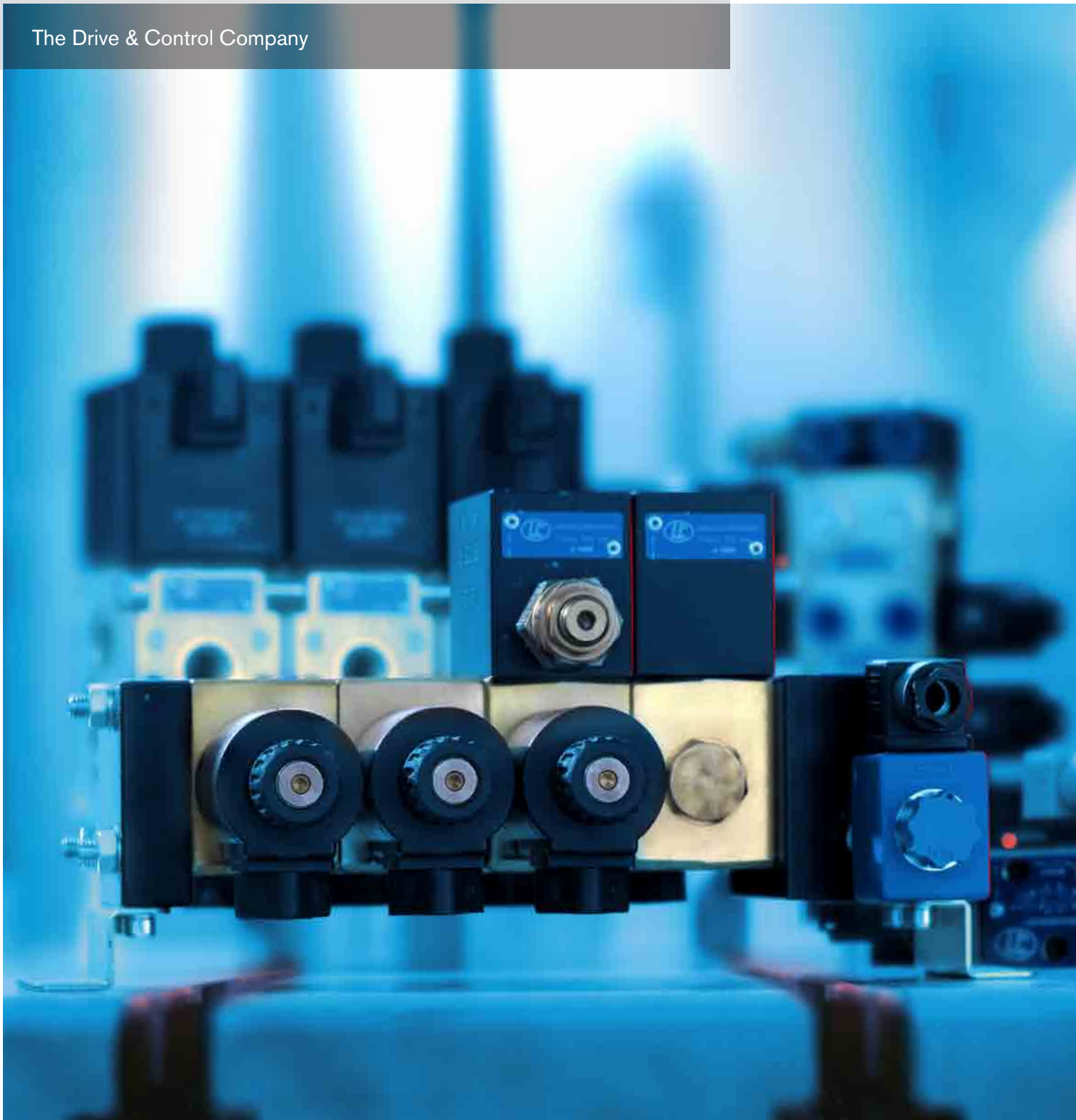
Electric Drives and Controls | Hydraulics | Linear Motion and Assembly Technologies | Pneumatics | Service

Rexroth
Bosch Group

Modular directional valves

RE 00159/10.09
Replaces: 01.06

The Drive & Control Company



Modular Directional Valves

Designation	Type	Size	Series	Interface	P max bar *[psi]*	Q max l/min *[gpm]*	Page
Inlet elements basic	TE00	6	00	G 3/8 G 1/2 SAE8	250 *[3625]* 310 *[4500]*	50 *[13.2]*	9
Inlet elements with Primary Pressure Relief Valve	TE01	6	00	G 3/8 G 1/2 SAE8	250 *[3625]* 310 *[4500]*	50 *[13.2]*	13
Inlet elements with LS connections	TE03	6	00	G 3/8 G 1/2 SAE8	250 *[3625]* 310 *[4500]*	50 *[13.2]*	17
Inlet elements with Primary Pressure Relief Valve and with LS connections	TE04	6	00	G 3/8 G 1/2 SAE8	250 *[3625]*	50 *[13.2]*	21
Inlet elements with Primary Pressure Relief Valve and with Solenoid Unloading Cartridge	TE05	6	00	G 3/8 G 1/2 SAE8	250 *[3625]* 310 *[4500]*	50 *[13.2]*	25
Inlet elements with limitation of primary pressure in the system and LS controlled unloading of the excess flow	TE06	6	00	G 3/8 G 1/2	250 *[3625]*	90 *[23.8]*	29
Inlet elements with limitation of primary pressure, LS compensated flow control and solenoid operated unloading	TE07	6	00	G 1/2	250 *[3625]*	90 *[23.8]*	33
Inlet elements with primary pressure relief valve and with 3-way pressure compensated combination type flow control	TE08	6	00	G 1/2	250 *[3625]*	50 *[13.2]*	37
Inlet elements with primary pressure relief valve and proportional LS controlled 3-way flow regulator	TE10	6	00	G 3/8 G 1/2 SAE8	210 *[3045]*	40 *[10.6]*	41
Inlet elements with Pressure Reducing Valve on the P line	TE11	6	00	G 3/8 G 1/2 SAE8	250 *[3625]*	50 *[13.2]*	45
Inlet elements from Compact Power Module K to ED Horizontal	TE-K > ED-O	6	00	CPM-K	250 *[3625]*	50 *[13.2]*	49
4/3 - 4/2 Directional valve elements with or without secondary relief valves, and with or without LS connections	EDBY	4	00	G 3/8 SAE6 M16x1 .5	250 *[3625]*	15 *[4]*	51
4/3 Directional valve elements with or without secondary relief valves, with or without LS connections, and with PO check valves	EDBY-VR	4	00	G 3/8 SAE6 M16x1 .5	250 *[3625]*	15 *[4]*	59
4/3 - 4/2 Directional valve elements with or without secondary relief valves, and with or without LS connections	EDBZ	4	00	G 3/8 SAE6 M16x1 .5	310 *[4500]*	25 *[6.6]*	67
4/3 Directional valve elements with or without secondary relief valves, with or without LS connections, and with PO check valves	EDBZ-VR	4	00	G 3/8 SAE6 M16x1 .5	250 *[3625]*	20 *[5.3]*	77

Designation	Type	Size	Series	Interface	P max bar *[psi]*	Q max l/min *[gpm]*	Page
4/2 Directional valve elements with or without secondary relief valves, with or without LS connections, and with 2/2 solenoid cartridge valve	EDBZ-VEI	4	00	G 3/8 SAE6 M16x1.5	310 *[4500]*	25 *[6.6]*	87
4/3 4/2 Directional valve elements with proportional control and with or without LS connections.	EDB-P	4	00	G 3/8 SAE6 M16x1.5	310 *[4500]*	0-17 *[0-4.5]*	97
4/3 - 4/2 Directional valve elements with or without secondary relief valves, with or without LS connections.	ED1-Z	6	00	G 3/8 SAE6	310 *[4500]*	30 *[7.9]*	105
4/3 - 4/2 Directional valve elements with or without secondary relief valves, with or without LS connections	ED2-DZ	6	00	G 3/8 G 1/2 SAE6 SAE8	310 *[4500]*	50 *[13.2]*	117
4/3 4/2 Directional valve elements with soft-shift	ED2S-DZ	6	00	G 3/8	310 *[4500]*	50 *[13.2]*	127
Directional valve elements with proportional control of Tank unloaded excess flow	ED4-PT	6	00	-	310 *[4500]*	28 *[7.4]*	135
Directional valve elements with compensated proportional control of Tank unloaded excess flow	ED4-PTC	6	00	-	250 *[3625]*	40 *[10.6]*	145
4/3 - 4/2 Directional valve elements with proportional control and with or without LS connections	ED4-P	6	00	G 3/8 SAE6	310 *[4500]*	45 *[11.9]*	153
4/3 - 4/2 Directional valve elements with proportional hydraulic control and with or without LS connections	ED-IP	6	00	G 3/8 SAE6 G 1/2 SAE8	310 *[4500]*	45 *[11.9]*	163
4/3 - 4/2 Directional valve elements with manual lever operated control and with or without LS connections	ED-LV	6	00	G 3/8 G 1/2 SAE8	310 *[4500]*	60 *[15.8]*	169
Intermediate elements with check valves for emergency pump	TI-00	6	00	-	250 *[3625]*	50 *[13.2]*	177
Intermediate elements with pressure reducer, and relieving	TI-03	6	00	-	250 *[3625]*	50 *[13.2]*	179
Intermediate elements with flow regulator on P line	TI-04	6	00	-	250 *[3625]*	50 *[13.2]*	181
Intermediate elements with 2 way compensator, and with LS connections	TI-C2	6	00	-	310 *[4500]*	30 *[7.9]*	183
Intermediate elements for interfacing ED with M4-12	TI-M4-12 >ED	6	00	-	310 *[4500]*	-	185
Intermediate elements with double acting hand pump	EPM-DE-18	6	00	-	310 *[4500]*	-	189

INTRODUCTION

Bosch Rexroth Oil Control (DCOC - Drive Control Oil Control) manufactures a wide range of solenoid and directional valves for different applications grouped by typology in the present catalogue.

For valves not included in this catalogue, please consult Bosch Rexroth Oil Control.

TECHNICAL DATA

The solenoid valves are composed by:

high strength cast iron body, with control spool made of special heat treated steel for long-lasting performance; 1 or 2 oil immersed solenoids and 1 or 2 coils made by copper wire winding, with isolating coating, optimized for high hydraulic performance with limited current absorption.

The directional valves bodies can be manufactured with different materials like high strength cast iron, steel or high strength wrought aluminium; their internal parts are manufactured with top quality steel processed with the most advanced machinery, which combines high production capacity with full and precise control of dimensions.

All external cast iron or steel parts are protected by zinc plating, and aluminium bodies are protected by anodizing.

All solenoid valves are designed according to the highest specifications and are manufactured and tested with the most advanced machinery and equipment which combines high production capacity with full and precise control of dimensions.

Ports, when present, can be drilled according to different specifications like: G sizes (BSPP) according to UNI-ISO 228/1; Metric with O-Ring, or with flat washer, according to UNI-ISO 6149; SAE threaded ports UN-UNF 2B; BSPP thread with O-Ring, according to JIS 2351-90 Type “O”.

Seals:

O-Rings: are made with acrylonitrile/butadiene, commonly called BUNA-N (or NBR, according to ASTM and ISO), standard for temperatures between -20°C and +80°C *[-68°F and + 176°F].* Special O-Rings for higher temperatures can be supplied upon request.

Back-up Rings and Slide Rings are made of reinforced poly-tetrafluoroethylene (PTFE), or BUNA-N (NBR) as well.

QUALITY SYSTEM APPROVAL ORDERS

DCOC distributes its valves through its sales network in compliance with the delivery terms shown in the specific documents. Customer orders must be transmitted to the Vendor in written form (via fax, telecommunication, or electronic means) and must contain the following information:

a) date and place of issue of the order;

b) exact name of the Customer company and its complete shipping and billing addresses;

c) a reference to the offer made by the Vendor company with the relevant agreed prices (if such an offer exists);

d) valid Vendor’s part numbers and description/specification of all the products to which the order refers;

e) the required quantities;

f) the quality requirements with which the Vendor must comply;

g) the signature of an authorized representative;

h) the required delivery date;

i) terms of payment;

j) shipping agent

For Customers supplied by DCOC directly, the orders are officially as accepted when the relevant order confirmation, duly signed by DCOC, arrives at the Customer; or, if such a document is not forthcoming, orders will be considered confirmed by the Vendor, at the terms requested, if they are not explicitly refused in writing within 10 working days from the order date.

NOTE: except if otherwise agreed with the Customer, DCOC can introduce technical modifications to the product specifications without notice; in any event, DCOC undertakes to execute customer orders/contracts which are already confirmed without applying any modifications to the product and/or anyway guaranteeing product interchange.

PRODUCT QUALITY AND COMPLIANCE TO THE SPECIFICATIONS

All DCOC valves are subject to the necessary checks/tests in various production phases in order to guarantee compliance with the specifications and settings shown in the catalogues, drawings, and/or technical datasheets. The Customer may make visits to and to carry out Quality AUDITS at the Vendor's plant, provided that a specific appointment is agreed.

Due to the wide range of variants and operating conditions of the equipment manufactured by the Customers, DCOC does not assume any liability for the results of tests performed by third parties. The Customer is therefore responsible for the final choice of the valve and for the adoption of all the measures required to achieve the functional and safety specifications of the system in which the valve is to be installed, in addition to the compliance with any specific regulation or standard applicable to the system in question.

In the event of product non compliance due to Vendor's mistake, in addition to the warranty coverage here described, the Customer can demand the Vendor to perform the necessary corrective actions in order to promptly improve its quality level.

APPLICATION LIMITATIONS

The Customer is expressly prohibited from using the products sold by the Vendor for purposes other than those specified in the offer, catalogues, or technical documentation.

Specifically, DCOC 's Dealers or Agents are not authorised to approve the use of DCOC valves for the following applications:

- any passenger or goods carrying road vehicle or equipment subject to Highway Safety Standards and Directives, such as (without limitation) steering, or brake systems;
- aircraft or space vehicles;
- ordnance equipment;
- medical and health products, including life support equipment or vehicles;
- systems to be used under any Nuclear Regulatory Act or Regulation;
- systems for use in explosive or otherwise hazardous environments.

If the Customer intends to use the valves supplied for any applications falling into one or more of the above categories or other similar categories, or for any applications other than those expressly described in the documentation, or in case of doubts concerning the application, he must require prior specific authorisation directly from DCOC and proceed only after such authorisation has been issued in writing.

Any damage suffered by the Customer or third parties arising from failure to comply with the above mentioned terms and limitations, or due to non compliance to DCOC's instructions/specifications shown in the catalogue pages or in the technical drawings, will be borne entirely by the Customer himself.

CUSTOMER'S OBLIGATIONS TO PREVENT DAMAGES WITHIN HIS OWN PRODUCTION PROCESS

If the valves are employed in a production process which could cause substantial damage to the Customer or to third parties in case of assembly line stopping as consequence of defects or lack of availability of valves, the Customer has the responsibility to maintain a safety stock in order to promptly replace the defective or missing parts; the Customer undertakes to engineer the production cycle so that the replacements can be carried out easily.

In any event, DCOC will be responsible for the repair or replacement of any part or valve found to be defective due to its own manufacturing causes.

WARRANTY

DCOC warrants the original purchaser of its valves that the products are free from defects in material and workmanship, when handled, installed and operated under normal conditions, in accordance with DCOC and Industry recommended practises, for a period of 12 months from the first installation, provided that the installation date is within 6 months from the manufacturing date marked on the valve itself.

Seals and O-Rings are expressly excluded from the warranty.

This warranty is applicable only to the original purchaser of the valves, and is not transferable.

This warranty will not apply to products that have been subject to conditions of contamination in the customer's hydraulic circuit, or to products which have been incorrectly handled, fitted, used or modified/disassembled without the Vendor's supervision or authorisation.

In the event that the Customer believes that the valves or parts of valves supplied are defective for causes attributable to the Vendor, the Customer shall notify the alleged defects by sending a detailed written report, thereby allowing the Vendor to understand and verify the nature of the claimed defects, also through its authorised technical personnel.

Once the defect has been analysed and after determination that the defect is attributable to the Vendor's fault, DCOC will repair or replace the valve within a reasonable time and/or inform the Customer of the cause of such defect.

The DCOC warranty policy does not provide for refund or credit for the defective material; specifically DCOC shall not be held responsible under any circumstances for loss of profit, costs of disassembly and reassembly of the product, nor for any damages connected with such operation, nor for any cost related to the fitting of the repaired or replaced valves, including losses of earnings related to machine being temporarily out of service.

If the valve supplied is to be fitted in assembly plants potentially capable of causing damages to third parties of magnitude significantly greater than the cost of the valve itself, it is the Customer's responsibility to adopt all the possible safety measures in order to avoid any such damages; in fact, the production of valves at competitive market prices cannot ensure the total absence of defects, in spite of DCOC's continuous concern to provide top quality products. Should the Customer face the need of a Recall Campaign in which an DCOC valve is involved, DCOC's involvement shall be discussed and agreed between DCOC and the Customer prior to the start of any action. Should the Customer face a problem connected with an DCOC valve and potentially capable to raise a "Product Liability" case, the Customer shall immediately notify the Vendor who will participate to the joint analysis of the problem, together with the Customer.

NOTE: any warranty condition or obligation different from this policy can be effective only if specifically agreed and undersigned by both Parties: Customer and Vendor.

TECHNICAL ASSISTANCE

DCOC guarantees to the Customer its availability to perform free of charge a joint analysis of any defect reported by end users, also when such analysis is to be carried out at the Customer's site, provided that the timing is reciprocally agreed.

However, if the malfunction is found to be not due to DCOC's responsibility, the Vendor will issue a debit note to the Customer for the cost of the services rendered. When the Customer requires the assistance of DCOC's engineers on its sites, he shall make a written request to this effect (which can be transmitted also by e-mail or fax).

STATEMENT

The valves described in this catalogue can be employed in systems or machines falling under the specifications of the EEC European Directive 2006/42/CE (Machine Directive) and later amendments. The valves shall not be operated, adjusted or disassembled before the complete machines are verified to be in compliance with the requirements of the above mentioned Directive.

APPLICABLE LAW

For all matters that are here omitted, any delivery performed by DCOC directly will be subject to the applicable provisions of the Italian law.

If the Customer's address is in a Foreign Country, any case of dispute, also of "International nature", which should arise from these sales conditions shall be subject to the provisions of the Italian Law, with the sole competence of the Court of Modena – Italy.

ATTENTION

Limited to the valves and related products here included, this catalogue cancels and supersedes any prior issue.

VISCOSITY CLASS AND FILTRATION DATA

- Tab. A -

Viscosity class	Kinematic viscosity		
	MAXIMUM AT 0° C *[32° F]*	MEDIUM AT 40° C *[104° F]*	MINIMUM AT 100° C *[212° F]*
ISO VG 10	90	10	2.4
ISO VG 22	300	22	4.1
ISO VG 32	420	32	5.0
ISO VG 46	780	46	6.1
ISO VG 68	1400	68	7.8
ISO VG 100	2560	100	9.9

- Tab. B -

TYPE OF SYSTEM TYPE OF VALVE	L.C. FILTRATION RECCOMENDATIONS			
	NOMINAL FILTRATION (micron)	ABSOLUTE FILTRATION RATING ISO 4572 ($BETA_X \geq 75$)	CONTAMINATION CLASS ACCORDING TO:	
			ISO 4406	NAS 1638
System/components operating at HIGH PRESSURE > 250 bar *[3625 psi]* HIGH DUTY CYCLE APPLICATIONS Systems/components with LOW dirt tolerance	10	X = 10... 12	19 / 17 / 14	8
System/components operating at MEDIUM HIGH PRESSURE HIGH DUTY CYCLE APPLICATIONS Systems/components with moderately dirt tolerance	15	X = 12... 15	20 / 18 / 15	9
System/components operating at LOW PRESSURE < 100 bar *[1450 psi]* LOW DUTY CYCLE APPLICATIONS Systems/components with GOOD dirt tolerance	25	X = 15... 25	21 / 19 / 16	10

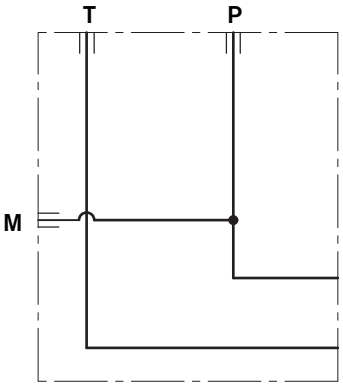
RE 18300-01/10.09 1/4
Replaces: RIE00159/01 .06

Inlet Elements basic


DVI0025

TE-00-__-

HYDRAULIC - SYMBOL



Description

The inlet elements have threaded ports and connect the external P and T lines to the P and T channels of the ED Directional Valve Elements.

They include a Test Point port (M) for pressure gauge connection.

Port sizes can be G 3/8, G 1/2 or SAE 8 (3/4 16 UNF).

Material: the body can be made of Black Anodized Aluminium (Al), or of Yellow Zinc plated (Cr+3) Cast Iron (CI).

Technical Data (for applications outside these parameters, please consult us)

General

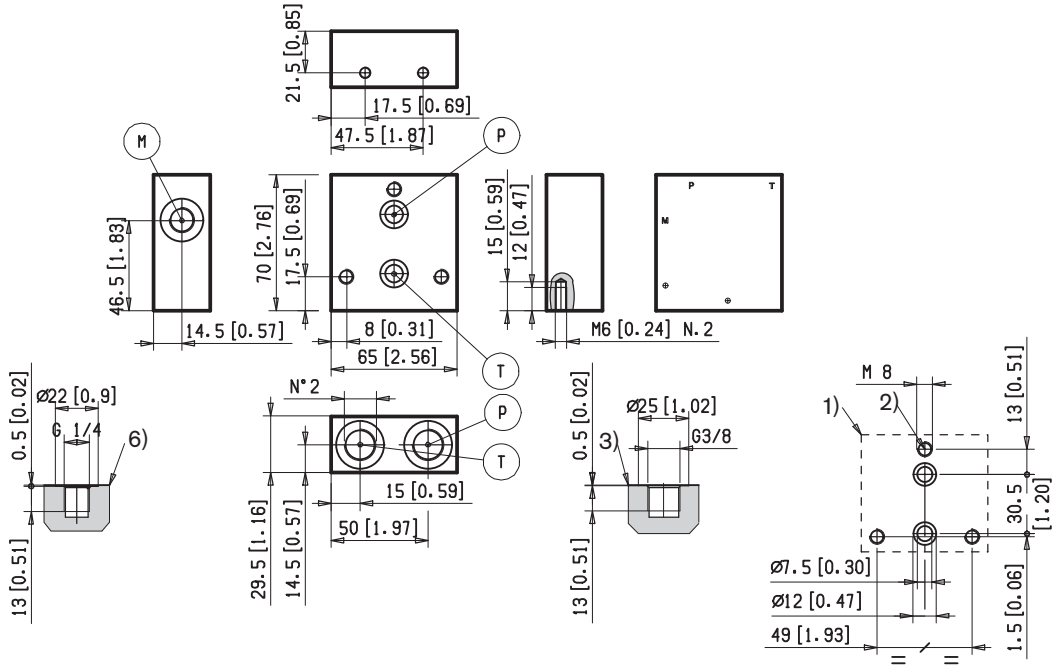
Inlet Element Type	Weight	AL Version (Aluminium)	CI Version (Cast Iron)
TE-00-02-00	kg *[lbs]*	0.33 *[0.72]*	0.82 *[1.81]*
TE-00-03-00	kg *[lbs]*	0.53 *[1.16]*	1.35 *[2.88]*
TE-00-56-00	kg *[lbs]*	0.53 *[1.16]*	1.35 *[2.88]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*	

Hydraulic

Maximum pressure for aluminium version	bar *[psi]*	250 *[3625]*
Maximum pressure for Cast Iron version	bar *[psi]*	310 *[4500]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

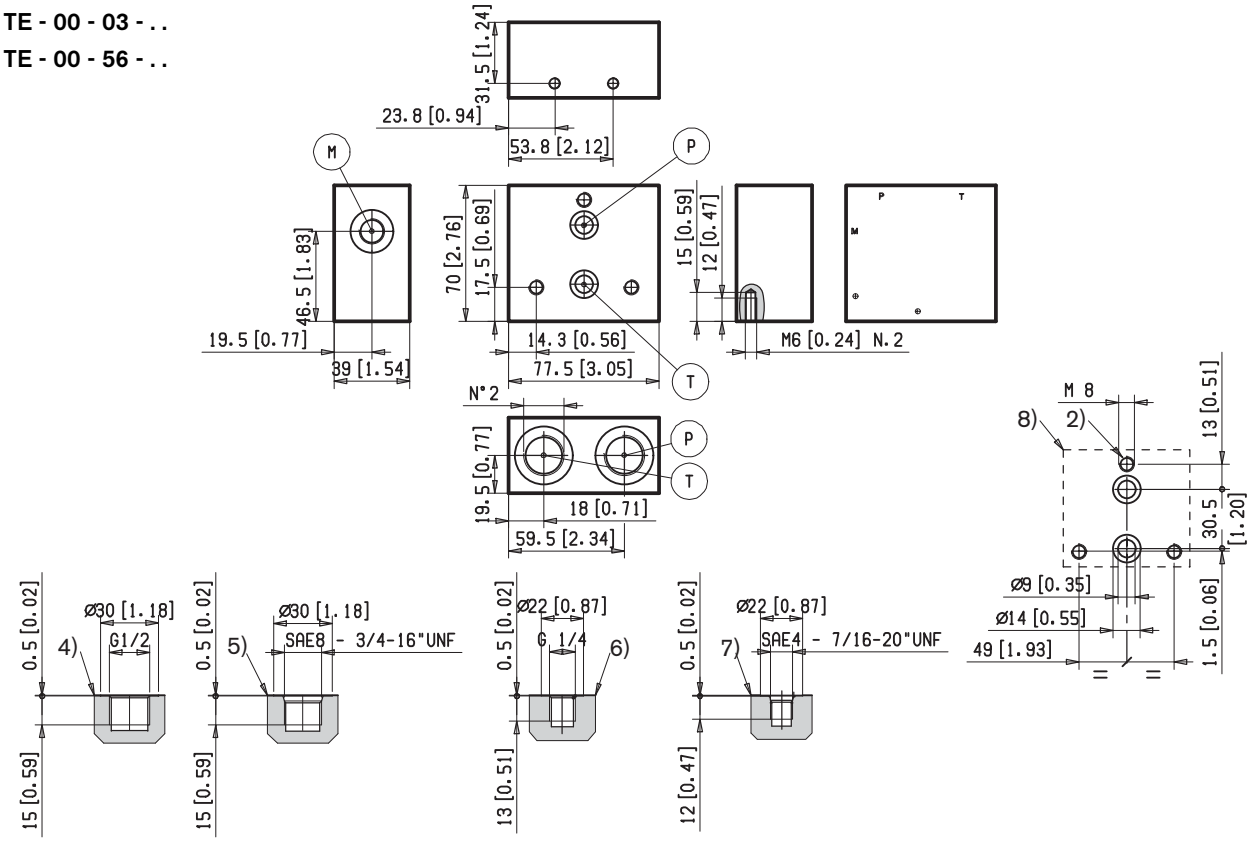
External Dimensions and Fittings

TE - 00 - 02 - . .



TE - 00 - 03 - . .

TE - 00 - 56 - . .



1 Flange details for interfacing with the ED Directional Valve Elements (Version TE-00-02…)

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*

3 Hydraulic Ports P-T, for Inlet Elements TE-00-02..

4 Hydraulic Ports P-T, for Inlet Modules TE-00-03..

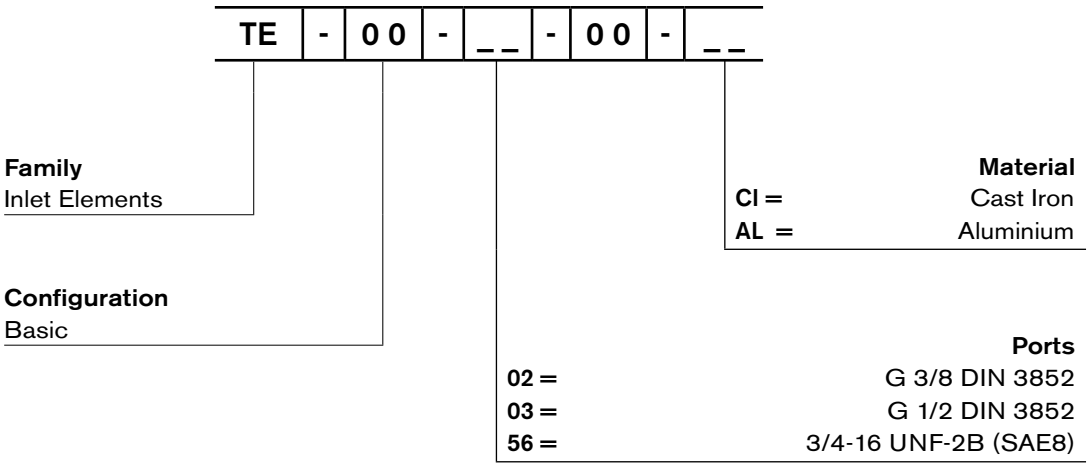
5 Hydraulic Ports P-T, for Inlet Elements TE-00-56..

6 Test Point port (M), for Inlet Elements TE-00-02.. and TE-00-03..

7 Test Point port (M), for Inlet Elements TE-00-56..

8 Flange details for interfacing with the ED Directional Valve Elements (Version TE-00-03… and TE-00-56…)

Ordering Details



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

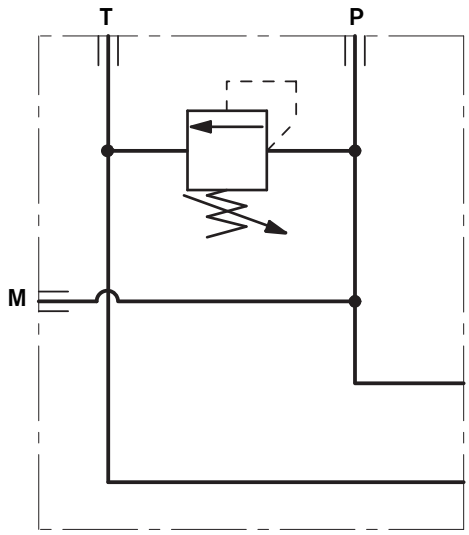
RE 18300-02/10.09 1/4
Replaces: RIE00159/01 .06

Inlet Elements with Primary Pressure Relief Valve


DVI0026

TE-01-__-

HYDRAULIC - SYMBOL



Description

The inlet elements TE-01-__ are employed to connect the external P and T lines to the P and T channels inside the ED elements of the Directional Valve Assembly. They incorporate a pressure relief cartridge which limits the maximum primary pressure in the P line and unloads to Tank any excess flow. The relief setting can be checked through the Test Point port M.
The TE-01-__ inlet elements are available in two versions:
-Body made of Black Anodized Aluminium (Al), or
-Body made of Yellow Zinc plated (Cr+3) Cast Iron (CI).
Port sizes can be G 3/8, G 1/2 or SAE 8 (3/4" 16 UNF).

Technical Data (for applications outside these parameters, please consult us)

General

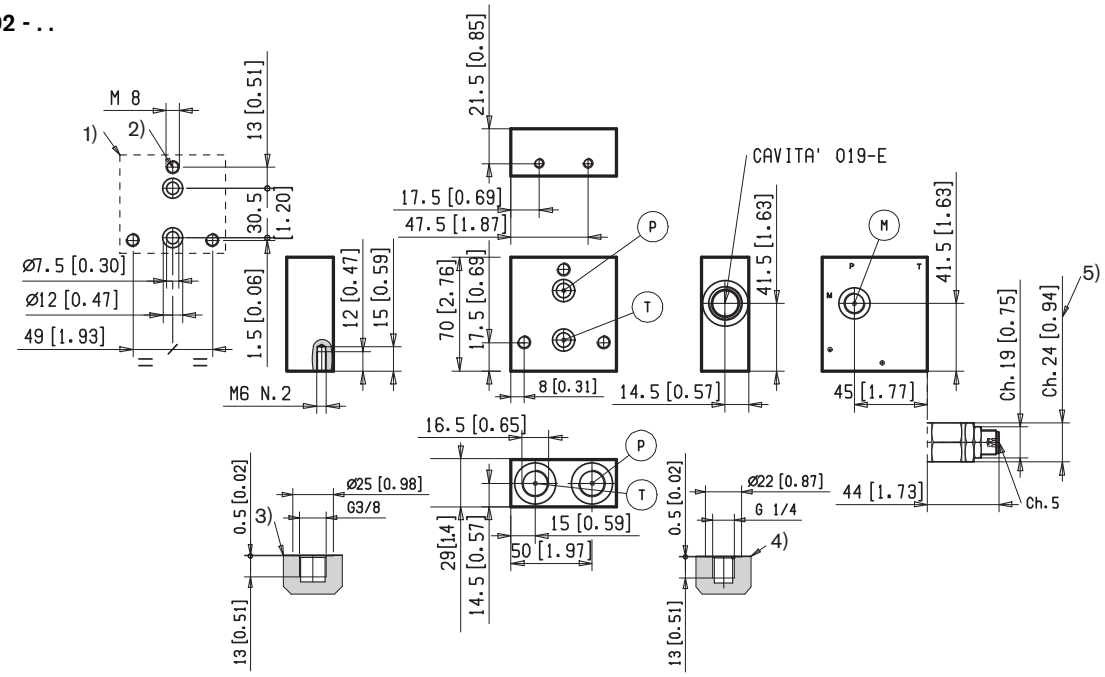
Inlet Element Type	Weight	AL Version (Aluminium)	CI Version (Cast Iron)
TE-01-02-00-	kg *[lbs]*	0.31 *[0.67]*	Not Available
TE-01-03-00-	kg *[lbs]*	0.49 *[1.08]*	1.23 *[2.72]*
TE-01-56-00-	kg *[lbs]*	0.49 *[1.08]*	Not Available
TE-01-02-S_-	kg *[lbs]*	0.44 *[0.96]*	Not Available
TE-01-03-S_-	kg *[lbs]*	0.66 *[1.45]*	1.36 *[3.00]*
TE-01-56-S_-	kg *[lbs]*	0.66 *[1.45]*	Not Available
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*	

Hydraulic

Maximum pressure for aluminium version	bar *[psi]*	250 *[3625]*
Maximum pressure for Cast Iron version	bar *[psi]*	310 *[4500]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

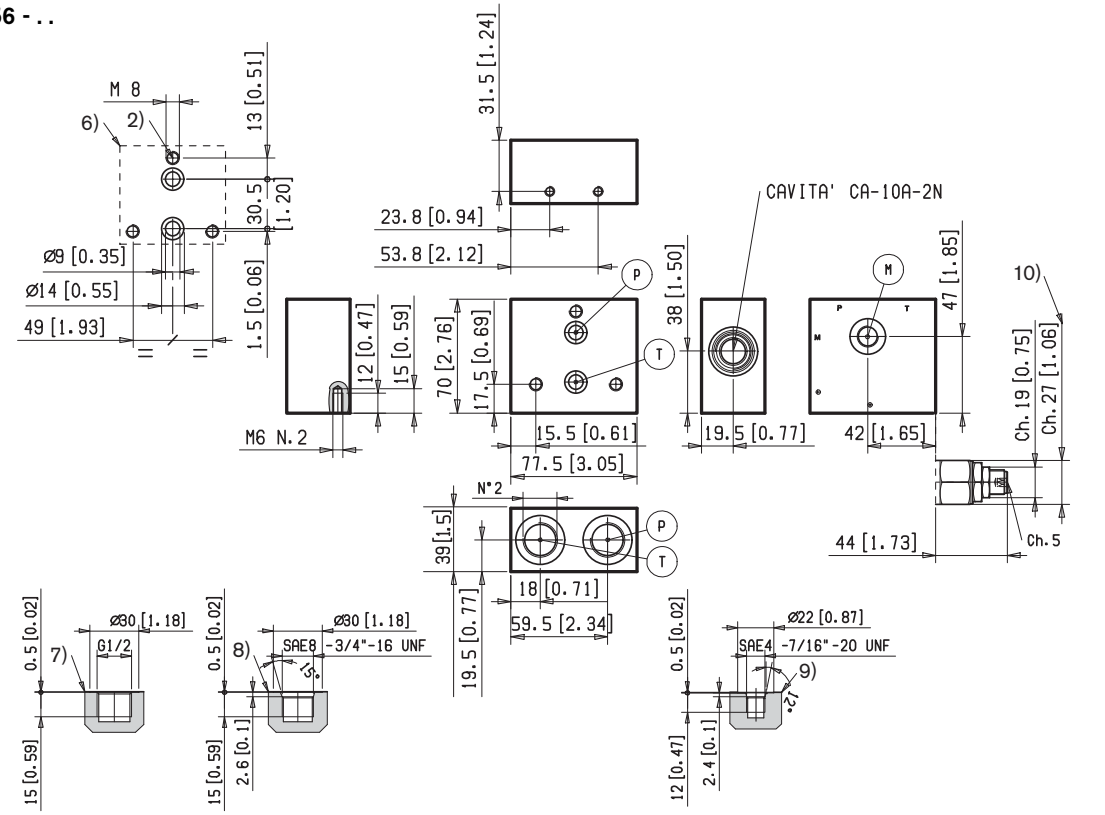
External Dimensions and Fittings

TE - 01 - 02 - . .



TE - 01 - 03 - . .

TE - 01 - 56 - . .



1 Flange specifications for coupling to the ED Directional Valve Elements (for Version TE-01-02…).

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Hydraulic Ports P-T G 3/8, for Inlet Elements TE-01-02…

4 Test Point port (M) G 1/4, for Inlet Elements TE-01-02… and TE-01-03…

5 Primary Pressure Relief Cartridge VMD1025, with screw type adjuster (refer to RE 18301-91).

6 Flange specifications for fitting of the ED Directional Valve Elements. (Versions TE-01-03… and TE-01-56…).

7 Hydraulic Ports P-T G 1/2, for versions TE-01-03-…

8 Hydraulic Ports P-T SAE 8, for versions TE-01-56…

9 Test Point port SAE 4, for versions TE-01-56-…

10 Primary Pressure Relief Cartridge VMD1040, with screw type adjuster (refer to RE 18301-91).

Ordering Details

TE	-	0 1	-	_ _	-	_ _	-	_ _

Family
Inlet Elements

Configuration
With Primary Pressure Relief Valve

Ports

G 3/8 DIN 3852	**=02**
G 1/2 DIN 3852	**=03**
3/4-16 UNF-2B (SAE8)	**=56**

Material

CI =	Cast Iron *
AL =	Aluminium

Primary Pressure Relief range

00 =	Without primary pressure relief valve
SN =	Pressure range 25-120bar *[362-1740 psi]*
SB =	Pressure range 40-200bar *[580-2900 psi]*
SV =	Pressure range 200-350bar *[2900-5076 psi]*

* Only available for versions with G 1/2 ports (TE-01-03-…)

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

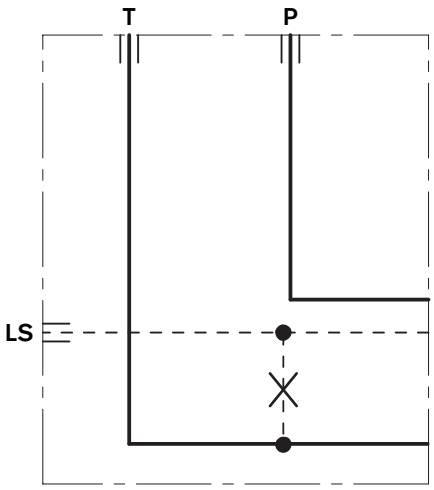
RE 18300-03/10.09 1/4
Replaces: RIE00159/01 .06

Inlet Elements with LS connections


DVI0027

TE-03-__-

HYDRAULIC - SYMBOL



Description

The inlet elementsTE-03-__ are employed to connect the external P, T lines to the P, T channels inside the ED elements of the Directional Valve Assembly and to connect to the LS ports of the elements equipped with LS channels.
The TE-03-__ inlet elements are available in two versions:
- Body made of Black Anodized Aluminium (Al), or
- Body made of Yellow Zinc plated (Cr+3) Cast Iron (CI).

Port sizes can be G 3/8, G 1/2 or SAE 8 (3/4" 16 UNF)
LS ports are G 1/4 for BSPP versions, and SAE 4 (7/16" 20UNF 2B) for "UNF" versions.

Technical Data (for applications outside these parameters, please consult us)

General

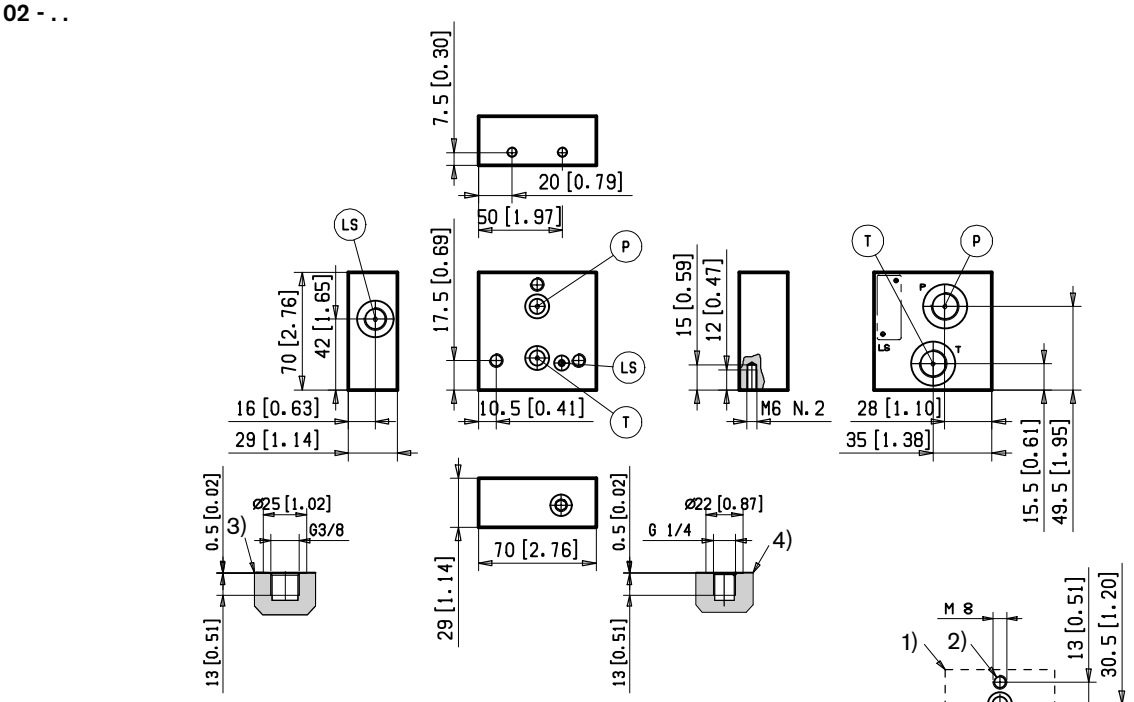
Inlet Element Type	Weight	AL Version (Aluminium)	CI Version (Cast Iron)
TE-03-02-00	kg *[lbs]*	0.36 *[0.80]*	Not available
TE-03-03-00	kg *[lbs]*	0.40 *[0.90]*	1.01 *[2.23]*
TE-03-56-00	kg *[lbs]*	0.40 *[0.90]*	Not available
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*	

Hydraulic

Maximum pressure for aluminium version	bar *[psi]*	250 *[3625]*
Maximum pressure for Cast Iron version	bar *[psi]*	310 *[4500]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

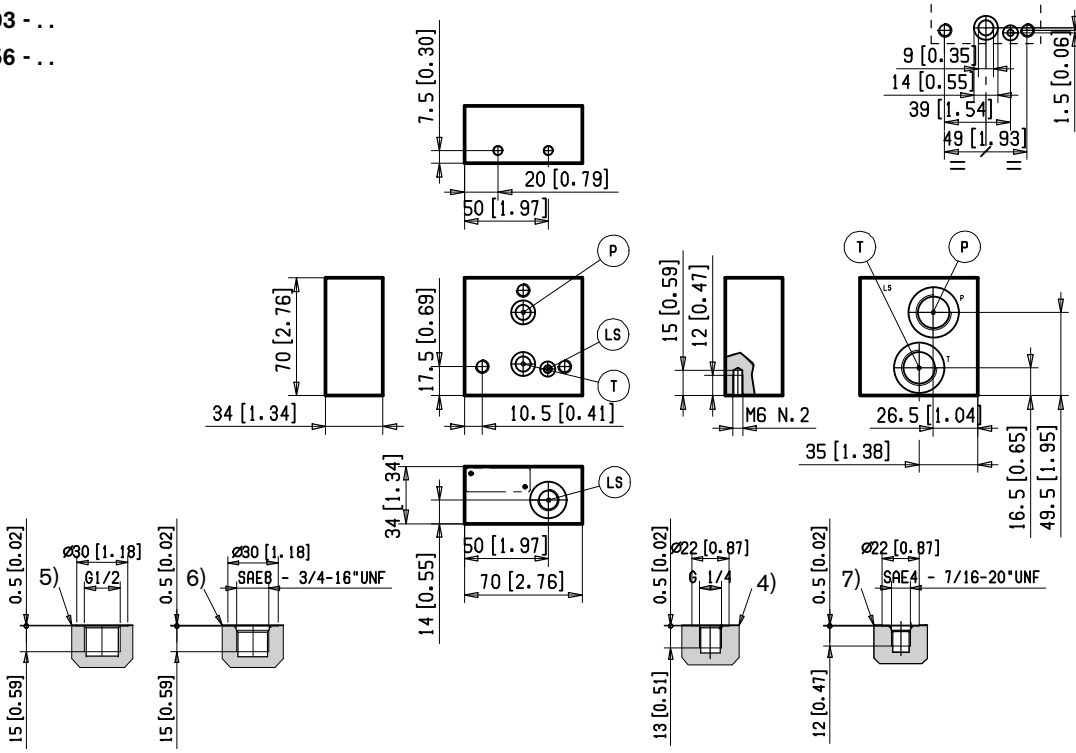
External Dimensions and Fittings

TE - 03 - 02 - . .



TE - 03 - 03 - . .

TE - 03 - 56 - . .



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Hydraulic Ports P-T G 3/8, for Inlet Elements TE-03-02…

4 Load Sensing port (LS) G 1/4, for Inlet Elements TE-03-02… and TE-03-03…

5 Hydraulic Ports P-T G 1/2, for versions TE-03-03-…

6 Hydraulic Ports P-T SAE 8, for versions TE-03-56…

7 Load Sensing port (LS) SAE 4, for Inlet Elements TE-03-56…

Ordering Details

TE	-	0 3	-	_ _	-	_ _	-	_ _

Family
Inlet Elements

Configuration
With Load Sensing ports

Material

CI =	Cast Iron*
AL =	Aluminium

Size of drain orifice for LS

00 =	No drain
01 =	0.3 mm *[0.012 inch]* orifice
02 =	0.4 mm *[0.016 inch]* orifice
03 =	0.5 mm *[0.020 inch]* orifice

Ports

02 =	G 3/8 DIN 3852
03 =	G 1/2 DIN 3852
56 =	3/4-16 UNF-2B (SAE8)

* Only available for versions with G 1/2 ports (TE-01-03-…)

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

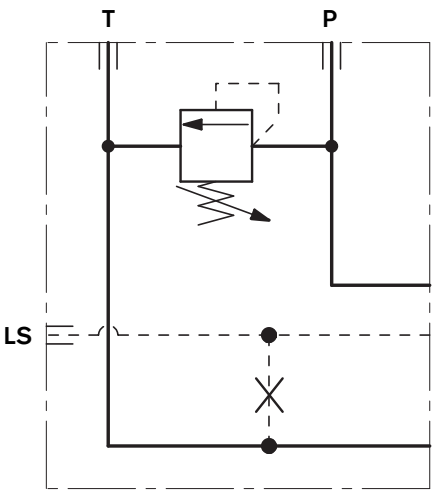
RE 18300-04/10.09 1/4
Replaces: RIE00159/01 .06

Inlet Elements with Primary Pressure Relief Valve and with LS connections

TE-04-__-


DVI0036

HYDRAULIC - SYMBOL



Description

The inlet elementsTE-04-__ are employed to connect the external P, T lines to the P, T channels inside the ED elements of the Directional Valve Assembly and to connect to the LS ports of the elements equipped with LS channels. They incorporate a pressure relief cartridge which limits the maximum primary pressure in the P line and unloads to Tank any excess flow.

The TE-04-__ inlet elements are available with body made of Black Anodized Aluminium (AL).

Hydraulic Ports P and T can be size G 3/8, G 1/2 or SAE 8 (3/4" 16 UNF). LS port is G 1/4 on BSPP versions, and SAE 4 in SAE versions.

Technical Data (for applications outside these parameters, please consult us)

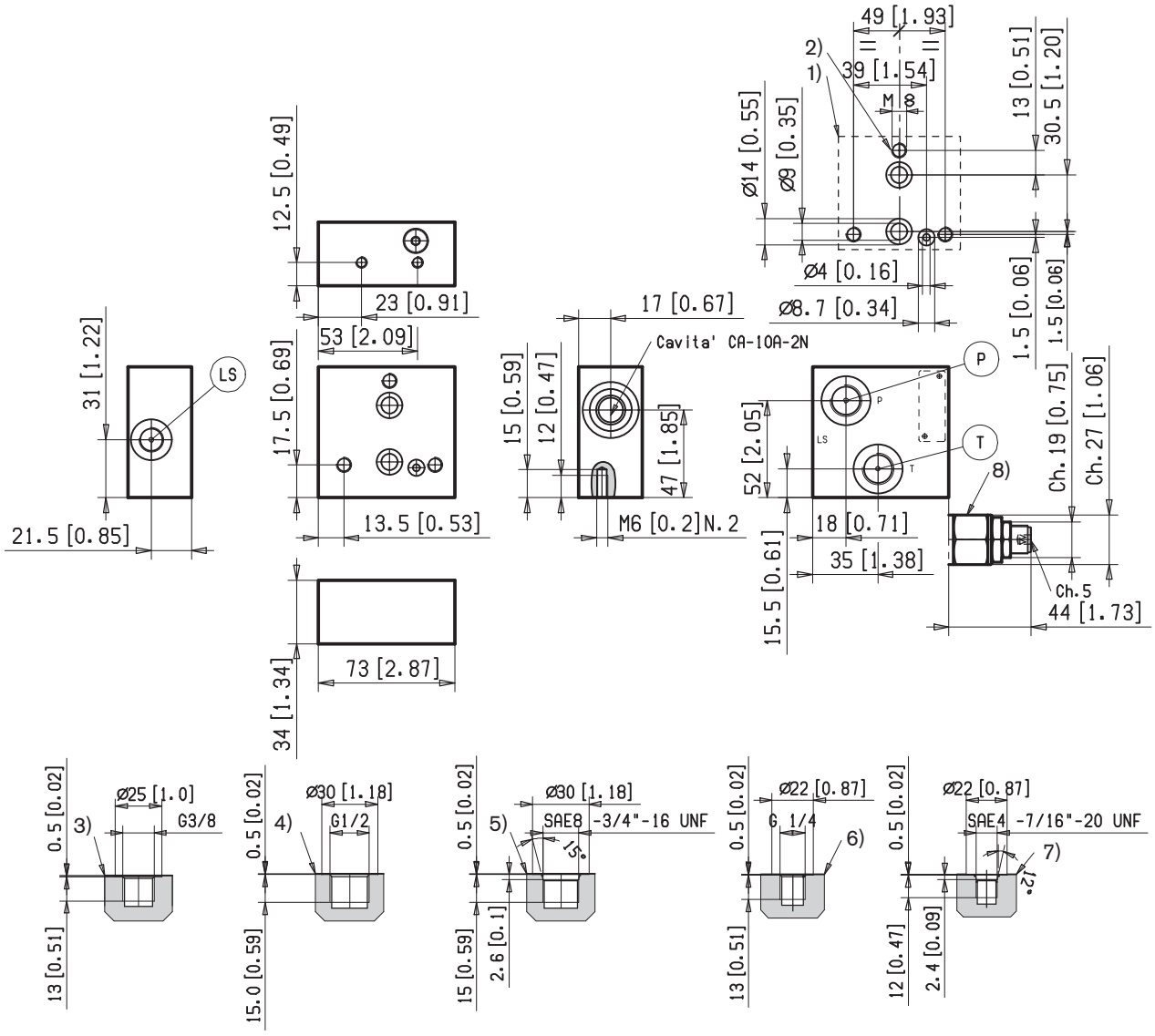
General

Weight TE-04-00	kg *[lbs]*	0.58 *[1.27]*
Weight TE-04-01	kg *[lbs]*	0.70 *[1.54]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Hydraulic Ports P-T G 3/8, for Inlet Elements TE-04-02…

4 Hydraulic Ports P-T G 1/2, for versions TE-04-03-…

5 Hydraulic Ports P-T SAE 8, for versions TE-04-56.

6 Test Point port G 1/4, for Inlet Elements TE-04-02… and TE-04-03…

7 Test Point port SAE 4, for versions TE-04-56-…

8 Primary Pressure Relief Cartridge VMD1040, with screw type adjuster (refer to RE 18301-91).

Ordering Details

TE	-	0 4	-	_ _	-	_ _	-	_ _	-	A L

Material
Aluminium

Family
Inlet Elements

Size of drain orifice for LS

00 =	Without drain orifice
01 =	Orefice 0.3 mm *[0.012 in]*
02 =	Orefice 0.4 mm *[0.016 in]*
03 =	Orefice 0.5 mm *[0.020 in]*

Configuration
With primary pressure relief valve and with LS connections

Primary Pressure Relief range

00 =	Without primary pressure relief valve
SN =	25-125bar *[362-1813 psi]*
SB =	40-200bar *[580-2900 psi]*
SV =	200-350bar *[2900-5076 psi]*

Ports

G 3/8 DIN 3852	**= 02**
G 1/2 DIN 3852	**= 03**
3/4-16 UNF-2B (SAE8)	**= 56**

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18300-05/10.09 1/4
Replaces: RIE00159/01 .06

Inlet elements with Primary Pressure Relief Valve and with Solenoid Unloading Cartridge

TE-05-__-

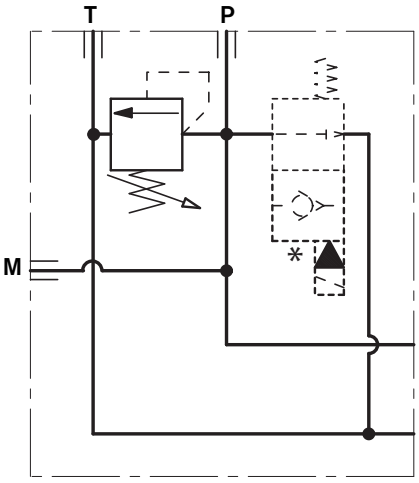

DVI0028

Description

The inlet elements TE-05-__ are employed to connect the external P and T lines to the P and T channels inside the ED elements of the Directional Valve Assembly. They incorporate a pressure relief cartridge which limits the primary pressure in the P line. The relief setting can be checked through the Test Point port M. When fitted, the Normally Open Solenoid Unloading VEI* Cartridge unloads to Tank all the P line flow; unloading stops when the cartridge coil is energized.
The TE-05-__ inlet elements are available in two versions:
- Body made of Black Anodized Aluminium (Al), or
- Body made of Yellow Zinc plated (Cr+3) Cast Iron (CI).

Port sizes can be G 3/8, G 1/2 or SAE 8 (3/4" 16 UNF).
*The VEI solenoid cartridge must be ordered separately (refer to RE 18301-91).

HYDRAULIC - SYMBOL



Technical Data (for applications outside these parameters, please consult us)

General

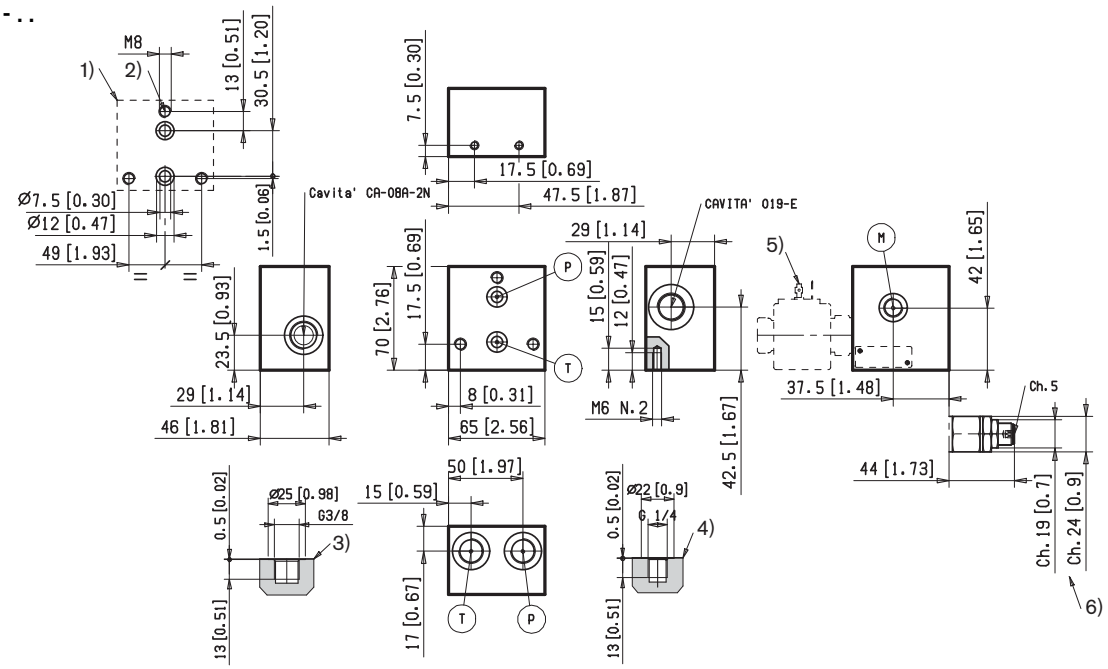
Inlet Element Type	Weight	AL Version (Aluminium)	CI Version (Cast Iron)
TE-05-02-00-	kg *[lbs]*	0.50 *[1.10]*	1.26 *[2.78]*
TE-05-03-00-	kg *[lbs]*	0.74 *[1.68]*	1.92 *[4.20]*
TE-05-56-00-	kg *[lbs]*	0.74 *[1.68]*	Not available
TE-05-02-S_-	kg *[lbs]*	0.60 *[1.39]*	1.40 *[3.10]*
TE-05-03-S_-	kg *[lbs]*	0.94 *[2.06]*	2.10 *[4.60]*
TE-05-56-S_-	kg *[lbs]*	0.94 *[2.06]*	Not available
Ambient Temperature	°C *[°F]*	−20....+50 *[−4....+120]*	

Hydraulic

Maximum pressure for aluminium version	bar *[psi]*	250 *[3625]*
Maximum pressure for Cast Iron version	bar *[psi]*	310 *[4500]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

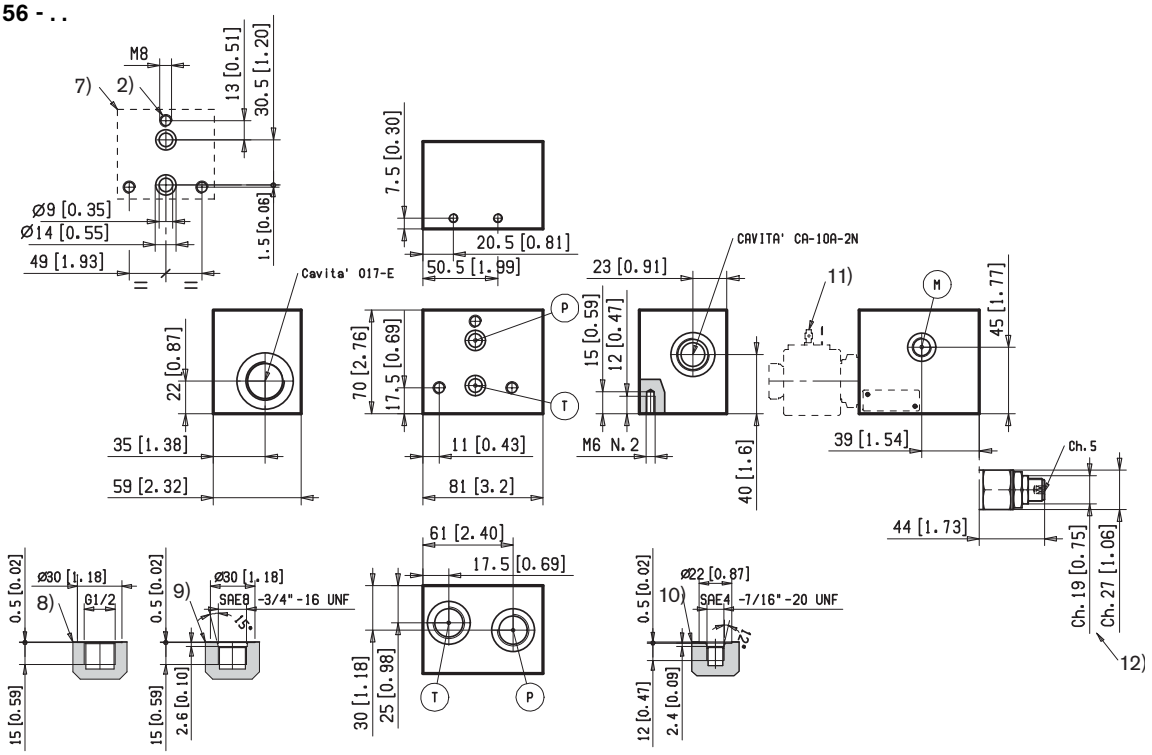
External Dimensions and Fittings

TE - 05 - 02 - . .



TE - 05 - 03 - . .

TE - 05 - 56 - . .



1 Flange specifications for coupling to the ED Directional Valve Elements:

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Hydraulic Ports P-T G 3/8, for Inlet Elements TE-05-02…

4 Test Point port M G 1/4, for Inlet Elements TE-05-02… and TE-05-03…

5 Cavity for Solenoid Unloading Cartridge, VEI type, for versions TE-05-02-… (refer to RE 18301-91).

6 Primary Pressure Relief Cartridge VMD1025, with screw type adjuster (refer to RE 18301-91) for TE-05-02… inlet elements.

7 Flange specifications for coupling to the ED Directional Valve Elements (versions TE-05-03-.., TE-05-56-…).

8 Hydraulic Ports P-T G 1/2, for versions TE-05-03-…

9 Hydraulic Ports P-T SAE 8, for versions TE-05-56…

10 Test Point port SAE 4, for versions TE-05-56-…

11 Cavity for Solenoid Unloading Cartridge, VEI type, for versions TE-05-03-… and TE-05-56… (refer to RE18301-91).

12 Primary Pressure Relief Cartridge VMD1040, with screw type adjuster for versions TE-05-03-… and TE-05-56… (refer to RE 18301-91).

Ordering Details

TE	-	0 5	-	_ _	-	_ _	-	_ _

Family
Inlet Elements

Configuration
With primary pressure relief valve
and with solenoid unloading cartridge

Ports

G 3/8 DIN 3852	**=02**
G 1/2 DIN 3852	**=03**
3/4-16 UNF-2B (SAE8)	**=56**

Material

CI =	Cast Iron*
AL =	Aluminium

Primary Pressure Relief range

00 =	Without primary pressure relief valve
SN =	25-120bar *[362-1740 psi]*
SB =	40-200bar *[580-2900 psi]*
SV =	200-350bar *[2900-5076 psi]*

*Only available for versions with G 1/2 ports (TE-01-03-…)

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18300-06/10.09 1/4
Replaces: RIE00159/01 .06

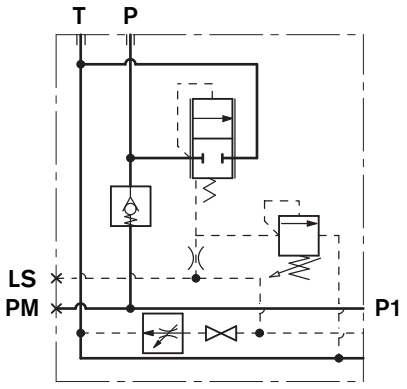
Inlet elements with limitation of primary pressure in the system and LS controlled unloading of the excess flow

TE-06-__-

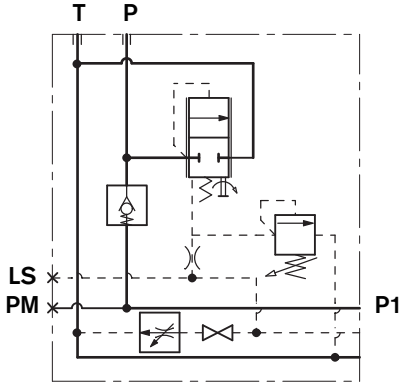

DVI0037

HYDRAULIC - SYMBOL

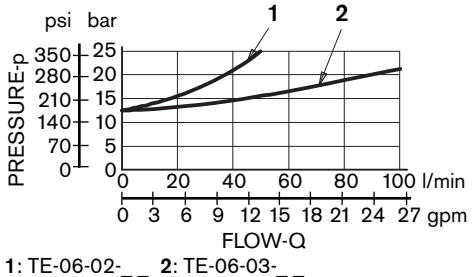
TE-06-_ _-00



TE-06-_ _-01



Pressure drop through compensator



1: TE-06-02-_ _ **2**: TE-06-03-_ _

Description

The inlet elementsTE-06-__ are employed to connect the external P, T lines to the P, T channels inside the ED elements of the Directional Valve Assembly and to connect to the LS ports of the elements equipped with LS channels. An LS controlled 3-way compensator provides pressure compensated flow to the ED elements of the Directional Valve Assembly. The same 3-way compensator is also controlled by a pilot relief cartridge and unloads to tank any excess flow in order to limit the primary pressure in the system. In the inlet elements version TE-06-__-01, the 3 way compensator can be mechanically blocked and the relief cartridge only controls the LS line pressure. The TE-06-__ inlet elements are available with body made of Black Anodized Aluminium (Al).

Port sizes can be G 3/8, G 1/2, with test point PM and LS port G 1/4.

Technical Data (for applications outside these parameters, please consult us)

General

Inlet Element Type		Weight
TE-06-02-_ _-	kg *[lbs]*	1.15 *[2.53]*
TE-06-03-_ _-	kg *[lbs]*	1.42 *[3.13]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

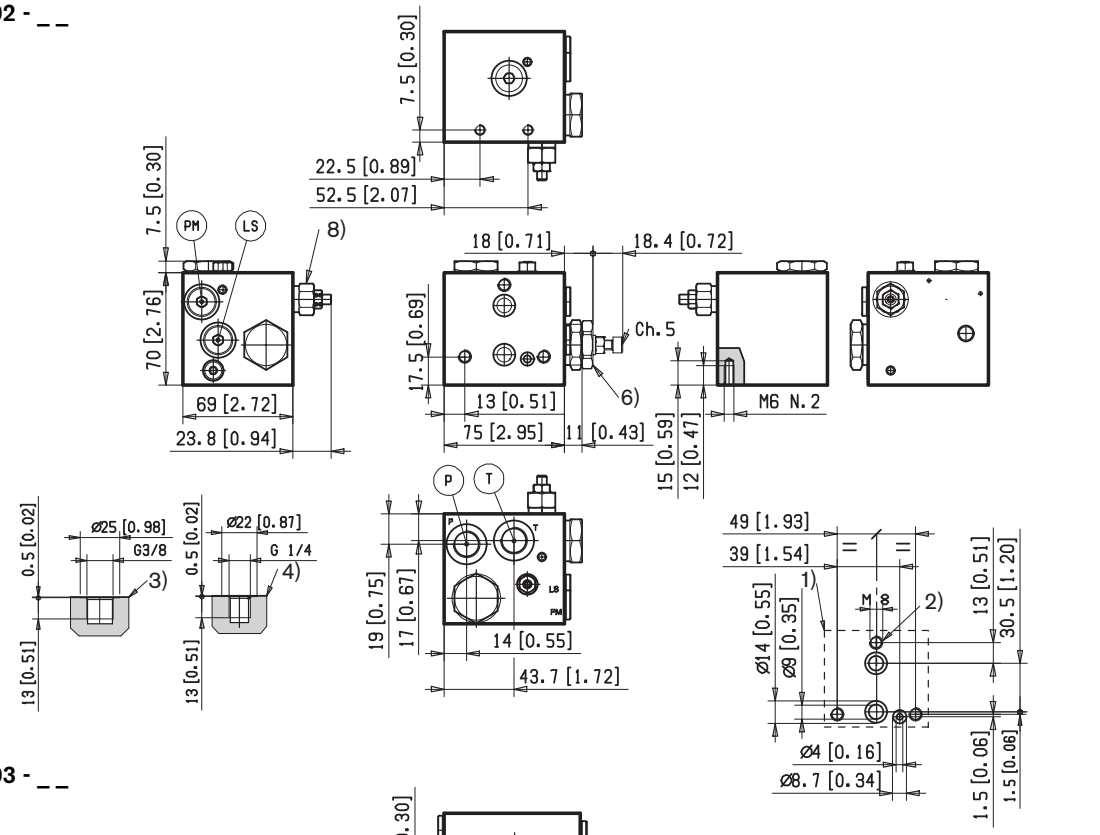
Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum inlet flow for TE-06-02-_ _ version	l/min *[gpm]*	40 *[10.6]*
Maximum inlet flow for TE-06-03-_ _ version	l/min *[gpm]*	90 *[23.8]*
Max. rated flow at P1	l/min *[gpm]*	40 *[10.57]**
Max. flow through LS drain	l/min *[gpm]*	0.7 *[0.185]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

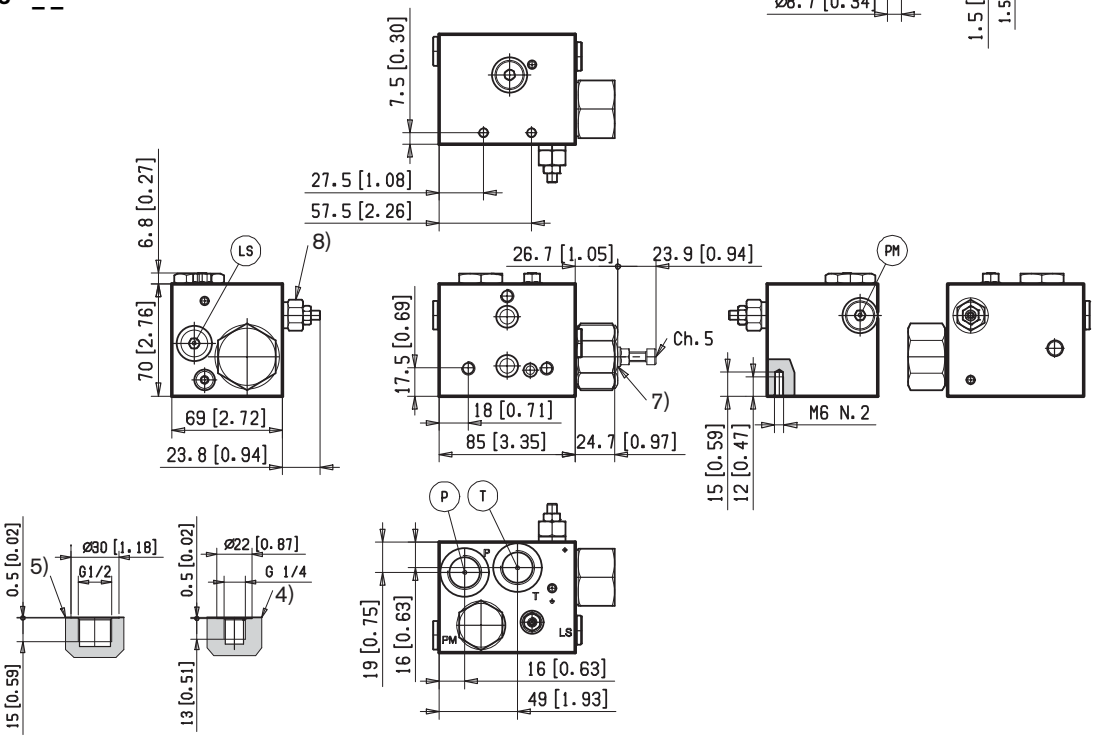
* The max. rated flow depends from the directional control element.

External Dimensions and Fittings

TE - 06 - 02 - _ _



TE - 06 - 03 - _ _



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three threaded holes M8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN 8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Hydraulic Ports P-T G 3/8, for Inlet Elements TE-06-02…

4 Test Point ports PM and LS port G 1/4.

5 Hydraulic Ports P and T G 1/2, for Inlet Elements TE-06-03…

6 Overall dimensions, including compensator, for TE-06-02-__-01

7 Overall dimensions, including compensator, for TE-06-03-__-01

8 Pressure relief cartridge VS-5-C (refer to RE 18301-91).

Ordering Details

TE	-	0 6	-	_ _	-	_ _	-	A L	-	_ _

Family
Inlet Elements

Configuration
With limitation of primary pressure in the system and LS controlled unloading of the excess flow

Ports

G 3/8 DIN 3852	**=02**
G 1/2 DIN 3852	**=03**

Pressure Relief range

Without valve	**=00**
50-210bar *[725-3046 psi]*	**=01**
100-250bar *[1450-3626 psi]*	**=02**

3-way compensator type

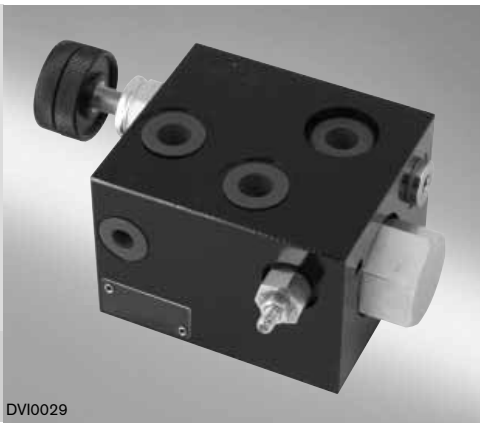
00 =	Without mechanical blocking
01 =	With mechanical blocking

Material
Aluminium

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18300-07/10.09 1/4
Replaces: RIE00159/01.06

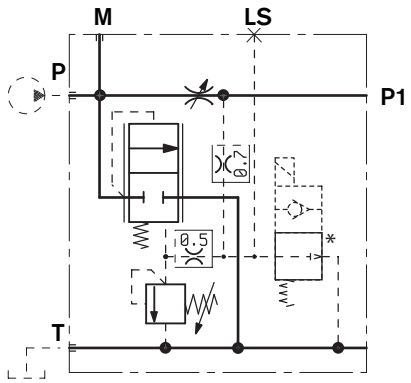
Inlet elements with limitation of primary pressure, LS compensated flow control and solenoid operated unloading


DVI0029

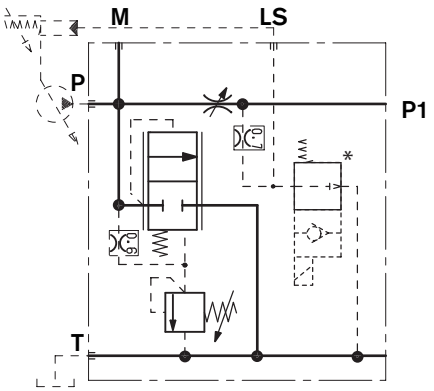
TE-07-__-

HYDRAULIC - SYMBOL

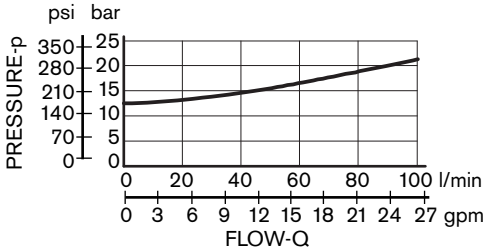
TE-07-01-03-. .



TE-07-02-03-. .



Pressure drop through compensator



Description

The inlet elementsTE-07-__ are employed to connect the external P, T lines to the P, T channels inside the ED elements of the Directional Valve Assembly and to connect to the LS ports of the elements equipped with LS channels. The main functions are: to provide LS controlled pressure compensated flow to the Directional Valve Elements, to limit the primary pressure in the P channels and to unload to Tank the inlet flow when all hydraulic operations must be inhibited, by de-energizing the VEI* solenoid operated cartridge. They are available in two versions: TE-07-01-03-… suitable for fixed displacement pumps, and TE-07-02-03-… for variable displacement pumps. The TE-07-__ inlet elements are manufactured with body made of Black Anodized Aluminium (Al). Port sizes are G 1/2, with LS and M test points G1/4.
* The Normally Open VEI solenoid cartridge, which must be ordered separately (refer to RE 18301-91), can be employed to pilot the 3-way compensator or to unload to tank the LS line pressure.
NOTE: the mechanical locking of the 3-way pressure compensator can be supplied upon request.

Technical Data (for applications outside these parameters, please consult us)

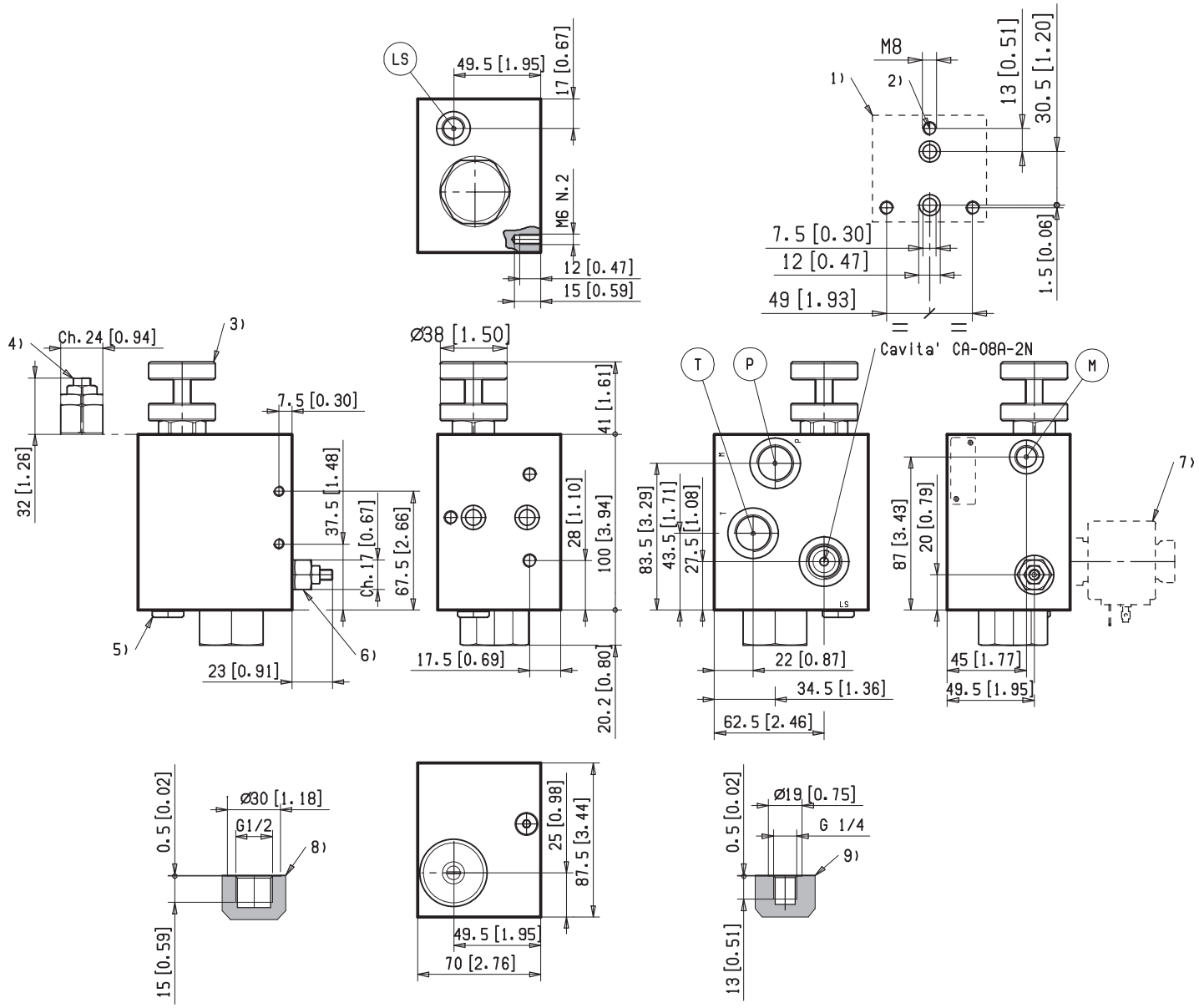
General

TE-07-.. Weight	kg *[lbs]*	1.80 *[3.98]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum inlet flow	l/min *[gpm]*	90 *[23.8]*
Rated flow at P1	l/min *[gpm]*	0-30 *[0-7.9]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three threaded holes M8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN 8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Flow restrictor with hand-knob adjustment.

4 Flow restrictor with screw type adjustment.

5 Plug G 1/4 for version TE-07-01-03-…

6 Pressure relief cartridge VS-5-C (refer to RE 18301-91).

7 Cavity for Solenoid Cartridge, VEI type (refer to RE 18301-91).

8 Hydraulic Ports P-T G 1/2.

9 G 1/4 ports for pressure gauge connection and LS signal.

Ordering Details

TE	-	0 7	-	_ _	-	0 3	-	_ _	-	_	-	_ _

Family
Inlet Elements

Configuration
with limitation of primary pressure, LS compensated flow control and solenoid operated unloading

Application Scheme
For fixed displacement pumps = **01**
For variable displacement pumps = **02**

Ports
G 1/2 DIN 3852

Pressure Relief range
00 = Without pressure relief valve
01 = 50-210bar *[725-3046 psi]*
02 = 100-250bar *[1450-3626 psi]*

Restrictor adjustment
S = Flow restrictor with screw type adjustment
K = Flow restrictor with hand-knob adjustment

3-way compensator type
00 = Without mechanical blocking
01 = With mechanical blocking

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

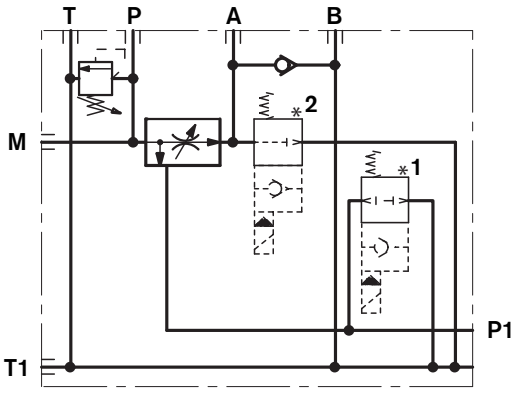
RE 18300-08/10.09 1/4
Replaces: RIE00159/01 .06

Inlet elements with primary pressure relief valve and with 3-way pressure compensated combination type flow control

TE-08-__-


DVI0030

HYDRAULIC - SYMBOL



Description

The inlet elements TE-08-__ are employed to connect the external P, T and T1 lines to the P1 pressure lines and tank lines in the ED elements of the Directional Valve Assembly. The main functions are: to limit the maximum primary pressure in the P line and to control the priority flow (P1) in the ED elements of the Directional Valve Assembly, with the excess flow delivered to port A for a secondary actuator. An incorporated check valve between B and A prevents cavitation.

Both priority (P1) and by-pass flow (A) can be separately unloaded to tank through the two solenoid (VEI*) cartridges 1 and 2.

The TE-08-__ inlet elements are manufactured with body made of Black Anodized Aluminium (Al).

P and T port sizes are G 1/2; A and B ports are sizes G 3/8 with LS, T1 and M test points G 1/4.

* The Normally Open VEI solenoid cartridges must be ordered separately (refer to RE 18301-91).

Technical Data (for applications outside these parameters, please consult us)

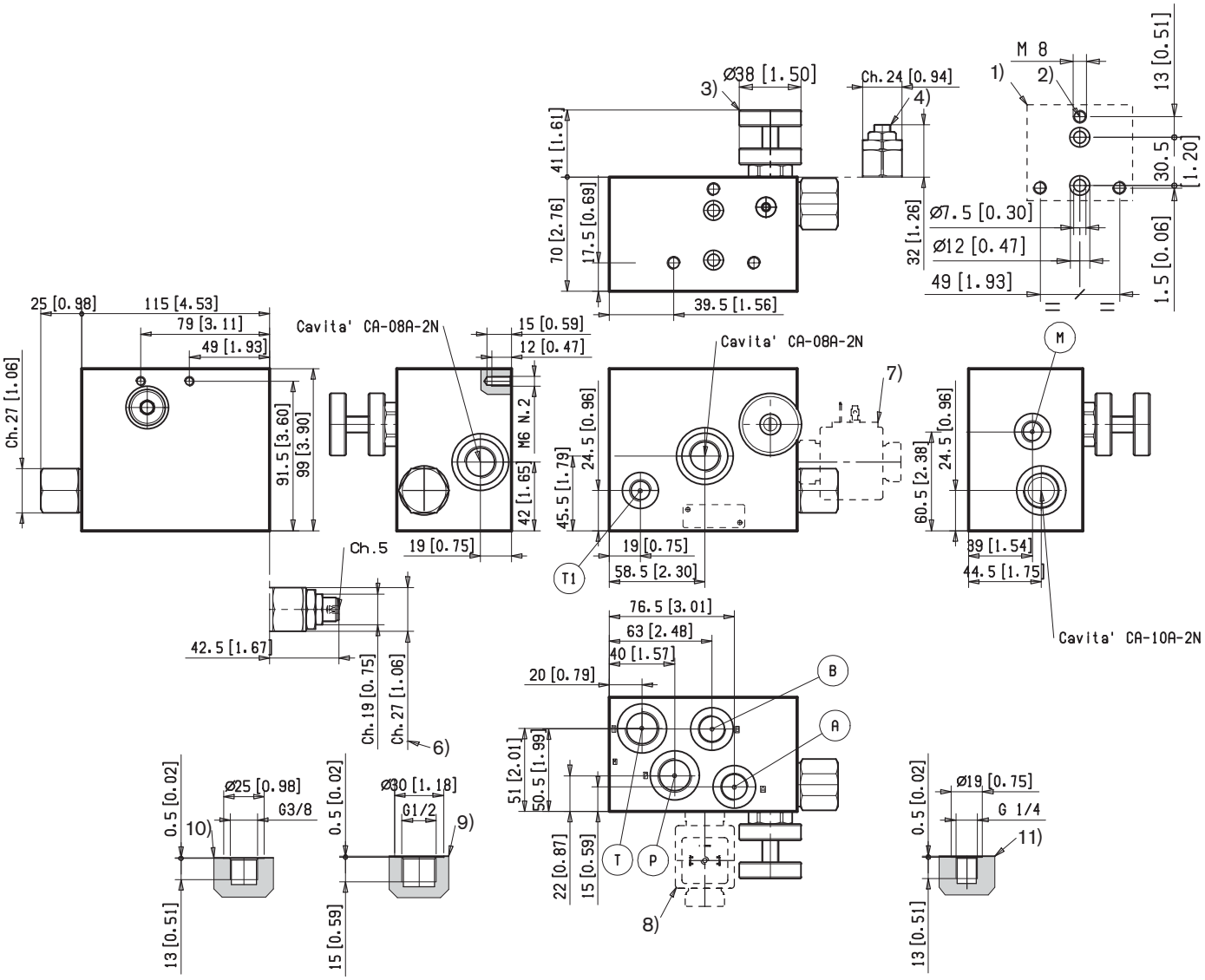
General

TE-08-.. Weight	kg *[lbs]*	2.36 *[5.21]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Maximum flow in A	l/min *[gpm]*	30 *[7.9]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Flow restrictor with hand-knob adjustment.

4 Flow restrictor with screw type adjustment.

6 Primary Pressure Relief Cartridge VMD1070 (refer to RE 18301-91).

7 Normally Open VEI solenoid unloading cartridge for P1 (refer to RE 18301-91).

8 Normally Open VEI solenoid unloading cartridge for A (refer to RE 18301-91).

9 Hydraulic Ports P-T size G 1/2.

10 Hydraulic Ports A and B size G 3/8.

11 Port for pressure gauge connection M size G 1/4.

Ordering Details

TE	-	0 8	-	0 3	-	_ _	-	A L

Family
Inlet Elements

Configuration
with primary pressure relief valve and
with 3-way pressure compensated
combination type flow control

Ports
G 1/2 DIN 3852

Material
Aluminium

Primary Pressure Relief range

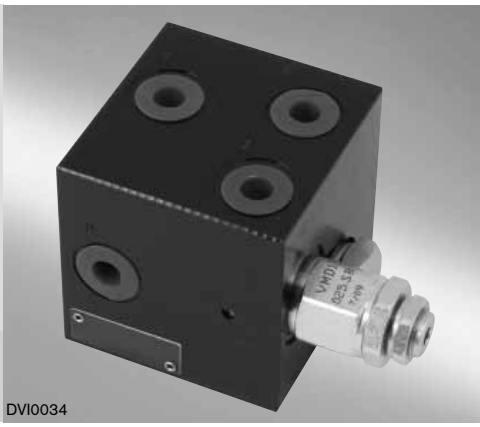
00 =	Without primary press. relief valve
SN =	10-60bar *[145-870 psi]*
SB =	40-110bar *[580-1600 psi]*
SR =	110-220bar *[1600-3200 psi]*
SV =	220-260bar *[3200-3800 psi]*

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18300-09/10.09 1/4
Replaces: RIE00159/01 .06

Inlet elements with primary pressure relief valve and proportional LS controlled 3-way flow regulator

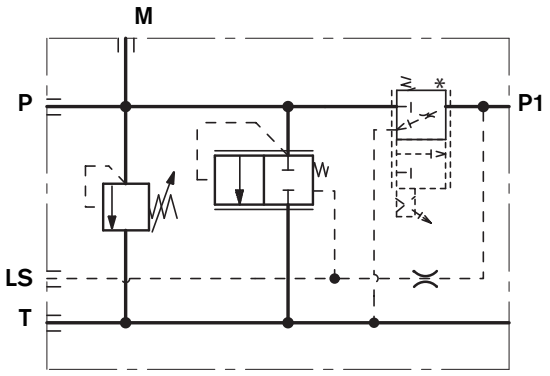
TE-10-__-


DVI0034

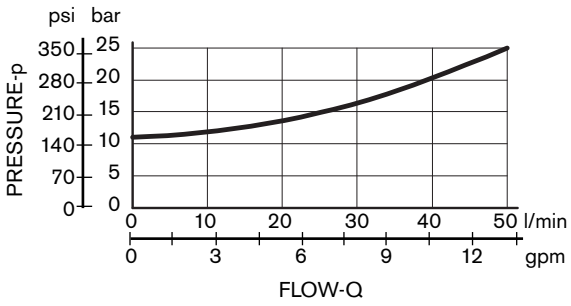
Description

The inlet elementsTE-10-__ are employed to connect the external P, T lines to the P, T channels inside the ED elements of the Directional Valve Assembly and to connect to the LS ports of the ED elements equipped with LS channels. The LS signal is sent downstream of the proportional flow restrictor VEP*: it provides a proportional pressure compensated flow, across the VEP*, for the ED elements of the Directional Valve Assembly, and it unloads the excess flow. The main functions are: to limit the maximum primary pressure in the P line and to supply proportional pressure compensated flow the ED elements of the Directional Valve Assembly. TE-10-__ inlet elements are available with body made of Black Anodized Aluminium (Al).
P and T Port sizes can be G 3/8, G 1/2, or SAE 8. Test point M is G 1/4 on BSPP versions, and SAE 4 in SAE versions.
* The VEP proportional solenoid cartridge must be ordered separately (refer to RE 18301-91).

HYDRAULIC - SYMBOL



Pressure drop through compensator



Technical Data (for applications outside these parameters, please consult us)

General

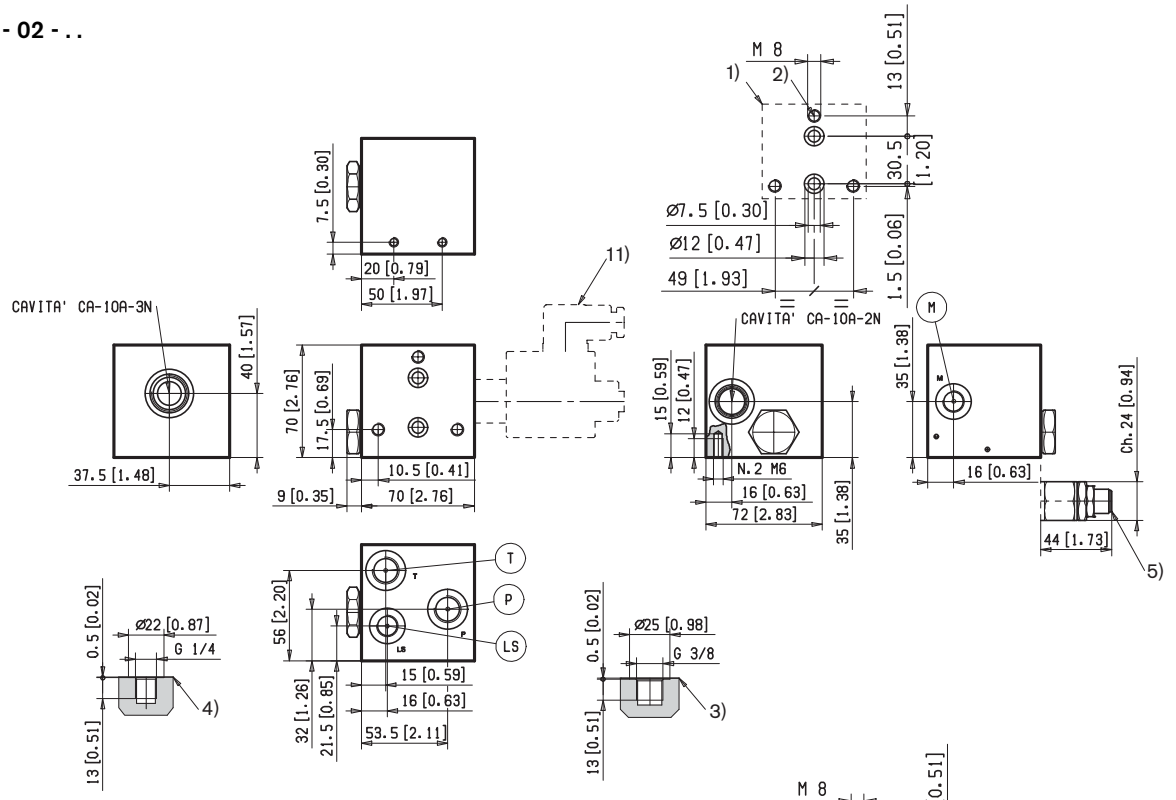
Model			Weight	Max rated flow at P1
TE-10-02-00-	kg *[lbs]*	l/min *[gpm]*	0.83 *[1.83]*	0-12 *[0-3.1]*
TE-10-03-00-	kg *[lbs]*	l/min *[gpm]*	0.88 *[1.94]*	0-32 *[0-8.4]*
TE-10-56-00-	kg *[lbs]*	l/min *[gpm]*	0.88 *[1.94]*	0-32 *[0-8.4]*
TE-10-02-S_-	kg *[lbs]*	l/min *[gpm]*	1.08 *[2.37]*	0-12 *[0-3.1]*
TE-10-03-S_-	kg *[lbs]*	l/min *[gpm]*	1.16 *[2.57]*	0-32 *[0-8.4]*
TE-10-56-S_-	kg *[lbs]*	l/min *[gpm]*	1.16 *[2.57]*	0-32 *[0-8.4]*
Ambient Temperature		°C *[°F]*	–20....+50 *[–4....+120]*	

Hydraulic

Maximum pressure	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	40 *[10.6]*
Maximum rated flow at P1	l/min *[gpm]*	32 *[8.45]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	20....380

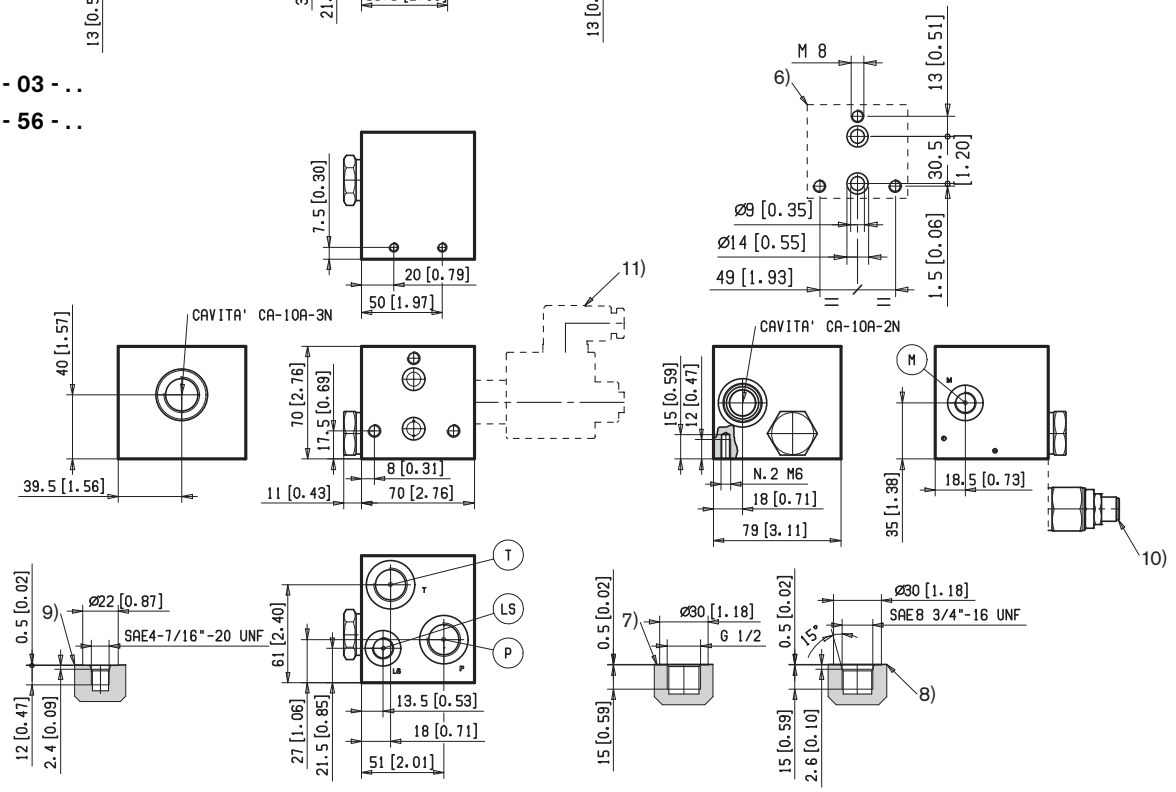
External Dimensions and Fittings

TE - 10 - 02 - . .



TE - 10 - 03 - . .

TE - 10 - 56 - . .



1 Flange specifications for coupling to the ED Directional Valve Elements (versions TE-10-02…).

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Hydraulic Ports P and T size G 3/8, for versions TE-10-02…

4 Port for pressure gauge connection M size G 1/4, for versions TE-10-02… and TE-10-03…

5 Primary Pressure Relief Cartridge VMD1025 for versions TE-10-02… (refer to RE 18301-91).

6 Flange specifications for coupling to the ED Directional Valve Elements (versions TE-10-03…, and TE-10-56-…).

7 Hydraulic Ports P and T size G 1/2, for versions TE-10-03...

8 Hydraulic Ports P and T size SAE 8, for versions TE-10-56...

9 Port for pressure gauge connection M size SAE 4.

10 Primary Pressure Relief Cartridge VMD1040 for versions TE-10-03…, and TE-10-56-… (refer to RE 18301-91).

11 Cavity for Proportional Solenoid Cartridge, VEP type, (refer to RE 18301-91).

Ordering Details

TE	-	1 0	-	_ _	-	_ _	-	A L

Family
Inlet Elements

Configuration
with primary pressure relief valve
and proportional LS controlled 3-way
flow regulator

Ports

G 3/8 DIN 3852	**=02**
G 1/2 DIN 3852	**=03**
3/4-16 UNF-2B (SAE8)	**=56**

Primary Pressure Relief range

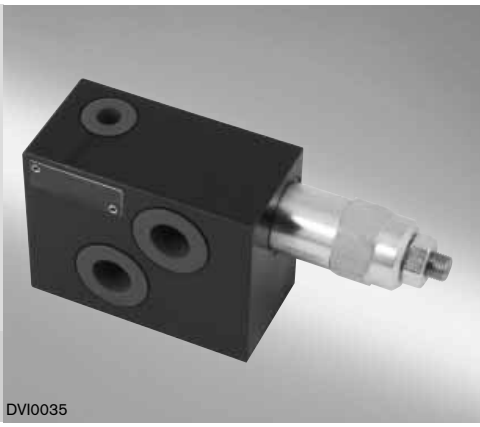
00 =	Without primary pressure relief valve
SN =	Pressure range 25-125bar *[362-1813 psi]*
SB =	Pressure range 40-200bar *[580-2900 psi]*
SV =	Pressure range 200-350bar *[2900-5076 psi]*

Material
Aluminium

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

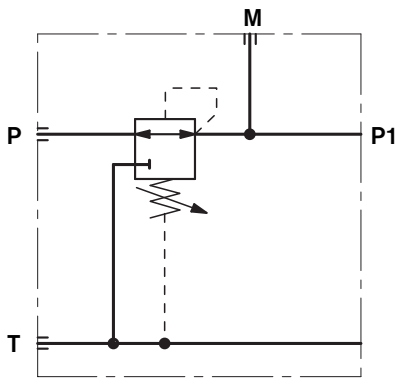
RE 18300-10/10.09 1/4

Inlet elements with Pressure Reducing Valve on the P line


DVI0035

TE-11-__-

HYDRAULIC - SYMBOL



Description

The inlet elements TE-11-__ are employed to connect the external P and T lines to the P and T channels inside the ED elements of the Directional Valve Assembly. They incorporate a 3-way pressure reducing / relieving cartridge which allows to control the primary pressure in the P line of the ED elements. The primary pressure can be adjusted and can be checked and through the Test Point port M.
The TE-11-__ inlet elements are available with body made of Black Anodized Aluminium (Al).
Hydraulic Ports P and T can be size G 3/8, G 1/2 or SAE 8 (3/4" 16 UNF).
Test point M is G 1/4 on BSPP versions, and SAE 4 in SAE versions.

Technical Data (for applications outside these parameters, please consult us)

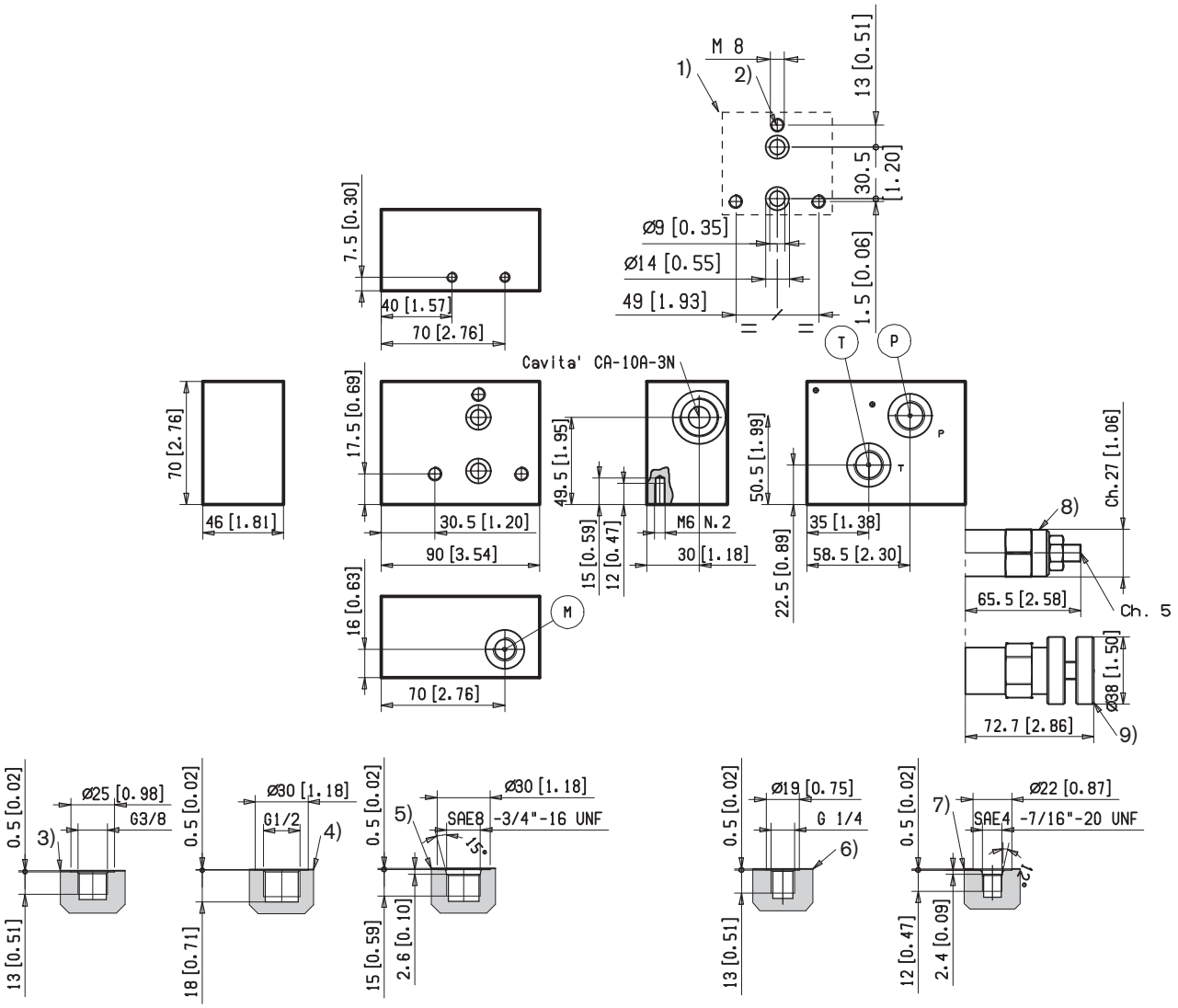
General

Model		Weight
TE-11-02-00-	kg *[lbs]*	0.54 *[1.19]*
TE-11-03-00-	kg *[lbs]*	0.54 *[1.19]*
TE-11-56-00-	kg *[lbs]*	0.54 *[1.19]*
TE-11-02-S_-	kg *[lbs]*	0.80 *[1.76]*
TE-11-03-S_-	kg *[lbs]*	0.80 *[1.76]*
TE-11-56-S_-	kg *[lbs]*	0.80 *[1.76]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings



1 Flange specifications for coupling to the ED Directional Valve Elements (for Version TE-11-02…).

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN 8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Hydraulic Ports P-T G 3/8, for Inlet Elements TE-11-02…

4 Hydraulic Ports P-T G 1/2, for versions TE-11-03-…

5 Hydraulic Ports P-T SAE 8, for versions TE-11-56.

6 Test Point port (M) G 1/4, for Inlet Elements TE-11-02… and TE-11-03…

7 Test Point port SAE 4, for versions TE-11-56-…

8 Pressure Reducing/Relieving Cartridge VRPR, with screw type adjuster (refer to RE 18301-91).

9 Pressure Reducing/Relieving Cartridge VRPR, with hand-knob type adjuster (refer to RE 18301-91).

Ordering Details

TE	-	1 1	-	_ _	-	_	_	-	A L

Family
Inlet Elements

Configuration
with pressure reducing valve
on the P line

Ports

G3/8 DIN 3852	**=02**
G1/2 DIN 3852	**=03**
3/4-16 UNF-2B (SAE8)	**=56**

Pressure Reducing Valve range

Without Pressure Reducing Valve	**=0**
Pressure range 2-25 bar *[30-350 psi]*	**=1**
Pressure range 10-50 bar *[145-758 psi]*	**=2**
Pressure range 28-80 bar *[400-1160 psi]*	**=3**

Type of pressure adjustment

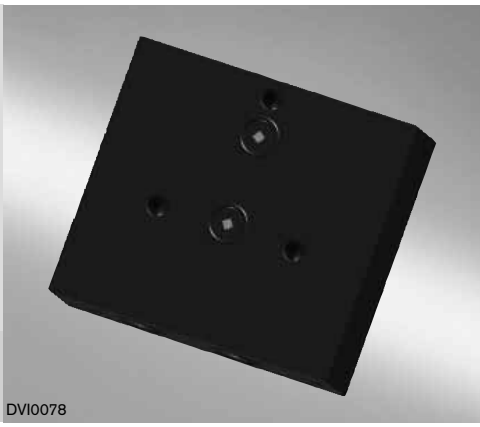
0 =	Without Pressure Reducing Valve
S =	Screw type adjuster
K =	Hand-knob type adjuster

Material
Aluminium

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18300-11/10.09 1/2

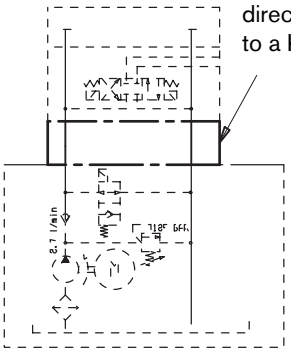
Inlet element for interfacing an horizontal directional control valve ED to a K series power unit


DVI0078

TE-K-ED-O

HYDRAULIC - SYMBOL

Connection element between an horizontal directional control valve ED to a K series power unit



Function, section

The inlet elements TE-K-ED-0 are employed to connect a directional control valve ED type to a K series power unit. When needed, the TE-K-ED-0 elements can incorporate a check valve (shown with dotted lines in the hydraulic symbol). The directional control valve assembly should develop in horizontal direction.

- Body made of Black Anodized Aluminium (EN-AW 2011 T6)

Technical Data (for applications outside these parameters, please consult us)

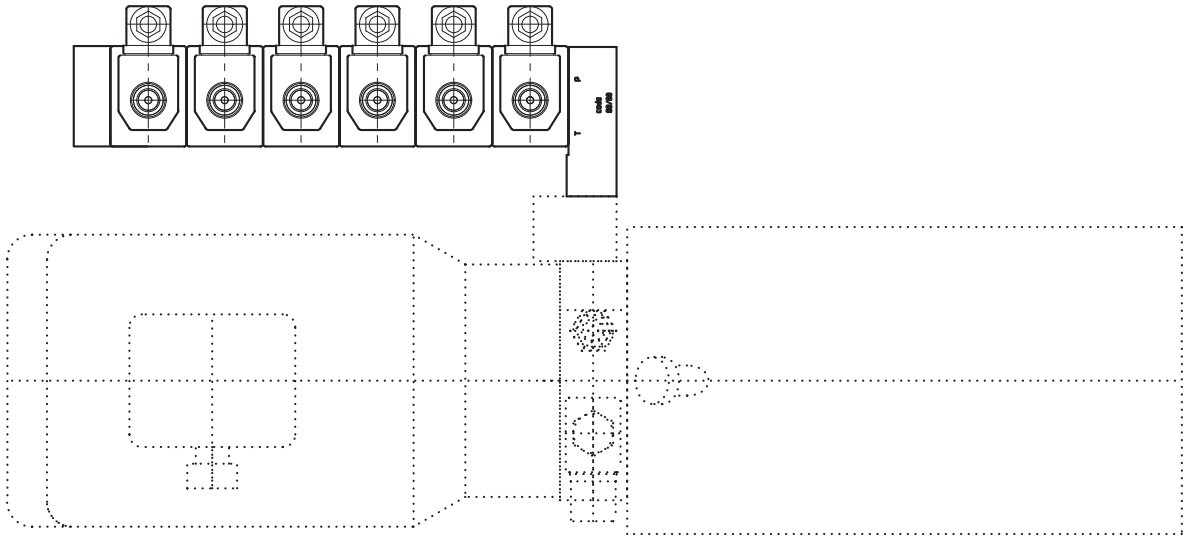
General

Weight	kg *[lbs]*	0.71 *[1.56]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

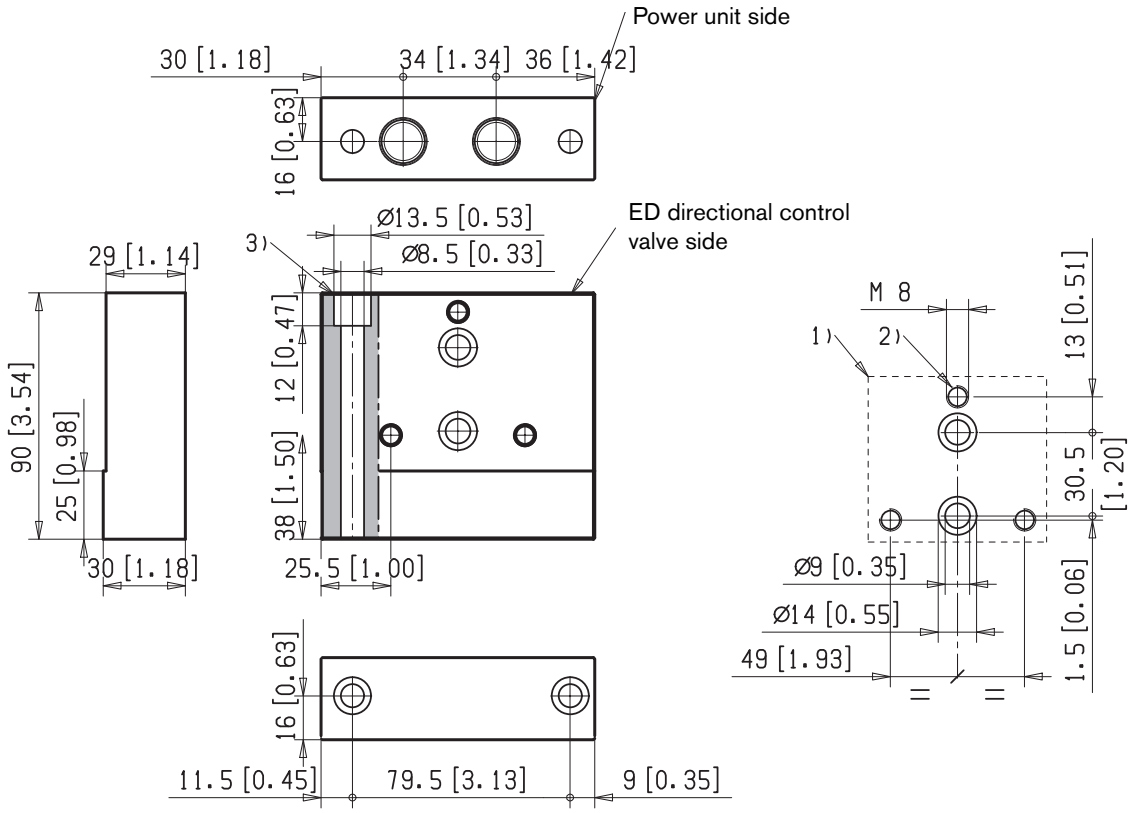
Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Inlet maximum pressure	l/min *[gpm]*	50 *[13.10]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

Installation scheme



External Dimensions and Fittings



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three threaded holes M 8 for coupling of the ED Directional Valve Elements. Recommended bolt strength class: DIN 8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

3 Two through holes for installation on the hydraulic power unit.

Ordering Details

Code	Description
R933007063	TE-K-ED-O

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with or without secondary relief valves, and with or without LS connections

RE 18300-50/10.09 1/8

B8_05… (EDBY)

Size 4
Series 00
Maximum operating pressure 250 bar *[3625 psi]*
Maximum flow 15 l/min *[4 gpm]*
Ports connection G 3/8 SAE6 - M16x1.5


DVI0053

Summary

General specifications

- Valve elements with 4 ways and 3, or 2, positions.
- Control spools directly operated by screwed-in solenoids with extractable coils.
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; burnish surface treatment.
- Coils can be rotated 360°around the tube.
- Manual override (push-button or screw type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); DT04-2P (Deutsch).

Ordering Details

B	8	_	0 5	_ _ _ _	_ _	_ _	_	_	0	_

Family
Directional valve elements EDB

Type
Size 4

Configuration *
Standard = 0
With secondary valve on A = 1
With ch. for Load Sensing = 4

Coil type
C31

Spool variants [1]
4/3 operated on both sides a and b = _ 2 _ _
4/2 operated on side a only = _ 3 _ _

Voltage supply
Without coil = 00
12V DC = OB
24V DC = OC

Optional fittings
0 = Standard emergency
P = Push-button type emergency
F = Screw type emergency

Secondary valves setting [2]
0 = 50-210bar *[725-3045psi]* *
1 = 100-310bar *[1450-4500psi]*
2 = 25-50bar *[362-725psi]*

Ports
3 = G 3/8 DIN 3852
U = M 16x1,5
B = 9/16-18 UNF 2-B (SAE6)

Electric connections
00 = Without coils
01 = With coils, without connectors
02 = With coils and with non-assembled connectors, type EN 175301-803
07 = With coils having DEUTSCH DT 04-2P connector

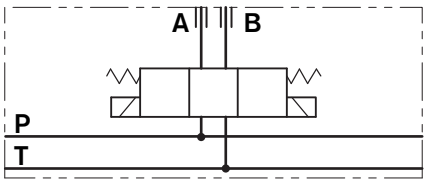
[1] The required hydraulic symbol and spool variant can be chosen by consulting page 3.

[2] Only for configuration 1.

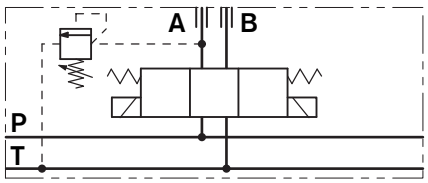
* Without secondary valve, the standard configuration corresponds to “0”.

Note: the secondary valve has a maximum flow capacity of 6 l/min. *[1.6 gpm].*

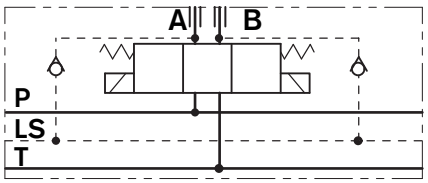
Configuration



= 0



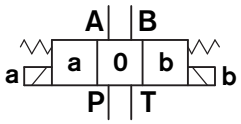
= 1



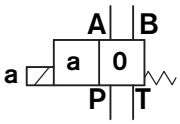
= 4

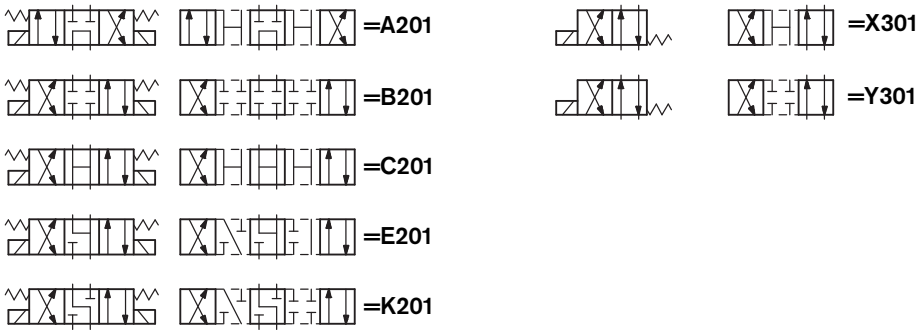
Spool variants

05_ 2 _ _



05_ 3 _ _

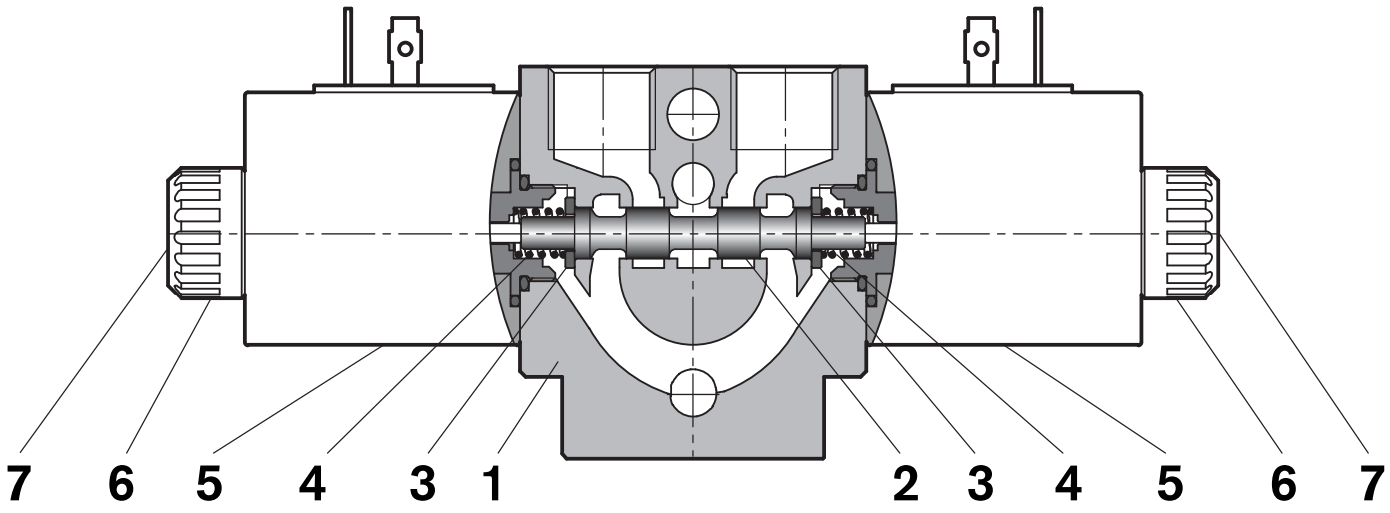




Principles of operation, cross section

The sandwich plate design directional valve elements B8_05… are very compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4). When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids and plug-in pins EN 175301-803	kg *[lbs]*	1.2 *[2.65]*
Valve element with 1 solenoid and plug-in pins EN 175301-803	kg *[lbs]*	1.0 *[2.20]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	250 *[3625]*
Maximum dynamic pressure at T	bar *[psi]*	150 *[2176]*
Maximum static pressure at T	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	15 *[4]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Electrical

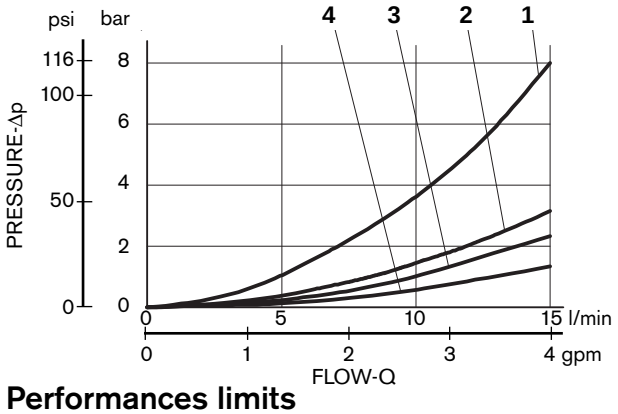
Voltage type		DC								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature	°C *[°F]*	150 *[302]*								
Insulation class		H								
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight with connection EN 175301-803	kg *[lbs]*	0.18 *[0.4]*								
Voltage	V	12	24							
Voltage type		DC	DC							
Power consumption	W	20	20							
Current [1]	A	1.72	0.86							
Resistance [2]	Ω	6.97	27.88							

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	C3101 12DC	12 DC	R933002776
=OB 07	12 DC	DEUTSCH DT 04-2P	C3107 12DC	12 DC	R933002778
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	C3101 24DC	24 DC	R933002777
=OC 07	24 DC	DEUTSCH DT 04-2P	C3107 24DC	24 DC	R933002779

Characteristic curves

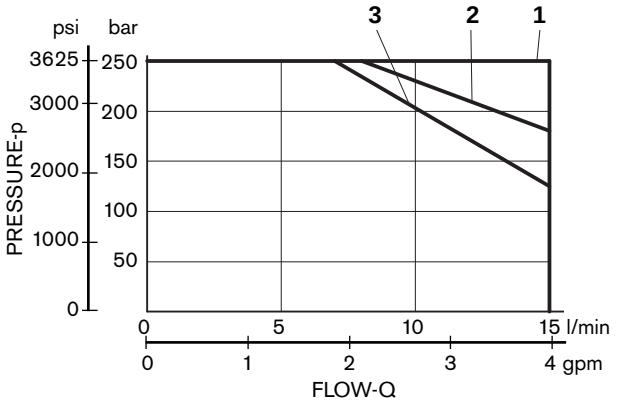
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANTS	Curve No.				
	P>T	P>A	P>B	A>T	B>T
A201	2	1	1	1	1
B201		3	3	2	2
C201	4	4	4	4	4
E201		3	3	4	4
K201		3	3	4	3
Y301		2	3	3	2
X301		3	3	3	3

Performances limits

Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.

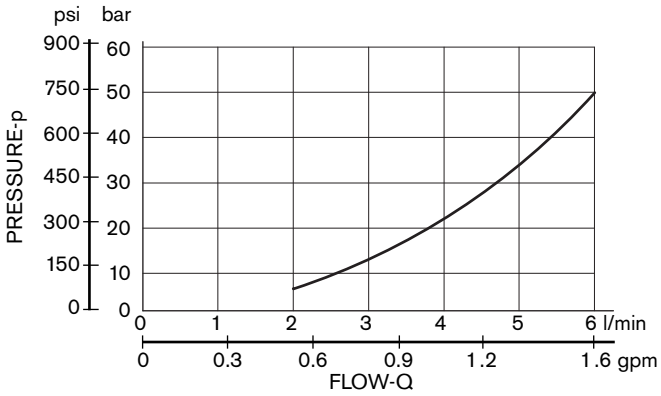


SPOOL VARIANTS	Curve No.
A201	3
B201	2
C201	1
E201	1
K201	3
X301	1
Y301	2

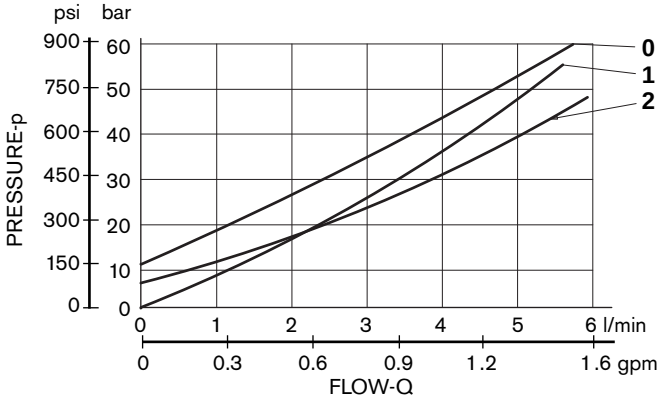
The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas.

In case of special circuit connections, the performance limits can change.

Minimum flow for efficiency of LS control

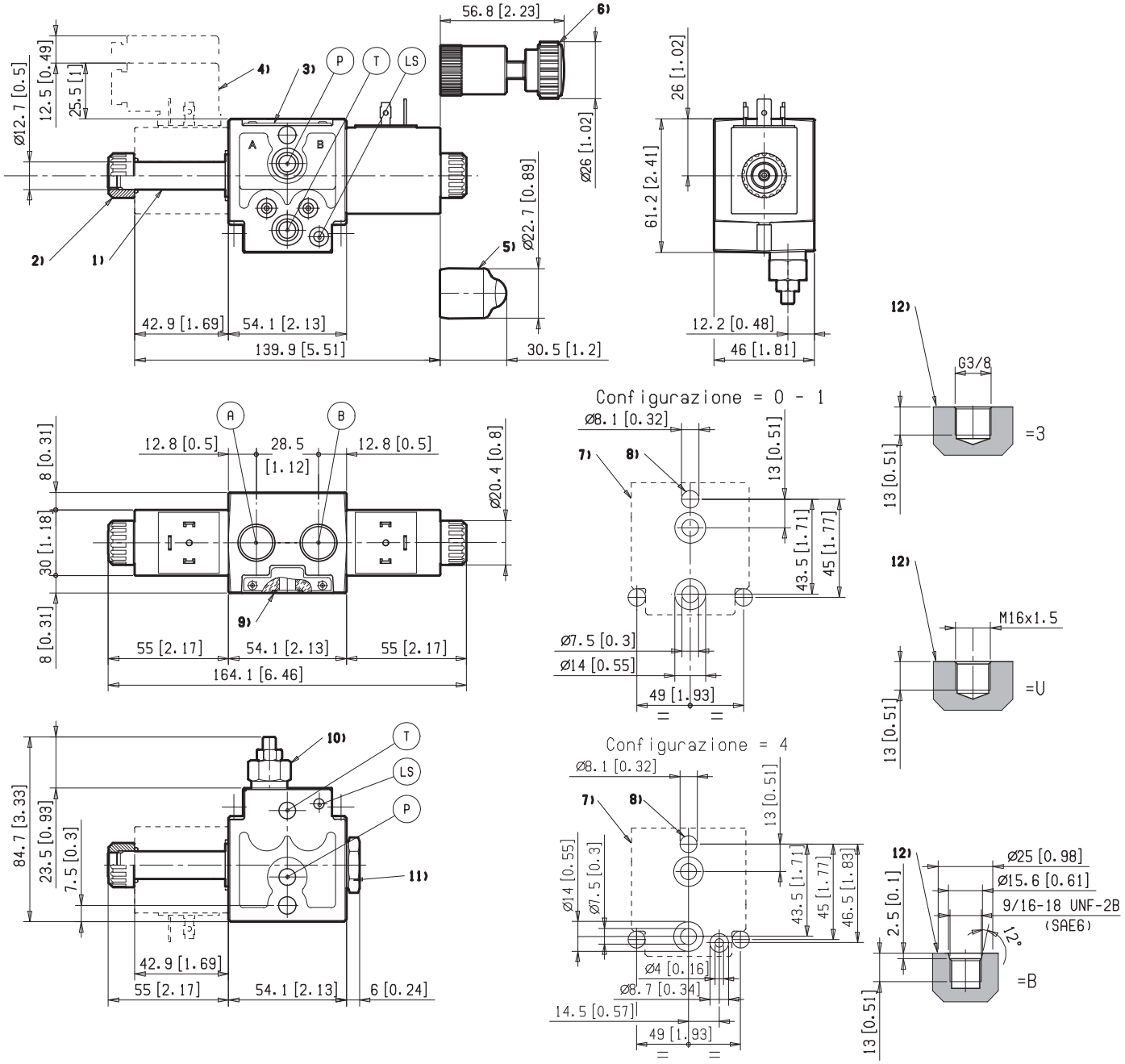


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar *[700-2950 psi]*	0
100-310 bar *[1400-4500 psi]*	1
25-50 bar *[350-700 psi]*	2

External Dimensions and Fittings



1 Solenoid tube hex 12.7 mm *[0.5 inch]*. Torque 15-16 Nm *[11-11.8 ft-lb]*.

2 Ring nut for coil locking (OD 20.5 mm *[0.81 inch]*); torque 3-4Nm *[2.2-3 ft-lb]*.

3 Identification label.

4 Clearance needed for connector removal.

5 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933000042.

6 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933006377.

7 Flange specifications for coupling to ED intermediate elements.

8 One through hole for coupling of the ED Directional Valve Elements. Recommended tie rod M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

9 O-Rings for P and T ports.

10 Space needed for secondary valve.

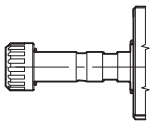
11 Plug for 2 positions versions (4/2); hex 22 mm, torque 20-22 Nm *[14.7-16.2 ft-lb]*.

12 A and B ports.

Electric connection (or connections, in case of two solenoids)

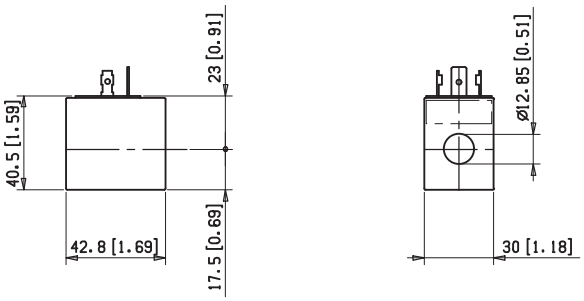
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

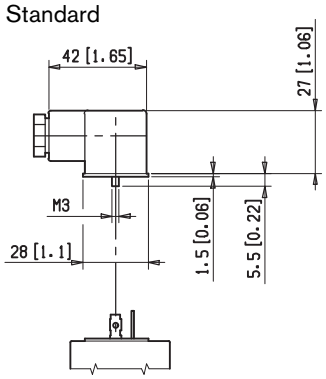


=02

With coils and with connectors non-assembled, type EN 175301-803.

Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard

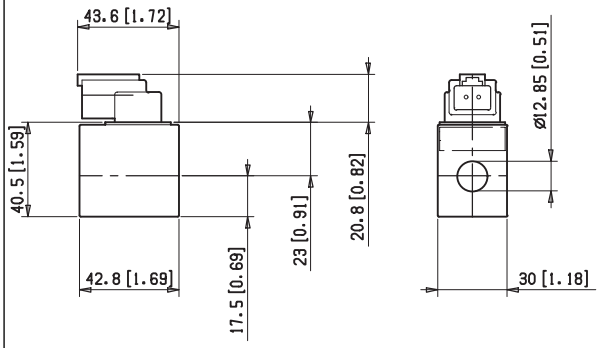


Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK

=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 Directional valve elements with or without secondary relief valves, with or without LS connections, and with PO check valves

RE 18300-51/10.09 1/8

B8_45… (EDBY-VR)

Size 4
Series 00
Maximum operating pressure 250 bar *[3625 psi]*
Maximum flow 15 l/min *[4 gpm]*
Ports connection G 3/8 SAE6 - M16x1.5


DVI0056

Summary

General specifications

- Valve elements with 4 ways and 3 positions.
- Control spools directly operated by screwed-in solenoids with extractable coils.
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; burnish surface treatment.
- Single or Dual cross piloted checks on A and B ports.
- PO checks with 4:1 pilot ratio.
- Coils can be rotated 360° around the tube.
- Manual override (push-button or screw type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); DT04-2P (Deutsch).

Ordering Details

B	8	_	4 5	_ _ _ _	_ _	_ _	_	_	_	_

Family
Directional valve element EDB

Type
Size 4

Configuration
Standard = **0**
With secondary valve on A1 = **1**
With ch. for Load Sensing = **4**

Coil type
C31

Spool variants [1]
4/3 operated on both sides a and b = **_ 2 _ _**

Voltage supply
Without coils = **00**
12V DC = **OB**
24V DC = **OC**

[1] The required hydraulic symbol and spool variant can be chosen by consulting page 3

[2] Only for configuration (1)

The secondary valves have a maximum flow capacity of 6 l/min *[1.6 gpm].*

Electric connections
00 = Without coils
01 = With coils, without connectors
02 = With coils having connectors EN 175301-803
07 = With coils having DEUTSCH DT 04-2P connector

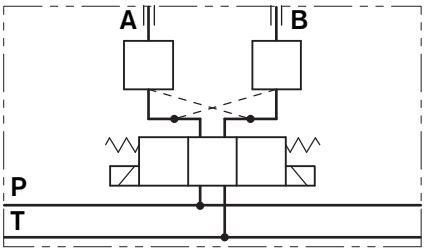
Ports
3 = G 3/8 DIN 3852
U = M 16x1,5 DIN 3852
B = 9/16-18 UNF 2-B (SAE6)

Secondary valves setting [2]
0 = 50-210bar *[725-3045psi]* [1]
1 = 100-310bar *[1450-4500psi]* [1]
2 = 25-50bar *[362-725psi]* [1]
3 = Without secondary valves

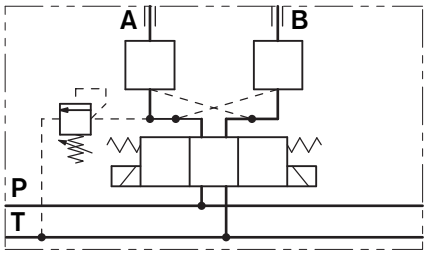
PO check valve position
1 = Check valve on port A
3 = Check valve on both ports A and B

Optional fittings
0 = Standard emergency
P = Push-button type emergency
F = Screw type emergency

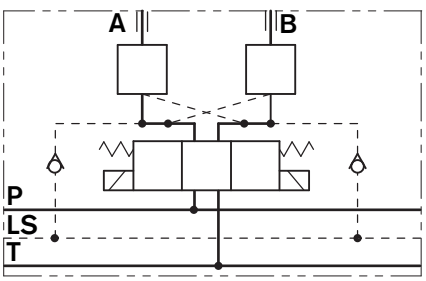
Configuration



= 0

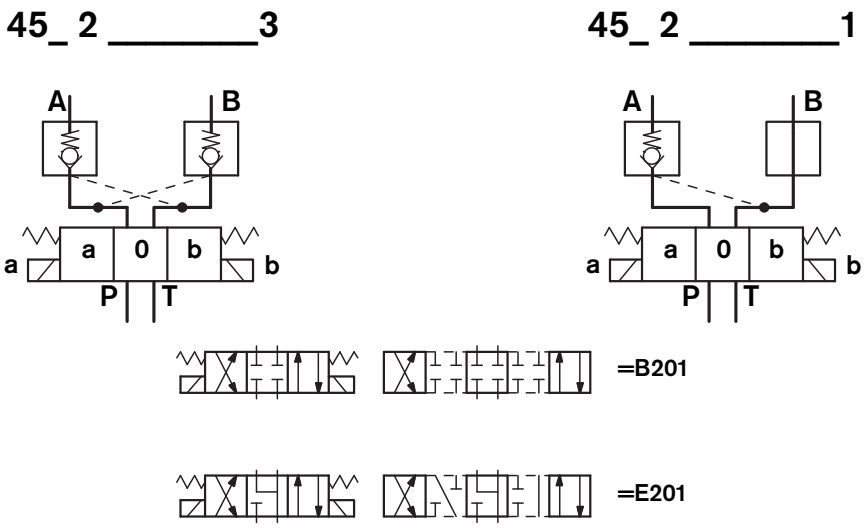


= 1



= 4

Spool variants



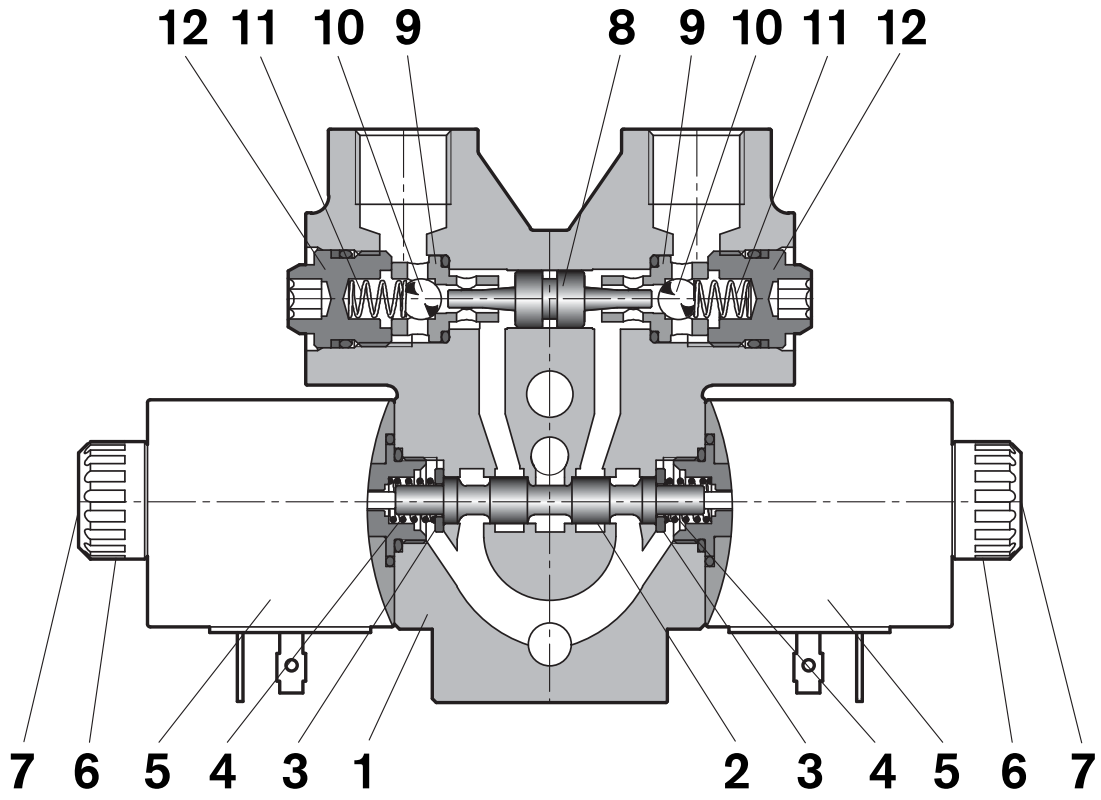
Principles of operation, cross section

The sandwich plate design directional valve elements B8_45… are very compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), two solenoids (5), and two return springs (4). The upper part of the housing is extended in order to provide space for the cavities where two PO check valves are fitted. They consist of two calibrated balls (10), with return springs (11), which allow upstream flow but lock on the respective seats (9) and prevent the return flow. The return flow is possible when they are opened by the pilot piston (8), if enough pilot pressure is present in the opposite line.

When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved.

Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool (2) returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids and plug-in pins EN 175301-803	kg *[lbs]*	1.6 *[3.5]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	250 *[3625]*
Maximum dynamic pressure at T	bar *[psi]*	150 *[2176]*
Maximum static pressure at T	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	15 *[4]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Electrical

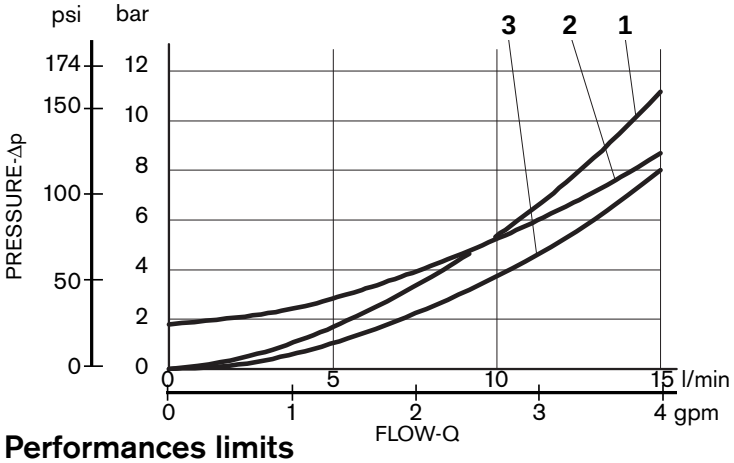
Voltage type		DC								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature	°C *[°F]*	150 *[302]*								
Insulation class		H								
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight	kg *[lbs]*	0.18 *[0.4]*								
Voltage	V	12	24							
Voltage type		DC	DC							
Power consumption	W	20	20							
Current [1]	A	1.72	0.86							
Resistance [2]	Ω	6.97	27.88							

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	C3101 12DC	12 DC	R933002776
=OB 07	12 DC	DEUTSCH DT 04-2P	C3107 12DC	12 DC	R933002778
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	C3101 24DC	24 DC	R933002777
=OC 07	24 DC	DEUTSCH DT 04-2P	C3107 24DC	24 DC	R933002779

Characteristic curves

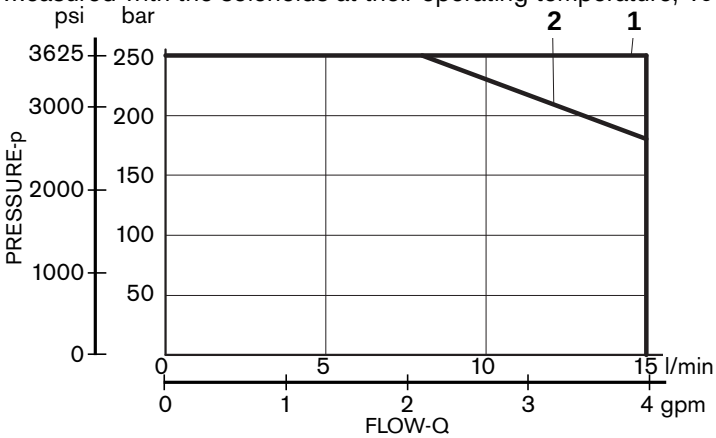
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANT	Curve No.			
	P>A	P>B	A>T	B>T
B201	2	2	1	1
E201	2	2	3	3

Performances limits

Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.

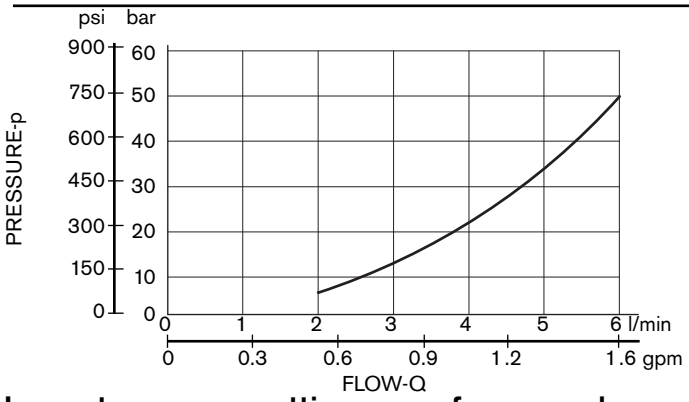


SPOOL VARIANT	Curve No.
B201	2
E201	1

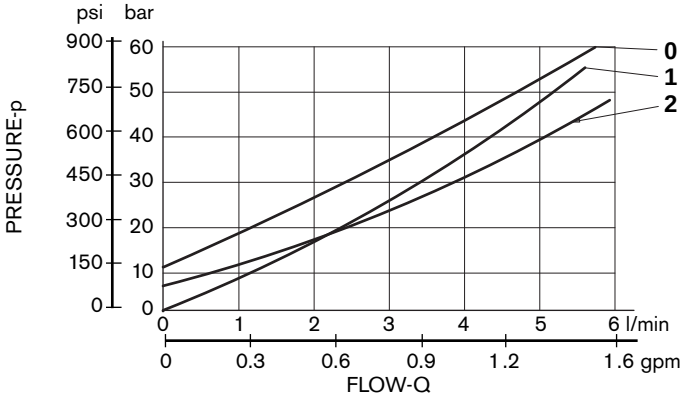
The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas.

In case of special circuit connections, the performance limits can change.

Minimum flow for efficiency of LS control

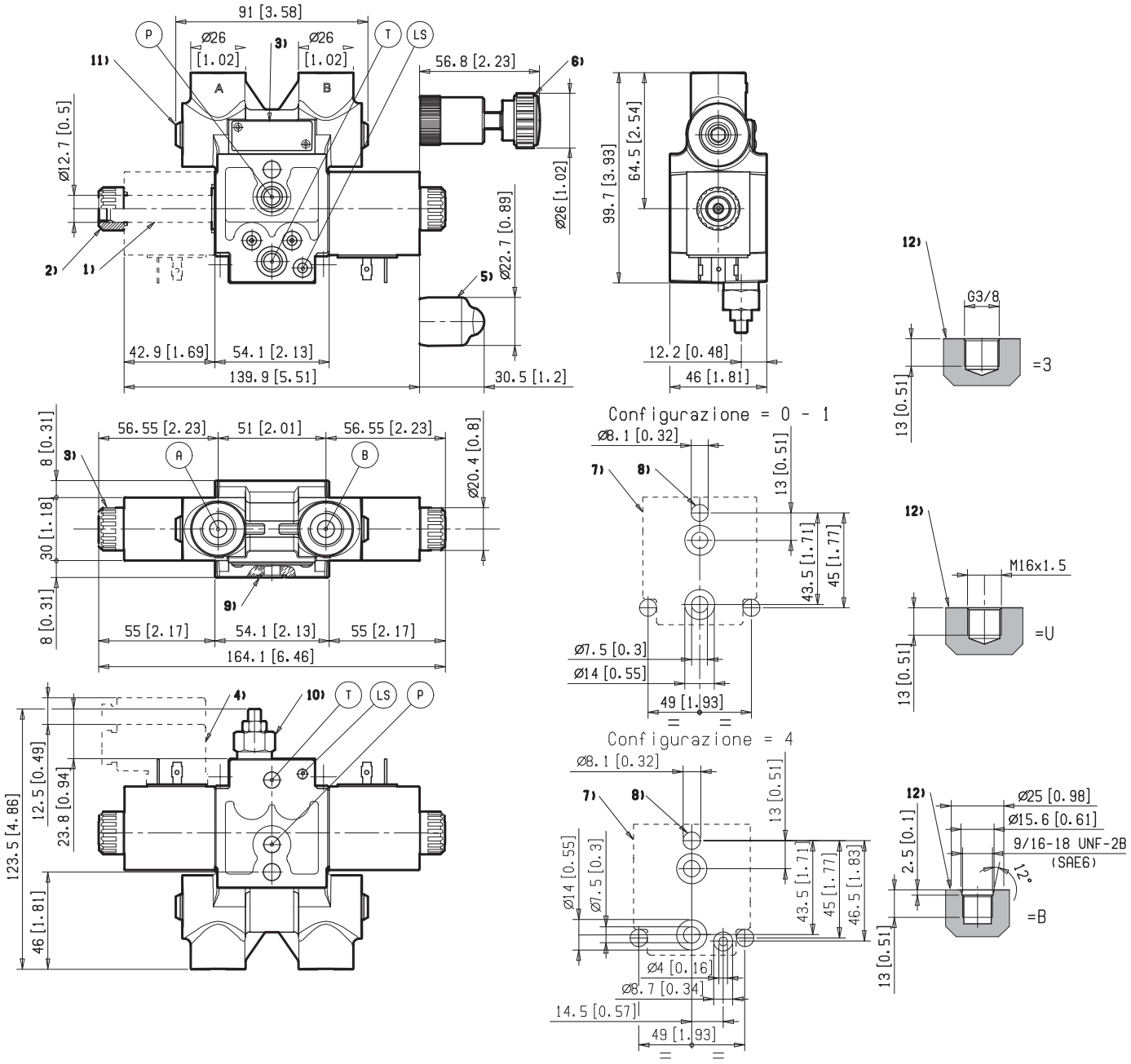


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar *[700-2950 psi]*	0
100-310 bar *[1400-4500 psi]*	1
25-50 bar *[350-700 psi]*	2

External Dimensions and Fittings



1 Solenoid tube hex 11 mm *[0.43 inch]*.
Torque 15-16 Nm *[11-11.8 ft-lb]*.

2 Ring nut for coil locking (OD 20.5 mm);
torque 3-4Nm *[2.2-3 ft-lb]*.

3 Identification label.

4 Clearance needed for connector removal.

5 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking.
Mat no. R933000042

6 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933006377.

7 Flange specifications for coupling to ED intermediate elements.

8 One through hole for coupling of the ED Directional Valve Elements. Recommended tie rod M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

9 O-Rings for P and T ports.

10 Space needed for secondary valve.

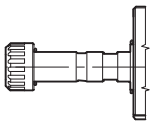
11 Plug hex. 6 mm; torque 30-33 Nm *[22-24 ft-lb]*.

12 A and B ports.

Electric connection (or connections, in case of two solenoids)

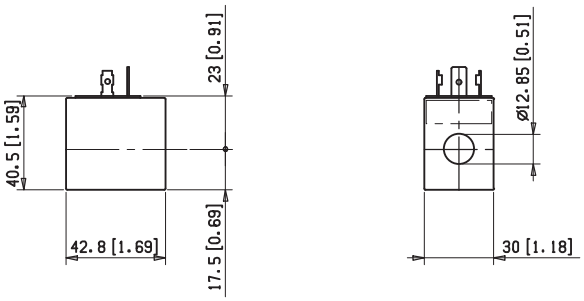
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

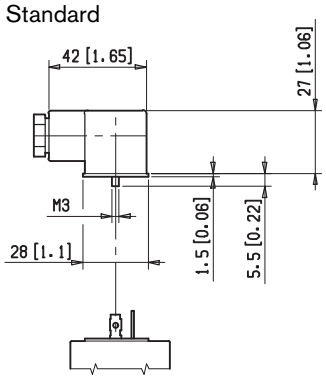


=02

With coils and with connectors non-assembled, type EN 175301-803.

Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard

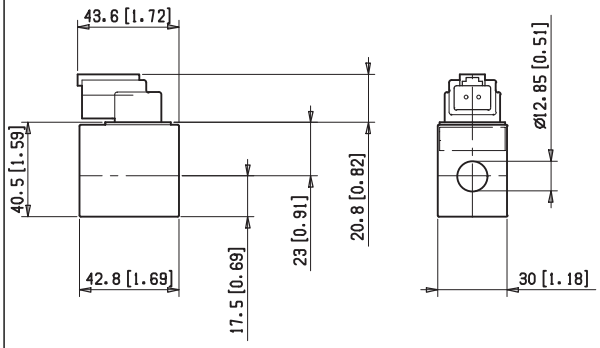


Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK

=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with or without secondary relief valves, and with or without LS connections

RE 18300-52/10.09 1/10

B8_08... (EDBZ)

Size 4
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 25 l/min *[6.6 gpm]*
Ports connection G 3/8 SAE6 - M16x1.5


DVI0054

Summary

General specifications

- Valve elements with 4 ways and 3, or 2, positions
- Control spools directly operated by screwed-in solenoids with extractable coils
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; burnish surface treatment
- Coils can be rotated 360° around the tube.
- Manual override (push-button or screw type) available upon request
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); AMP Junior; DT04-2P (Deutsch); free leads

Ordering details

B	8	_	0	8	_	_	_	_	_ _	_ _	_	_	0	_

Family
Directional valve elements EDB

Type
Size 4

Configuration

Standard	= 0
With secondary valve on A	= 1
With ch. for Load Sensing	= 4

Coil type
C36

Spool variants [1]

4/3 operated on both sides a and b	= _ 2 _ _
4/2 operated on side a only	= _ 3 _ _

Voltage supply

Without coil	■							= 00
12V DC		■	■	■	■	■	■	= OB
13V DC		■	■					= AD
24V DC		■	■	■	■	■	■	= OC
27V DC		■	■					= AC
48V DC		■	■		■			= OD
110V DC		■	■					= OE
(21.5 DC) 24V AC		■	■					= OV
(98 DC) 110V AC		■	■					= OW
(207 DC) 230V AC		■	■					= OZ
	00	01	02	03	04	07	31	

Available connections

Optional fittings

0 =	Standard emergency
P =	Push-button type emergency
F =	Screw type emergency

Secondary valves setting [2]

0 =	50-210 bar *[725-3045 psi]* *
1 =	100-310 bar *[1450-4500 psi]*
2 =	25-50 bar *[362-725 psi]*

Ports

3 =	G 3/8 DIN 3852
U =	M 16x1,5 DIN 3852
B =	9/16-18 UNF 2-B (SAE6)

Electric connections

00 =	Without coils
01 =	With coils, without connectors
02 =	With coils having connectors EN 175301-803
03 =	With coils having AMP Junior connector
04 =	With coils having horizontal AMP Junior connector
07 =	With coils having DEUTSCH DT 04-2P connector
31 =	With coils and bipolar sheathed lead 350mm *[13.8 in]* long

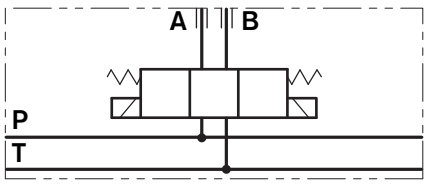
* Without secondary valve (versions B80__; B84__), the standard configuration corresponds to “0”.

[1] The required hydraulic symbol and spool variant can be chosen by consulting page 3.

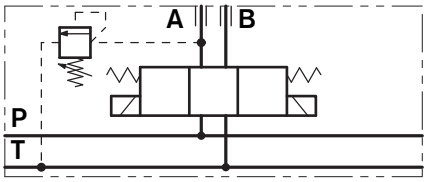
[2] Only for configuration (1)

The secondary valves have a maximum flow capacity of 6 l/min *[1.6 gpm]*.

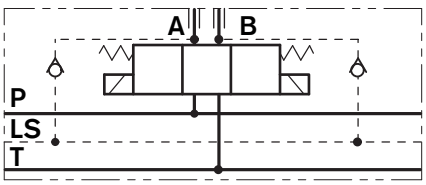
Configuration



= 0



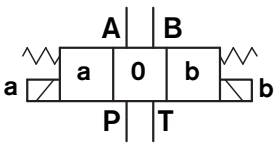
= 1



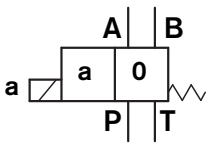
= 4

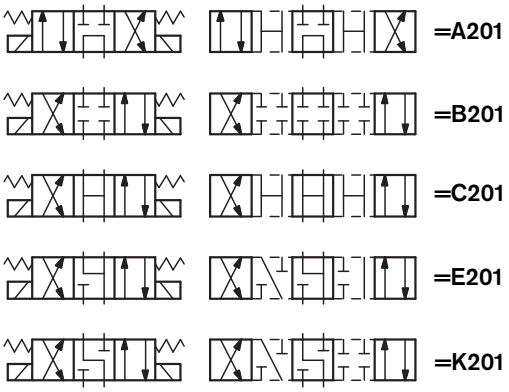
Spool variants

08_ 2 _ _



08_ 3 _ _



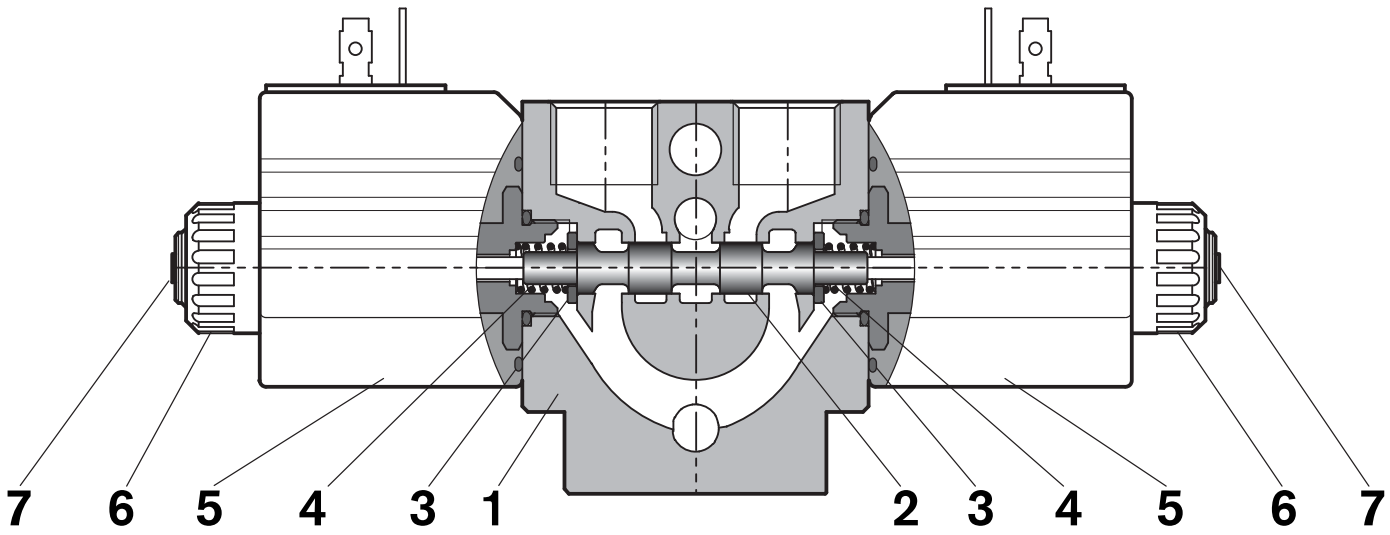


Principles of operation, cross section

The sandwich plate design directional valve elements B8_08… are very compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4). When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6).

A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids and plug-in pins EN 175301-803	kg *[lbs]*	1.34 *[2.95]*
Valve element with 1 solenoid and plug-in pins EN 175301-803	kg *[lbs]*	1.06 *[2.34]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	310 *[4500]*
Maximum dynamic pressure at T	bar *[psi]*	180 *[2610]*
Maximum static pressure at T	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	25 *[6.6]*
Maximum inlet flow with spool A201	l/min *[gpm]*	20 *[5.3]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Electrical

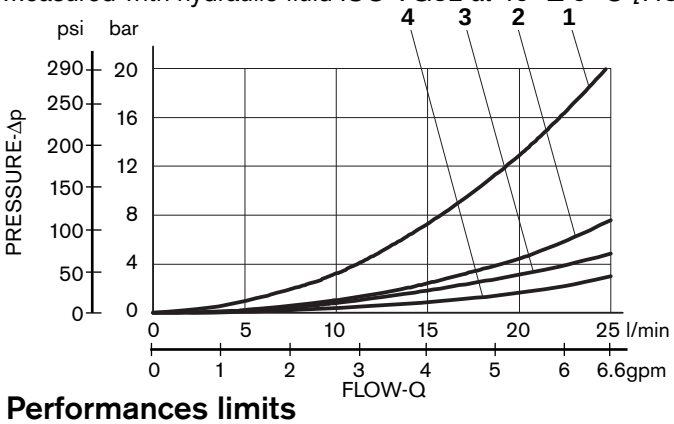
Voltage type		DC (AC only with RAC connection)								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature	°C *[°F]*	150 *[302]*								
Insulation class		H								
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight	kg *[lbs]*	0.215 *[0.44]*								
Voltage	V	12	13	24	27	48	110	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)
Voltage type		DC	DC	DC	DC	DC	DC	AC	AC	AC
Power consumption	W	26	26	26	26	26	26	29	29	29
Current [1]	A	2.15	2.0	1.10	1.0	0.54	0.27	1.20	0.29	0.14
Resistance [2]	Ω	5.5	6.5	22	28	89	413	18	338	1430

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	C3601 12DC	12 DC	R933000044
=OB 03	12 DC	AMP JUNIOR	C3603 12DC	12 DC	R933000047
=OB 04	12 DC	AMP JUNIOR Horizontal	C3604 12DC	12 DC	R933002913
=OB 07	12 DC	DEUTSCH DT 04-2P	C3607 12DC	12 DC	R933000048
=OB 31	12 DC	Cable 350 mm long	C3631 12DC	12 DC	R933000045
=AD 01 **=AD 02**	13 DC	EN 175301-803 (Ex. DIN 43650)	C3601 13DC	13 DC	R933000051
=AD 07	13 DC	DEUTSCH DT 04-2P	C3607 13DC	13 DC	R933000049
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	C3601 24DC	24 DC	R933000053
=OC 03	24 DC	AMP JUNIOR	C3603 24DC	24 DC	R933000057
=OC 04	24 DC	AMP JUNIOR Horizontal	C3604 24DC	24 DC	R933002914
=OC 07	24 DC	DEUTSCH DT 04-2P	C3607 24DC	24 DC	R933000058
=OC 31	24 DC	Cable 350 mm long	C3637 24DC	24 DC	R933000055
=AC 01 **=AC 02**	27 DC	EN 175301-803 (Ex. DIN 43650)	C3601 27DC	27 DC	R933000056
=AC 07	27 DC	DEUTSCH DT 04-2P	C3607 27DC	27 DC	R933000050
=OD 01 **=OD 02**	48 DC	EN 175301-803 (Ex. DIN 43650)	C3601 48DC	48 DC	R933000059
=OD 04	48 DC	AMP JUNIOR Horizontal	C3604 48DC	48 DC	R933002915
=OE 01 **=OE 02**	110 DC	EN 175301-803 (Ex. DIN 43650)	C3601 110DC	110 DC	R933000061
=OV 01 **=OV 02**	24 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 21.5DC	21.5 DC	R933000054
=OW 01 **=OW 02**	110 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 98DC	98 DC	R933000060
=OZ 01 **=OZ 02**	230 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 207DC	207 DC	R933000062

Characteristic curves

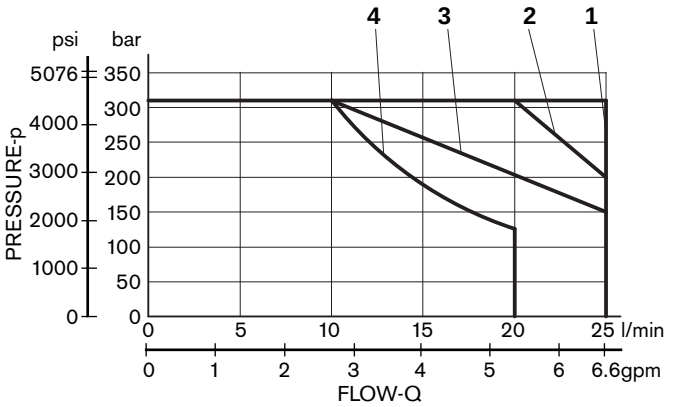
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANT	Curve No.				
	P>T	P>A	P>B	A>T	B>T
B201		3	3	2	2
E201		3	3	4	4
A201	2	1	1	1	1
C201	4	4	4	4	4
K201		3	3	4	3
X301		2	3	3	2
Y301		2	3	3	2

Performances limits

Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.

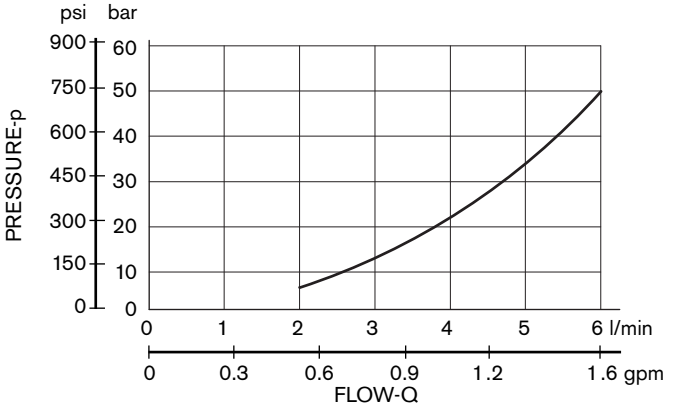


SPOOL VARIANT	Curve No.
B201	1
E201	1
A201	4
C201	1
K201	3
X301	1
Y301	2

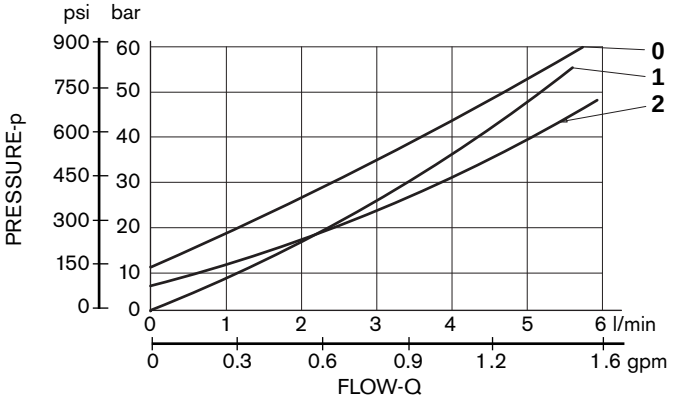
The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas.

In case of special circuit connections, the performance limits can change.

Minimum flow for efficiency of LS control

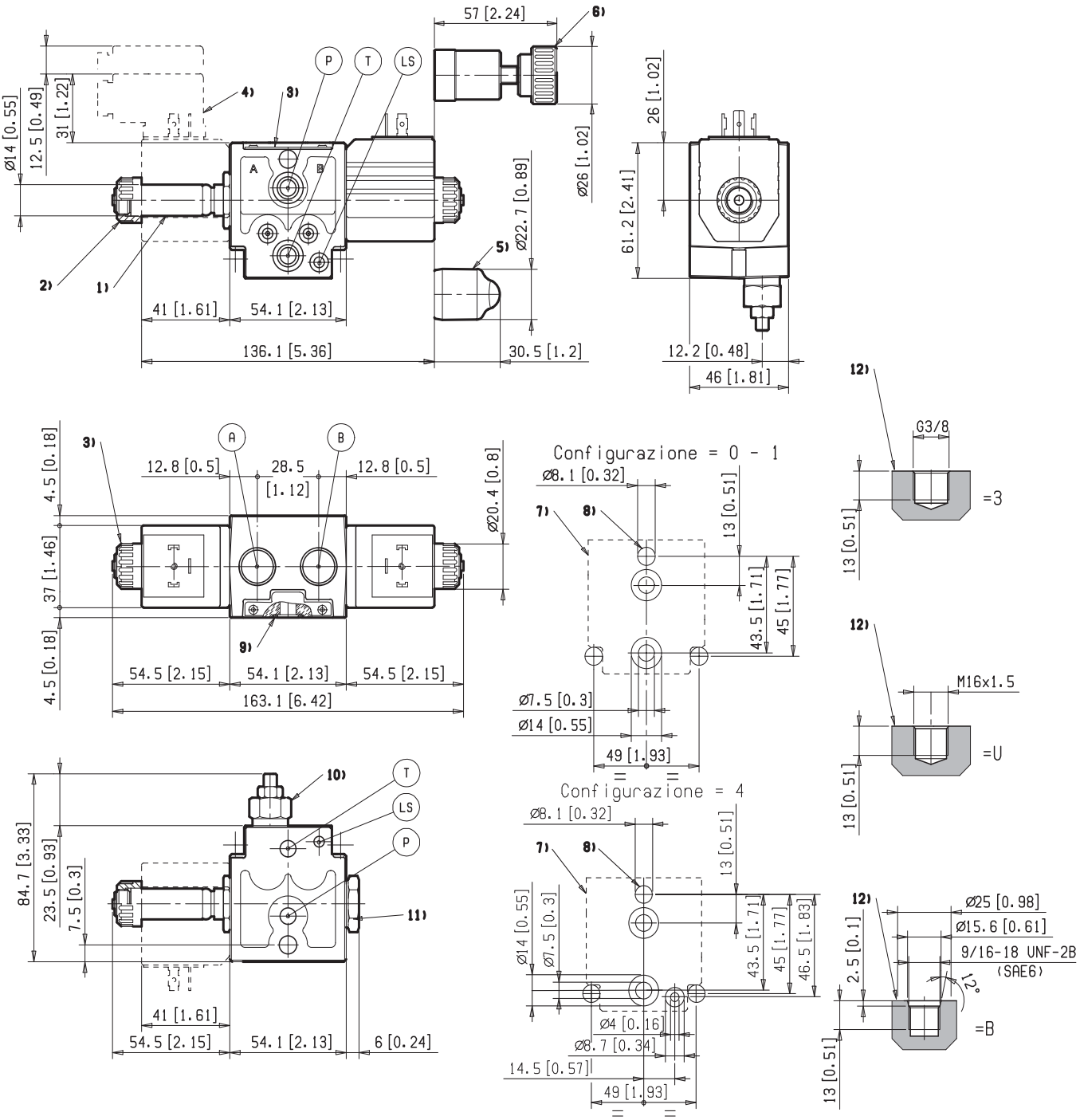


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar *[700-2950 psi]*	0
100-310 bar *[1400-4500 psi]*	1
25-50 bar *[350-700 psi]*	2

External Dimensions and Fittings



1 Solenoid tube hex 22 mm *[0.87 inch]*. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

2 Ring nut for coil locking (OD 20.5 mm); torque 3-4Nm *[2.2-3 ft-lb]*.

3 Identification label.

4 Clearance needed for connector removal.

5 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933000042.

6 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933006377.

7 Flange specifications for coupling to ED intermediate elements.

8 One through hole for coupling of the ED Directional Valve Elements. Recommended tie rod M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

9 O-Rings for P and T ports.

10 Space needed for secondary valve.

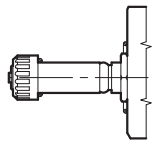
11 Plug for 2 positions versions (4/2); hex 22 mm, *[0.87 inch]*. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

12 A and B ports.

Electric connection (or connections, in case of two solenoids)

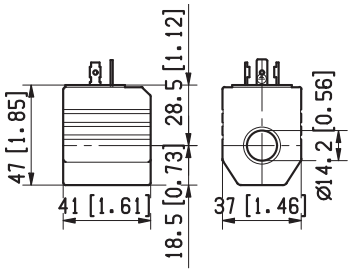
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

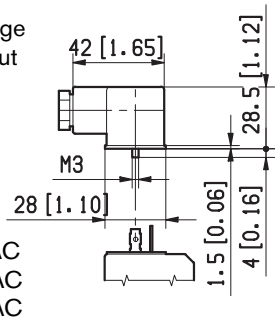


=02

With coils and with connectors non-assembled, type EN 175301-803.

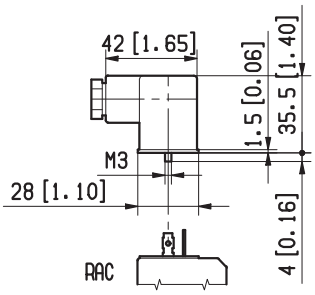
Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard.
182-LED-T-A1: with LED monitoring presence of voltage.
182-09-G-DO-2-1: with VDR (Voltage Dependent Resistor), to prevent input voltage over-shootings.



Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK
R933002893	182-LED-T-A1 12 DC/AC
R933002894	182-LED-T-A1 24 DC/AC
R933002896	182-LED-T-A1 48 DC/AC
R933002897	182-LED-T-A1 110 DC/AC
R933002898	182-LED-T-A1 230 DC/AC
R933002886	182-09-G-DO-2-1 12DC with VDR
R933002887	182-09-G-DO-2-1 24DC with VDR

532-09 RAC: special connectors with rectifier (RAC) for AC applications.

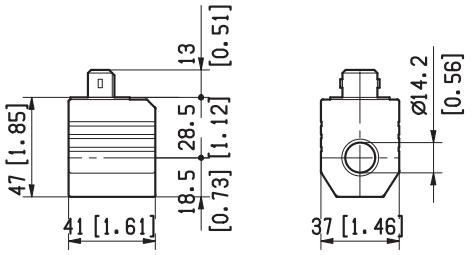


Mat. No.	Description
R933002892	532-09 RAC GRAY
R933002891	532-09 RAC BLACK

=03

With coils having AMP Junior connector, and with bi-directional diode.

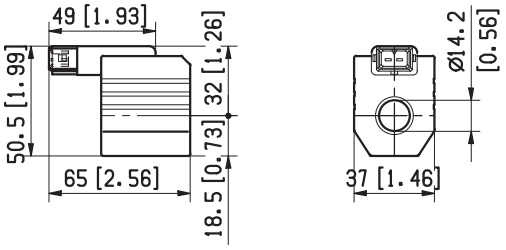
Protection class: IP 65 with female connector properly fitted (see drawing).



=04

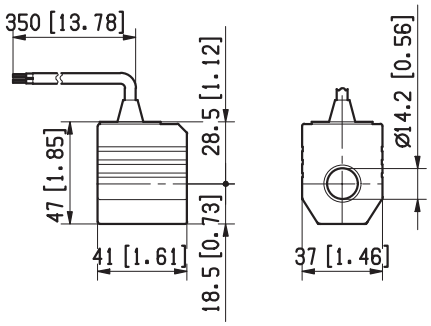
With coils having Horizontal AMP Junior connector, and with bi-directional diode.

Protection class: IP 65 with female connector properly fitted (see drawing).



=31

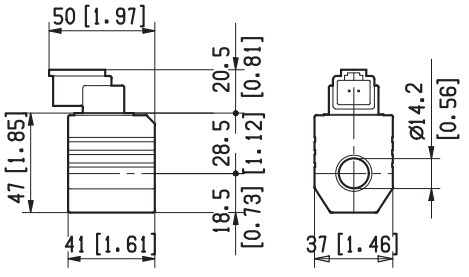
With coils having bi-directional diode and bipolar sheathed free lead, 350 mm long, without pins.



=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 Directional valve elements with or without secondary relief valves, with or without LS connections, and with PO check valves

RE 18300-53/10.09 1/10

B8_48... (EDBZ-VR)

Size 4
Series 00
Maximum operating pressure 250 bar *[3625 psi]*
Maximum flow 20 l/min *[5.3 gpm]*
Ports connection G 3/8 SAE6 - M16x1.5


DVI0057

Summary

General specifications

- Valve elements with 4 ways and 3 positions.
- Control spools directly operated by screwed-in solenoids with extractable coils.
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; burnish surface treatment.
- Single or Dual cross piloted check valves on A and B ports.
- PO checks valves with 4:1 pilot ratio.
- Coils can be rotated 360° around the tube.
- Manual override (push-button or screw type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); AMP JUNIOR; DT04-2P (Deutsch); free leads.

Ordering Details

B	8	_	4 8	_ _ _ _	_ _	_ _	_	_	_	_

Family
Directional valve element EDB

Type
Size 4

Configuration
Standard = 0
With secondary valve on A1 = 1
With ch. for Load Sensing = 4

Coil type
C36

Spool Variants [1]
4/3 operated on both sides a and b = _ 2 _ _

Voltage supply

	00	01	02	03	04	07	31	
Without coil	■							= 00
12V DC		■	■	■	■	■	■	= OB
13V DC		■	■					= AD
24V DC		■	■	■	■	■	■	= OC
27V DC		■	■					= AC
48V DC		■	■		■			= OD
110V DC		■	■					= OE
(21.5 DC) 24V AC		■	■					= OV
(98 DC) 110V AC		■	■					= OW
(207 DC) 230V AC		■	■					= OZ
	00	01	02	03	04	07	31	

Available connections

Optional fittings
0 = Standard emergency
P = Push-button type emergency
F = Screw type emergency

PO check valve position
1 = Check valve on port A
3 = Check valve on both ports A and B

Secondary valves setting
0 = 50-210bar *[725-3045psi]* [2]
1 = 100-310bar *[1450-4500psi]* [2]
2 = 25-50bar *[362-725psi]* [2]
3 = Without secondary valve

Ports
3 = G 3/8 DIN 3852
U = M 16x1,5 DIN 3852
B = 9/16-18 UNF 2-B (SAE6)

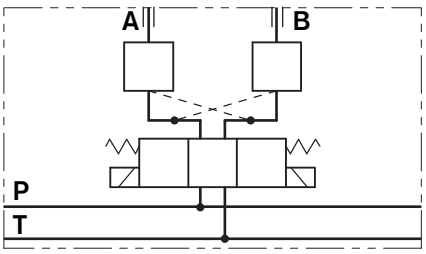
Electric connections
00 = Without coils
01 = With coil, without connector
02 = With coils and with connectors non-assembled, type EN 175301-803
03 = With coils having AMP Junior connector
04 = With coils having horizontal AMP Junior connector
07 = With coils having DEUTSCH DT 04-2P connector
31 = Coils having bi-directional diode and bipolar sheathed cable 350 mm *[13.8 Inch]* [2]

[1] The required hydraulic symbol and spool variant can be chosen by consulting page 3

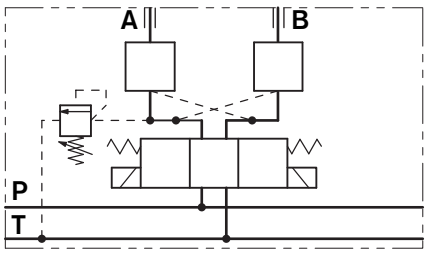
[2] Only for configuration (1)

The secondary valves have a maximum flow capacity of 6 l/min. *[1.6 gpm]*.

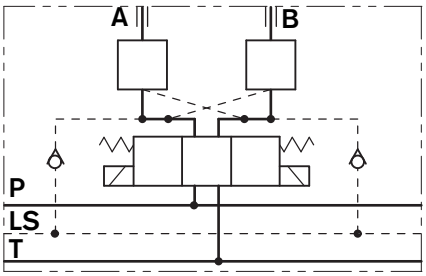
Configuration



= 0

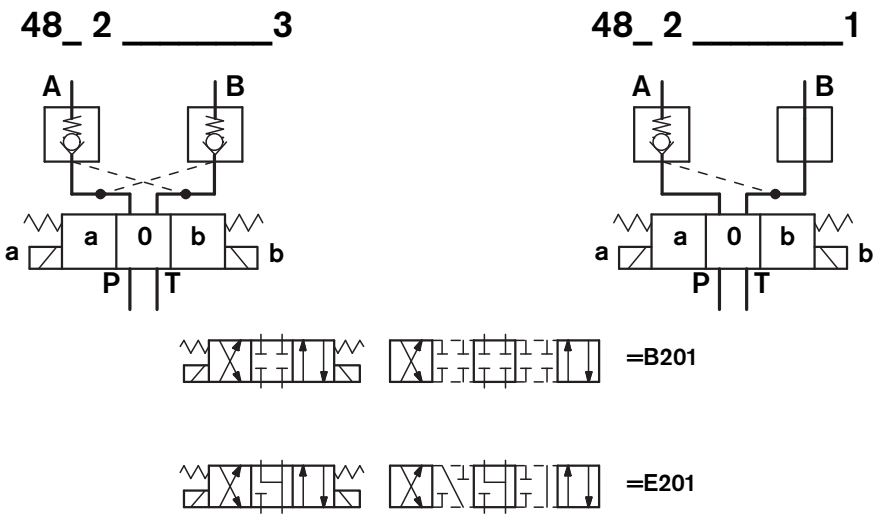


= 1



= 4

Spool variants



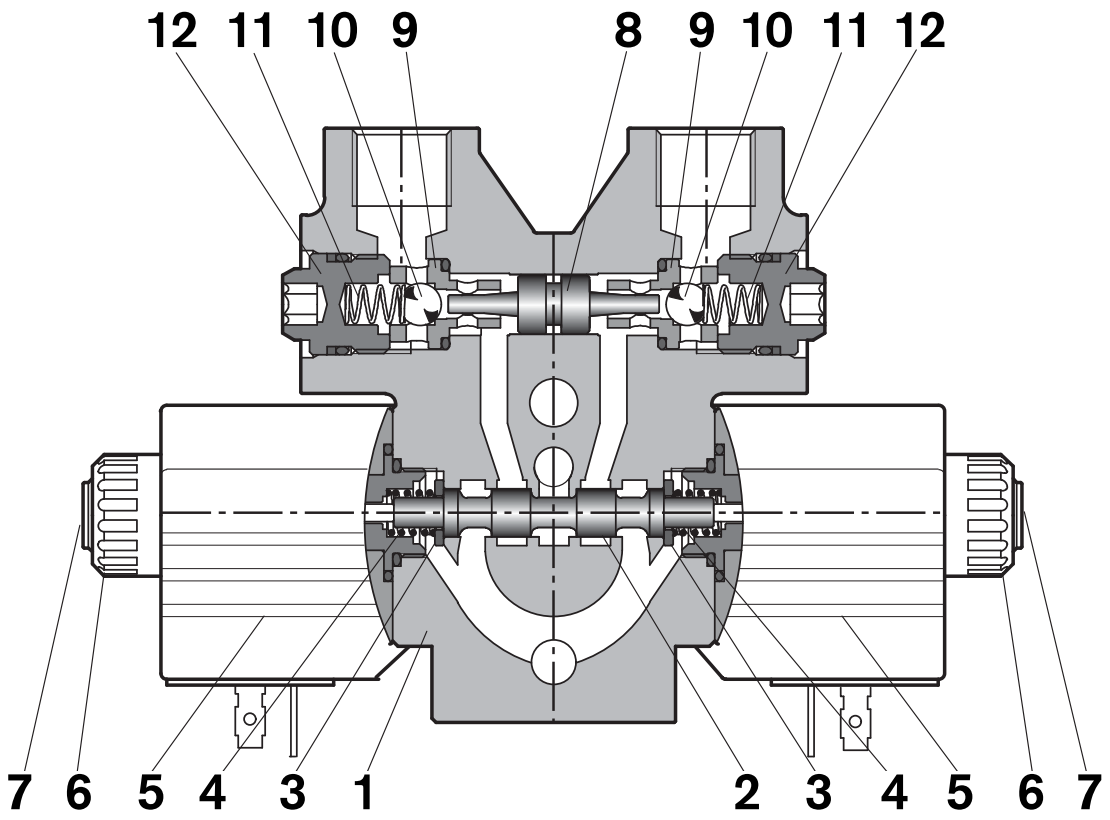
Principles of operation, cross section

The sandwich plate design directional valve elements B8_48… are very compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), two solenoids (5), and two return springs (4). The upper part of the housing is extended in order to provide space for the cavities where two PO check valves are fitted. They consist of two calibrated balls (10), with return springs (11), which allow upstream flow but lock on the respective seats (9) and prevent the return flow. The return flow is possible when they are opened by the pilot piston (8), if enough pilot pressure is present in the opposite line.

When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved.

Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool (2) returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids and plug-in pins EN 175301-803	kg *[lbs]*	1.75 *[3.86]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	250 *[3625]*
Maximum dynamic pressure at T	bar *[psi]*	180 *[2610]*
Maximum static pressure at T	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	20 *[5.3]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Electrical

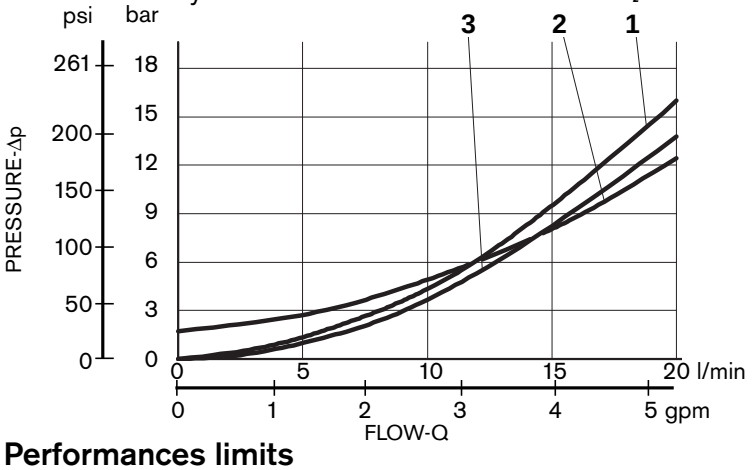
Voltage type		DC (AC only with RAC connection)								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature	°C *[°F]*	150 *[302]*								
Insulation class		H								
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight	kg *[lbs]*	0.215 *[0.44]*								
Voltage	V	12	13	24	27	48	110	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)
Voltage type		DC	DC	DC	DC	DC	DC	AC	AC	AC
Power consumption	W	26	26	26	26	26	26	29	29	29
Current [1]	A	2.15	2.0	1.10	1.0	0.54	0.27	1.20	0.29	0.14
Resistance [2]	Ω	5.5	6.5	22	28	89	413	18	338	1430

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 =OB 02	12 DC	EN 175301-803 (Ex. DIN 43650)	C3601 12DC	12 DC	R933000044
=OB 03	12 DC	AMP JUNIOR	C3603 12DC	12 DC	R933000047
=OB 04	12 DC	AMP JUNIOR Horizontal	C3604 12DC	12 DC	R933002913
=OB 07	12 DC	DEUTSCH DT 04-2P	C3607 12DC	12 DC	R933000048
=OB 31	12 DC	Cable 350 mm long	C3631 12DC	12 DC	R933000045
=AD 01 =AD 02	13 DC	EN 175301-803 (Ex. DIN 43650)	C3601 13DC	13 DC	R933000051
=AD 07	13 DC	DEUTSCH DT 04-2P	C3607 13DC	13 DC	R933000049
=OC 01 =OC 02	24 DC	EN 175301-803 (Ex. DIN 43650)	C3601 24DC	24 DC	R933000053
=OC 03	24 DC	AMP JUNIOR	C3603 24DC	24 DC	R933000057
=OC 04	24 DC	AMP JUNIOR Horizontal	C3604 24DC	24 DC	R933002914
=OC 07	24 DC	DEUTSCH DT 04-2P	C3607 24DC	24 DC	R933000058
=OC 31	24 DC	Cable 350 mm long	C3637 24DC	24 DC	R933000055
=AC 01 =AC 02	27 DC	EN 175301-803 (Ex. DIN 43650)	C3601 27DC	27 DC	R933000056
=AC 07	27 DC	DEUTSCH DT 04-2P	C3607 27DC	27 DC	R933000050
=OD 01 =OD 02	48 DC	EN 175301-803 (Ex. DIN 43650)	C3601 48DC	48 DC	R933000059
=OD 04	48 DC	AMP JUNIOR Horizontal	C3604 48DC	48 DC	R933002915
=OE 01 =OE 02	110 DC	EN 175301-803 (Ex. DIN 43650)	C3601 110DC	110 DC	R933000061
=OV 01 =OV 02	24 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 21.5DC	21.5 DC	R933000054
=OW 01 =OW 02	110 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 98DC	98 DC	R933000060
=OZ 01 =OZ 02	230 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 207DC	207 DC	R933000062

Characteristic curves

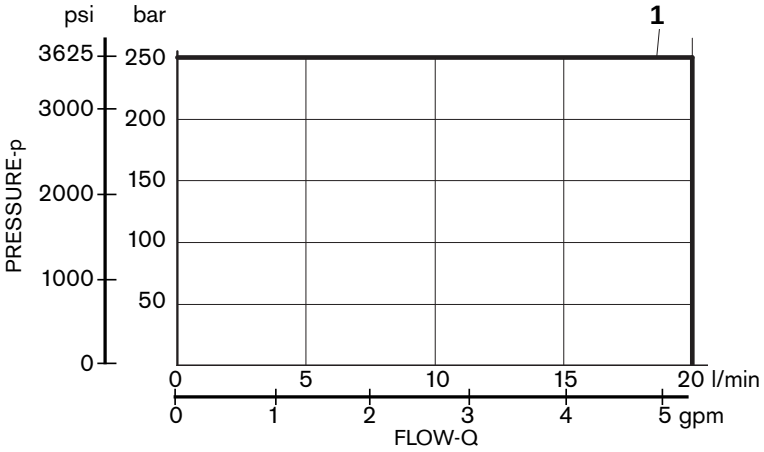
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANT	Curve No.			
	P>A	P>B	A>T	B>T
B201	2	2	1	1
E201	2	2	3	3

Performances limits

Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.

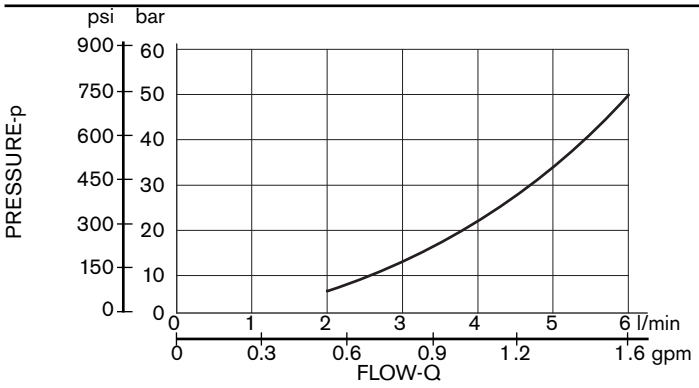


SPOOL VARIANT	Curve No.
B201	1
E201	1

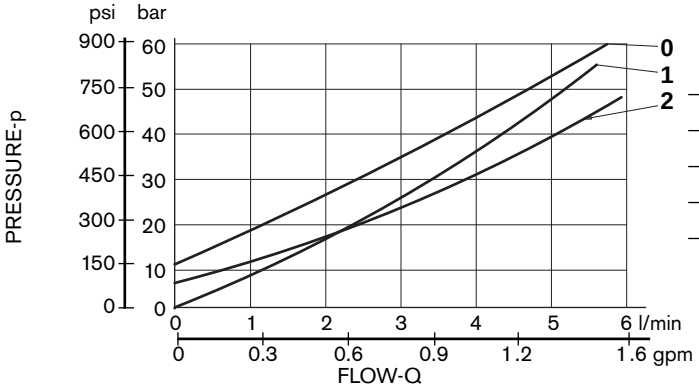
The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas.

In case of special circuit connections, the performance limits can change.

Minimum flow for efficiency of LS control

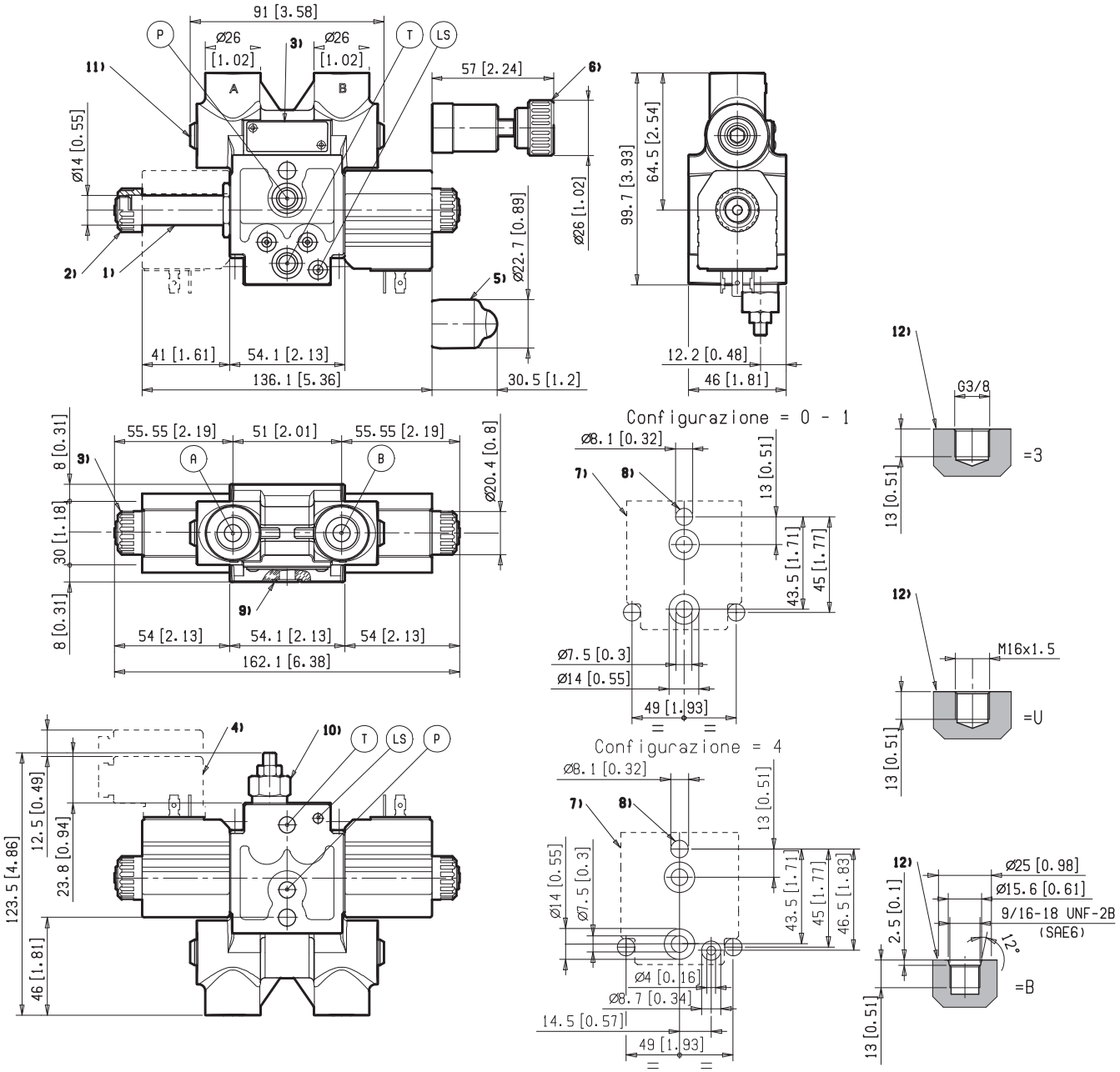


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar *[700-2950 psi]*	0
100-310 bar *[1400-4500 psi]*	1
25-50 bar *[350-700 psi]*	2

External Dimensions and Fittings



1 Solenoid tube hex 22 mm *[0.87 inch].* Torque 15-16 20-22 Nm *[14.6-16.2 lb-ft].*

2 Ring nut for coil locking (OD 20.5 mm); torque 3-4Nm *[2.2-3 ft-lb]*.

3 Identification label.

4 Clearance needed for connector removal.

5 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933000042.

6 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933000021.

7 Flange specifications for coupling to ED intermediate elements.

8 One through hole for coupling of the ED Directional Valve Elements. Recommended tie rod M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

9 O-Rings for P and T ports.

10 Space needed for secondary valve, for configuration 1. Hex. 17, torque 9-10 Nm *[6.6-7.4 lb-ft]*.

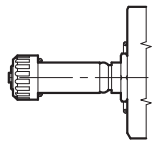
11 Plug hex. 6 mm ; torque 30-33 Nm *[22-24 ft-lb]*.

12 A and B ports.

Electric connection (or connections, in case of two solenoids)

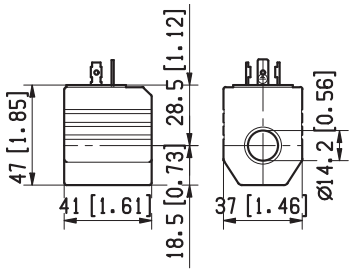
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

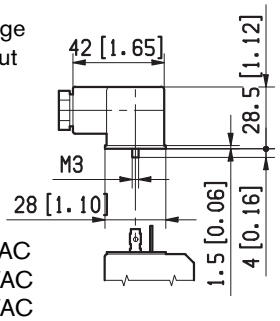


=02

With coils and with connectors non-assembled, type EN 175301-803.

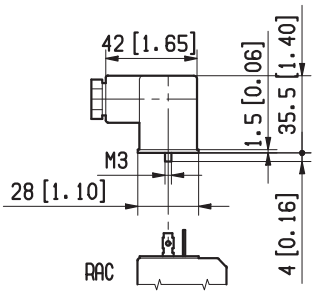
Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard.
182-LED-T-A1: with LED monitoring presence of voltage.
182-09-G-DO-2-1: with VDR (Voltage Dependent Resistor), to prevent input voltage over-shootings.



Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK
R933002893	182-LED-T-A1 12 DC/AC
R933002894	182-LED-T-A1 24 DC/AC
R933002896	182-LED-T-A1 48 DC/AC
R933002897	182-LED-T-A1 110 DC/AC
R933002898	182-LED-T-A1 230 DC/AC
R933002886	182-09-G-DO-2-1 12DC with VDR
R933002887	182-09-G-DO-2-1 24DC with VDR

532-09 RAC: With Voltage Rectifier for AC current applications.

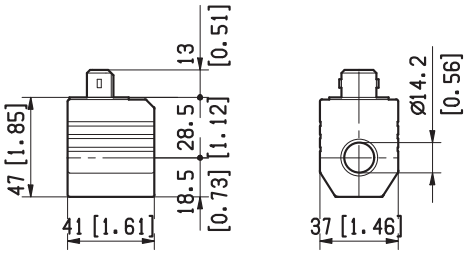


Mat. No.	Description
R933002892	532-09 RAC GRAY
R933002891	532-09 RAC BLACK

=03

With coils having AMP Junior connector, and with bi-directional diode.

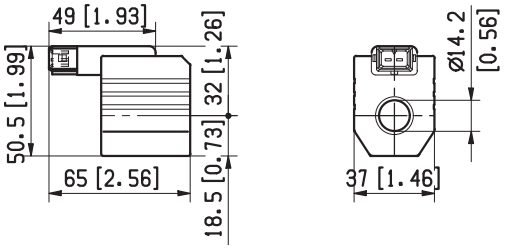
Protection class: IP 65 with female connector properly fitted (see drawing).



=04

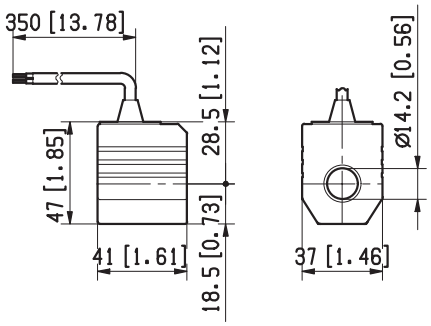
With coils having Horizontal AMP Junior connector, and with bi-directional diode.

Protection class: IP 65 with female connector properly fitted (see drawing).



=31

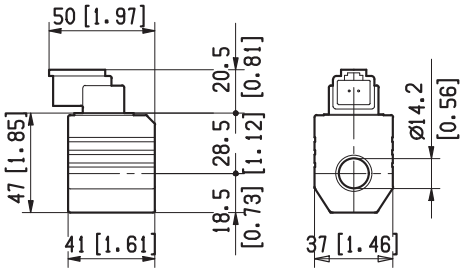
With coils having bi-directional diode and bipolar sheathed free lead, 350 mm long, without pins.



=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/2 Directional valve elements with or without secondary relief valves, with or without LS connections, and with 2/2 solenoid cartridge valve

RE 18300-54/10.09 1/8

B8_58… (EDBZ-VEI)

Size 4
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 25 l/min *[6.6 gpm]*
Ports connection G 3/8 - SAE6 - M16x1.5


DVI0076

Summary

General specifications

- Valve elements with 4 ways and 2 positions.
- Control spools directly operated by screwed-in solenoids with extractable coils.
- In the de-energized condition, the control spool is held in the central position by return spring.
- Wet pin tubes for DC coils, with push rod for mechanical override; burnish surface treatment.
- Manual override (push-button or screw type) available upon request.
- Additional solenoid cartridge 2/2, NO or NC, single locking or dual locking on port A.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); DT04-2P (Deutsch); AMP Junior.

Ordering Details

B	8	_	5 8	E 4 0 1	_ _	_ _	_	_	_	_

Family
Directional valve element EDB

Type
Size 4

Configuration
Standard = **0**
With secondary valve on A = **1**
With ch. for Load Sensing = **4**

Coil type
C36

Spool Variants
4/2 operated on side b only

Voltage supply

	00	01	02	03	07	
Without coil	■					= 00
12V DC		■	■	■	■	= OB
24V DC		■	■	■	■	= OC
(21.5 DC) 24V AC		■	■			= OV
(98 DC) 110V AC		■	■			= OW
(207 DC) 230V AC		■	■			= OZ
	00	01	02	03	07	

Available connections

Optional fittings
0 = Standard emergency
P = Push-button type emergency
F = Screw type emergency

Solenoid screw-in cartridge VEI
N = Without valve [3]
C = Normalmente chiusa
A = Normalmente aperta
D = Doppia tenuta normalmente chiusa
O = Doppia tenuta normalmente aperta

Secondary valve setting
0 = 50-210bar *[725-3045psi]* [2]
1 = 100-310bar *[1450-4500psi]* [2]
2 = 25-50bar *[362-725psi]* [2]
3 = Without secondary valve

Ports
3 = G 3/8 DIN 3852
U = M 16x1,5 DIN 3852
B = 9/16-18 UNF 2-B (SAE6)

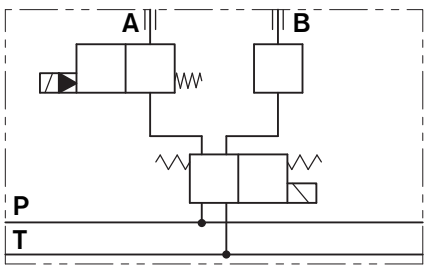
Electric connections
00 = Without coil
01 = With coil, without connector
02 = With coil and with connector non-assembled, type EN 175301-803
03 = With coil having AMP Junior connector
07 = With coil having DEUTSCH DT 04-2P connector

[2] Only for configuration (1)

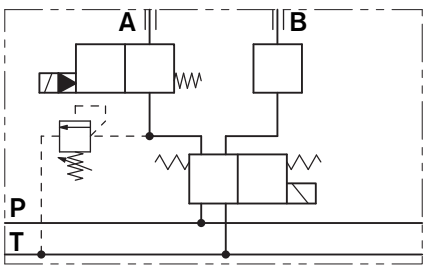
[3] *The VEI solenoid cartridge must be ordered separately (refer to RE 18301-91).

The secondary valves have a maximum flow capacity of 6 l/min. *[1.6 gpm]*.

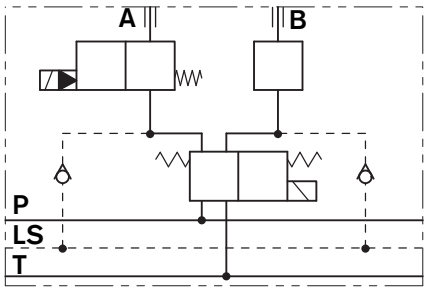
Configuration



= 0

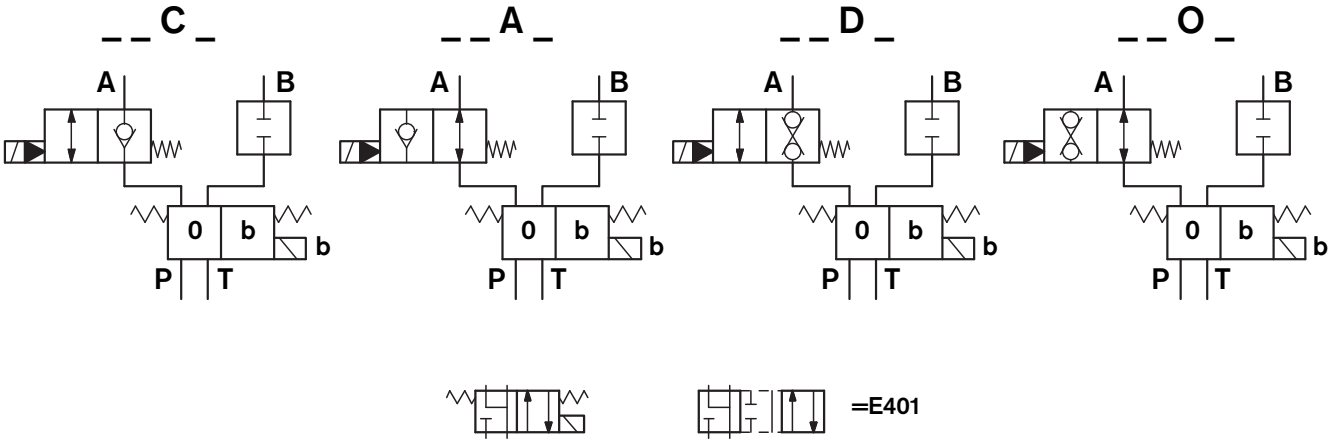


= 1



= 4

Spool variants



Principles of operation, cross section

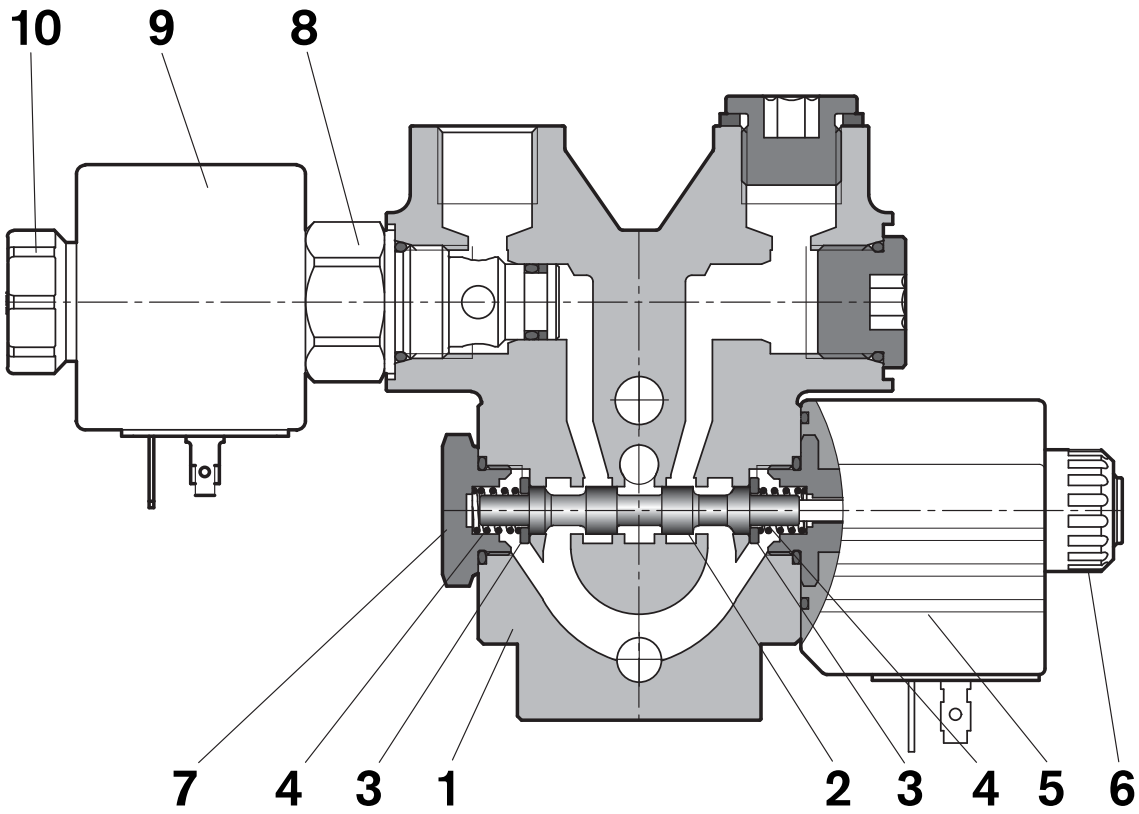
The sandwich plate design directional valve elements B8_58… are very compact direct operated solenoid valves which control the start, the direction and the leak free stop the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one solenoid (5), a spring holder plug (7); two return springs (4); a solenoid screw-in cartridge VEI (8) with its coil (9).

When energized, the force of the solenoid (5) pushes the control spool (2) from its rest position “0” to the end position “b”. If there is a solenoid cartridge VEI (8) type C, A, O, the oil flow goes directly to the port A; if there is a solenoid cartridge VEI (8) type D (Dual locking), it is necessary the energize the solenoid cartridge as well in order to allow the oil flow to the port A.

Once the solenoid (5) is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool (2) returns in its rest position. The leak free holding at port A is provided by energizing (or de-energizing, if the VEI is NC type) the solenoid cartridge.

By energizing open both the solenoid (5) and the VEI (8), the A port is open to tank and downstream flow is possible.

The coils are fastened to the respective solenoids (5) and VEI (8) by the ring nuts (6) and (10).



Technical Data (for applications with different specifications consult us)

General

Valve element with solenoid and plug-in pins EN 175301-803	kg *[lbs]*	1.8 *[3.96]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P and A ports	bar *[psi]*	310 *[4500]*
Maximum dynamic pressure at T	bar *[psi]*	180 *[2610]*
Maximum static pressure at T	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	25 *[6.6]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Electrical

Voltage type		DC (AC only with RAC connection)								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature	°C *[°F]*	150 *[302]*								
Insulation class		H								
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight	kg *[lbs]*	0.215 *[0.44]*								
Voltage	V	12	24	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)				
Voltage type		DC	DC	AC	AC	AC				
Power consumption	W	26	26	29	29	29				
Current [1]	A	2.15	1.10	1.20	0.29	0.14				
Resistance [2]	Ω	5.5	22	18	338	1430				

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

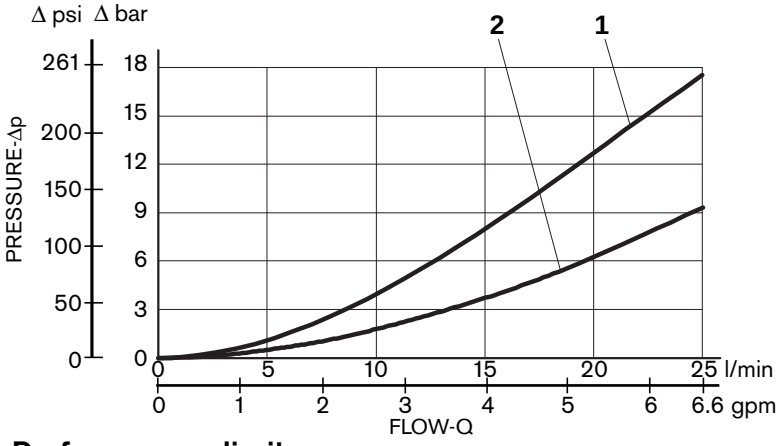
For the technical data of the VEI coils, please refer to RE 18301-91.

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	C3601 12DC	12 DC	R933000044
=OB 03	12 DC	AMP JUNIOR	C3603 12DC	12 DC	R933000047
=OB 07	12 DC	DEUTSCH DT 04-2P	C3607 12DC	12 DC	R933000048
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	C3601 24DC	24 DC	R933000053
=OC 03	24 DC	AMP JUNIOR	C3603 24DC	24 DC	R933000057
=OC 07	24 DC	DEUTSCH DT 04-2P	C3607 24DC	24 DC	R933000058
=OV 01 **=OV 02**	24 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 21.5DC	21.5 DC	R933000054
=OW 01 **=OW 02**	110 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 98DC	98 DC	R933000060
=OZ 01 **=OZ 02**	230 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 207DC	207 DC	R933000062

For the technical data of the VEI coils, please refer to RE 18301-91.

Characteristic curves

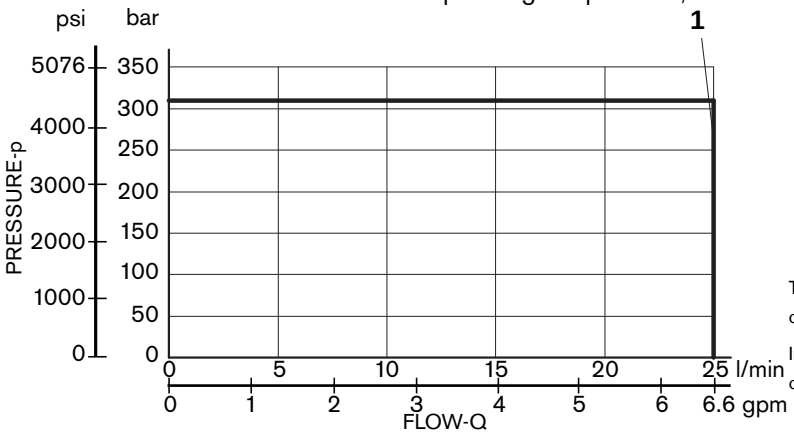
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANT	Curve No.	
	B>T	P>A
X301	1	2

Performances limits

Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.

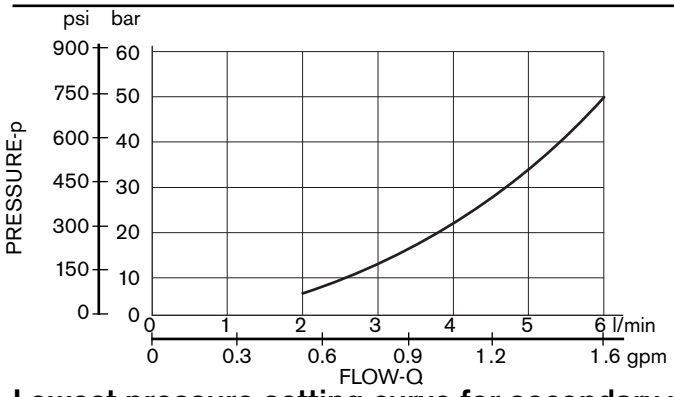


SPOOL VARIANT	Curve No.
X401	1

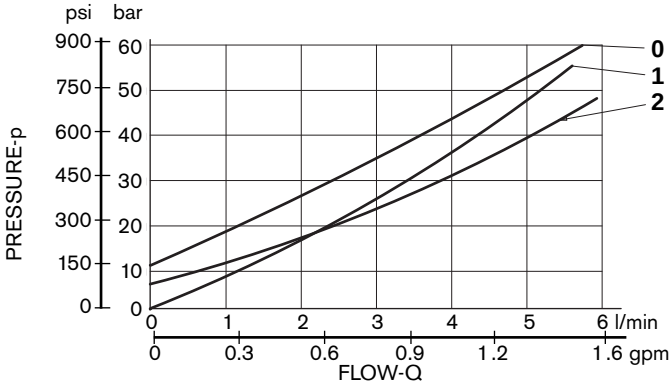
The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas.

In case of special circuit connections, the performance limits can change.

Minimum flow for efficiency of LS control

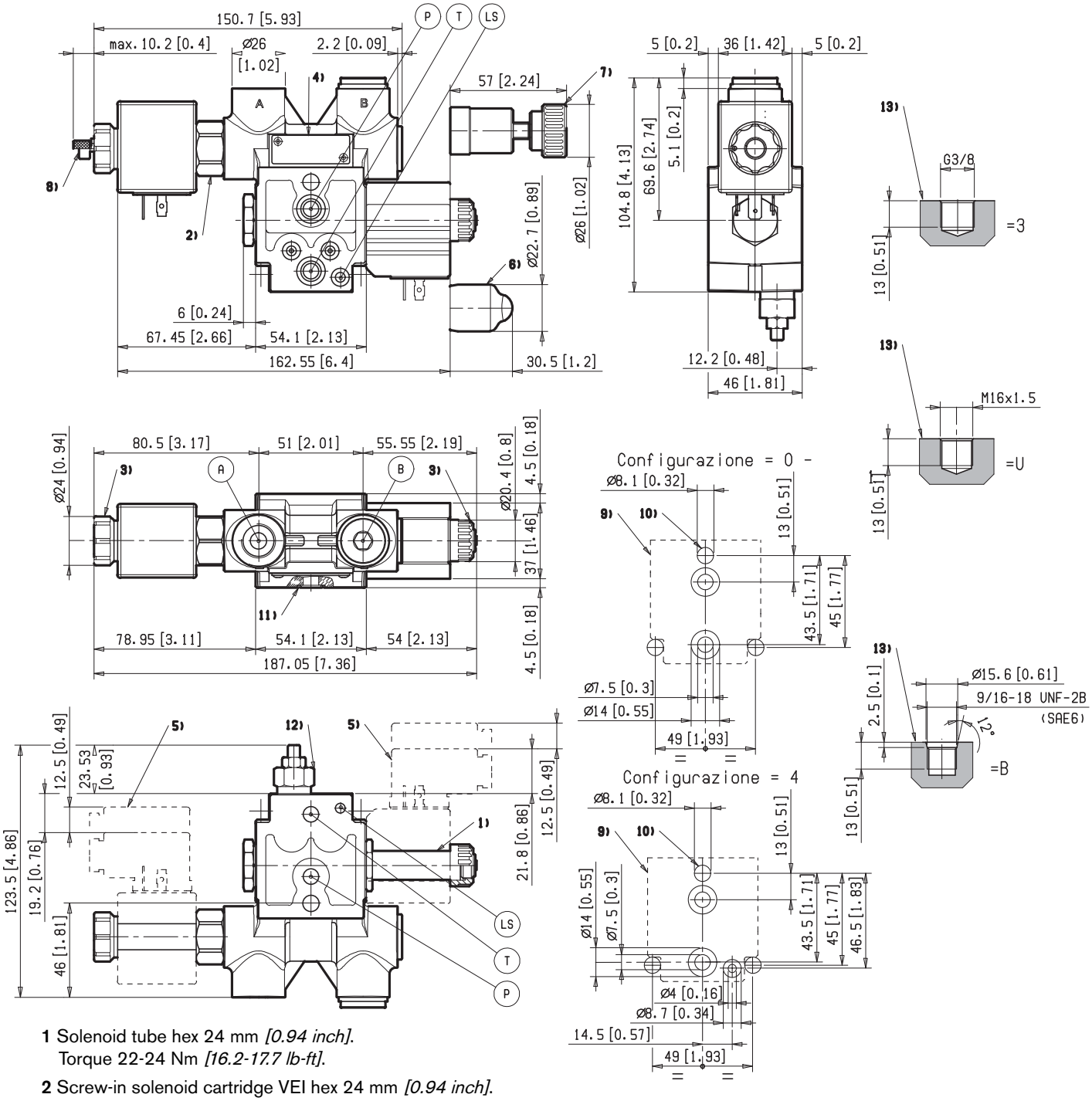


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar *[700-2950 psi]*	0
100-310 bar *[1400-4500 psi]*	1
25-50 bar *[350-700 psi]*	2

External Dimensions and Fittings



1 Solenoid tube hex 24 mm *[0.94 inch]*.
Torque 22-24 Nm *[16.2-17.7 lb-ft]*.

2 Screw-in solenoid cartridge VEI hex 24 mm *[0.94 inch]*.
Torque 39-51Nm *[28.8-37.6 lb-ft]*.

3 Ring nut for coil locking (OD 20.5 mm);
torque 3-4Nm *[2.2-3 ft-lb]*.

4 Identification label.

5 Clearance needed for connector removal.

6 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking.
Mat no. R933000042.

7 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933006377.

8 Optional emergency control for VEI cartridge: it can be push/pull or screw type. Please refer to the VEI catalogue for details.

9 Flange specifications for coupling to ED intermediate elements.

10 One through hole for coupling of the ED Directional Valve Elements. Recommended tie rod M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

11 O-Rings for P and T ports.

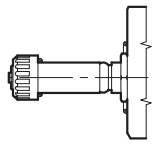
12 Space needed for secondary valve in configuration 1.

13 A and B ports.

Electric connection (or connections, in case of two solenoids)

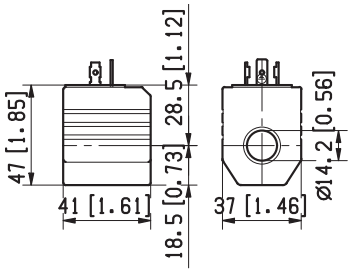
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

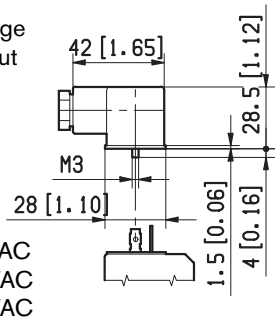


=02

With coils and with connectors non-assembled, type EN 175301-803.

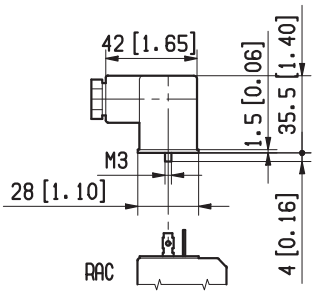
Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard.
182-LED-T-A1: with LED monitoring presence of voltage.
182-09-G-DO-2-1: with VDR (Voltage Dependent Resistor), to prevent input voltage over-shootings.



Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK
R933002893	182-LED-T-A1 12 DC/AC
R933002894	182-LED-T-A1 24 DC/AC
R933002896	182-LED-T-A1 48 DC/AC
R933002897	182-LED-T-A1 110 DC/AC
R933002898	182-LED-T-A1 230 DC/AC
R933002886	182-09-G-DO-2-1 12DC with VDR
R933002887	182-09-G-DO-2-1 24DC with VDR

532-09 RAC: With Voltage Rectifier for AC current applications.

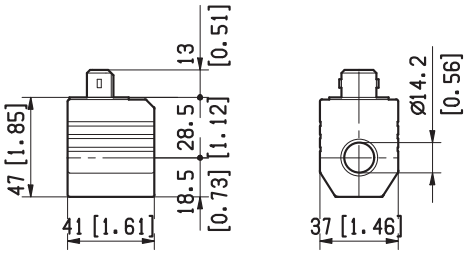


Mat. No.	Description
R933002892	532-09 RAC GRAY
R933002891	532-09 RAC BLACK

=03

With coils having AMP Junior connector, and with bi-directional diode.

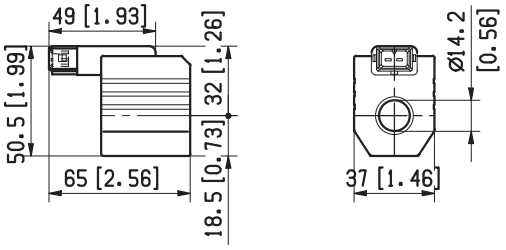
Protection class: IP 65 with female connector properly fitted (see drawing).



=04

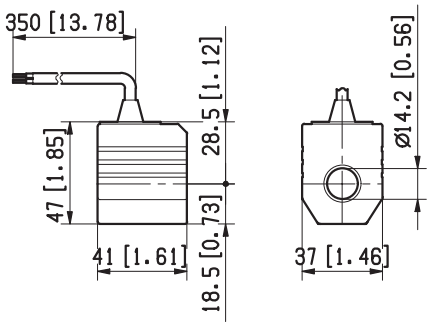
With coils having Horizontal AMP Junior connector, and with bi-directional diode.

Protection class: IP 65 with female connector properly fitted (see drawing).



=31

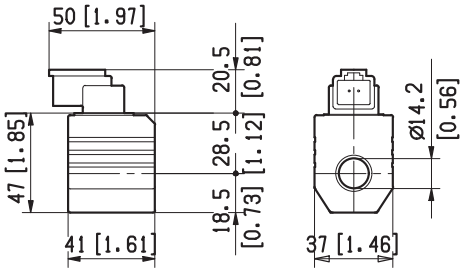
With coils having bi-directional diode and bipolar sheathed free lead, 350 mm long, without pins.



=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with proportional control and with or without LS connections

RE 18300-55/10.09 1/8

B8_80... (EDB-P)

Size 4
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 17 l/min *[4.5 gpm]*
Ports connection G 3/8 - SAE6 - M16x1.5


DVI0075

Summary

General specifications

- Valve element with direct proportional control of spool.
- Control spool operated by screwed-in solenoid with extractable coil.
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin proportional tubes for DC coils, with push rod for mechanical override; nickel plated surface.
- Manual override (push-button or screw type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650), AMP Junior.

Ordering Details

B	8	_	8 0	_ _	S	_	_ _	_ _	_	0	0	_

Family
Directional valve elements EDB

Type
Size 4 proportional

Configuration
Standard = **0**
With Load Sensing control = **4**

Coil type
P45

Spool variants [1)]
4/3 operated both sides a and b;
P – T closed in neutral = **B2**
4/2 operated on side a only;
P – T closed in neutral = **B3**
4/2 operated on side b only;
P – T closed in neutral = **B4**
4/3 operated on both sides a and b;
A and B to T in neutral = **E2**
4/2 operated on side a only;
A and B to T in neutral = **E3**
4/2 operated on side b only;
A and B to T in neutral = **E4**

Flow pattern
Symmetrical

Nominal flow *
4 l/min *[1.06gpm]* = **3**
9 l/min *[2.38gpm]* = **4**
17 l/min *[4.50gpm]* = **5**

Voltage supply
00 = Without coil
OB = 12V DC
OC = 24V DC

Electric connection
01 = With coils, without connectors
02 = With coils and with non-assembled connectors, type EN 175301-803
03 = With coils having AMP Junior connector

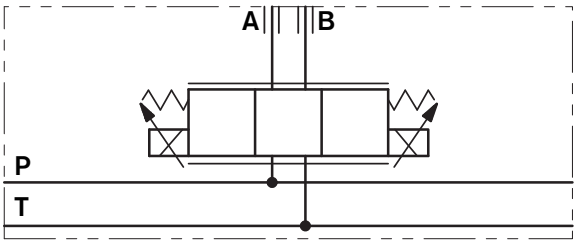
Ports
3 = G 3/8 DIN 3852
U = M 16x1,5 DIN 3852
B = 9/16-18 UNF 2-B (SAE6)

Optional fittings
0 = Standard version
F = Screw type emergency

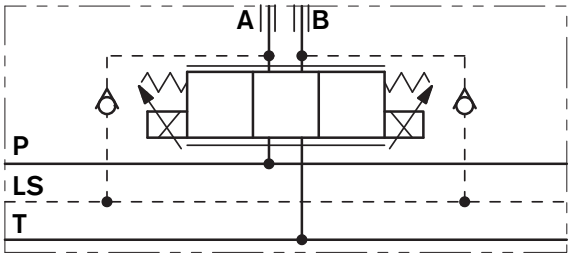
[1)] The required hydraulic symbol and spool variant can be chosen by consulting page 3.

* With Δp (P > T) 10 bar *[145 psi]*.

Configuration

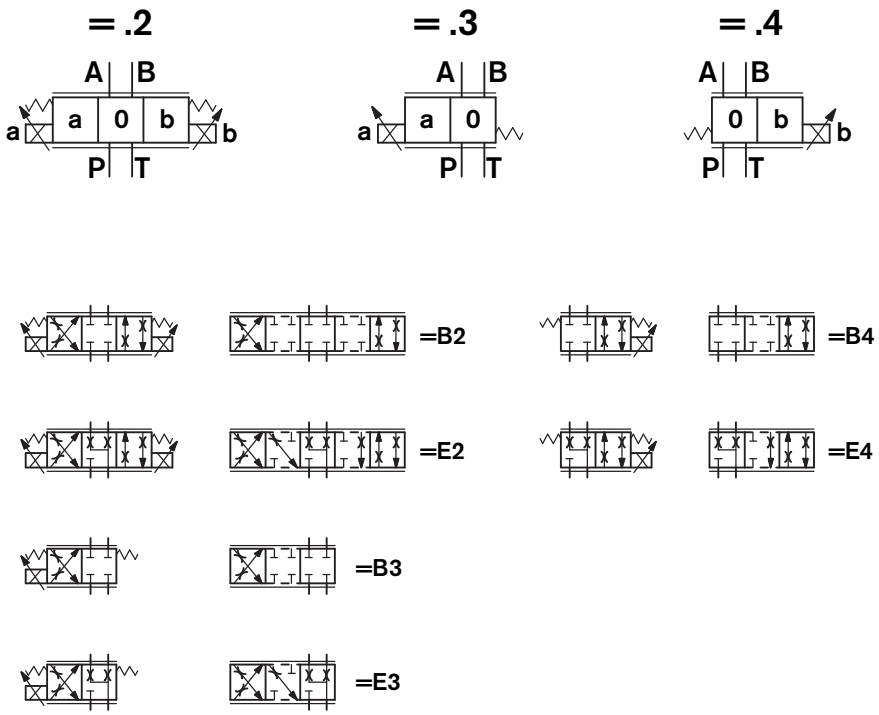


= **0**



= **4**

Spool variants

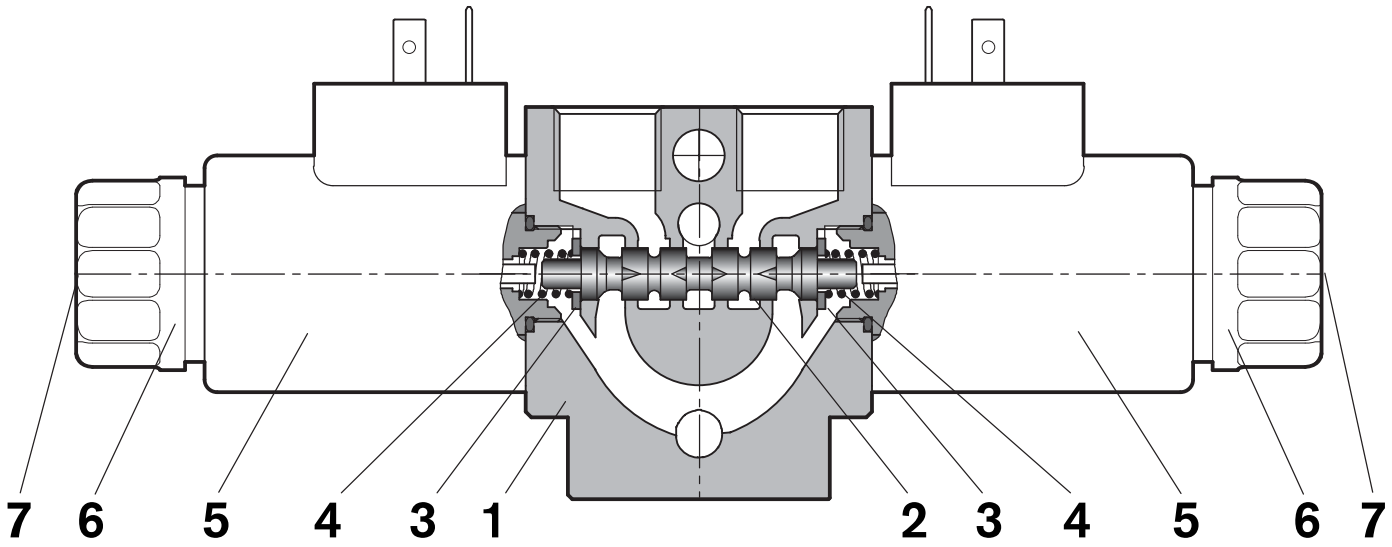


Principles of operation, cross section

The sandwich plate design directional valve elements B8080… are compact direct operated proportional solenoid valves which control the start, the stop, the direction and the quantity of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4).

Energized by an electronic feed regulator, each solenoid (5) displaces the control spool (2) from its neutral-central position “0” proportionally to the current received, in open loop mode; a regulated oil flow P to A , or P to B, is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool (2) returns in its neutral-central position “0”.

Each coil is fastened to the solenoid tube (5) by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids	kg *[lbs]*	1.5 *[3.3]*
Valve element with 1 solenoid	kg *[lbs]*	1.1 *[2.5]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	310 *[4500]*
Maximum dynamic pressure at T	bar *[psi]*	180 *[2610]*
Maximum static pressure at T	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	24 *[6.3]*
Nominal flow with $\Delta p = 10$ bar	l/min *[gpm]*	4, 9, 17 *[1.06, 2.38, 4.5]*
E-schemes p closed in the neutral position (connection from A to T and B to T)		Approx. 2.3% of the nominal cross-section
Hysteresis		≤ 5%
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=10...12 ISO 4406: class 19/17/14 NAS 1638: class 8
Viscosity range	mm^2/s	20....380 (optimal 30....46)

Electrical

Voltage type		PWM	Power Wave Modulation pre-set at 120 Hz								
Voltage tolerance (nominal voltage)		%	-10 .... +10								
Duty			Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature		°C *[°F]*	150 *[302]*								
Insulation class			H								
Compliance with			Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight		kg *[lbs]*	0.228 *[0.503]*								
Voltage		V	12	24							
Current [1]		A	1.76	0.94							
Coil resistance [2]	- Cold value at 20°C	Ω	3.71	13							
	- Max. hot value	Ω	6.1	22.9							

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	P45 01	12 DC	R933000088
=OB 03	12 DC	AMP-JUNIOR	P45 03	12 DC	R933000089
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	P45 01	24 DC	R933000090
=OC 03	24 DC	AMP-JUNIOR	P45 03	24 DC	R933000091

Electronic control

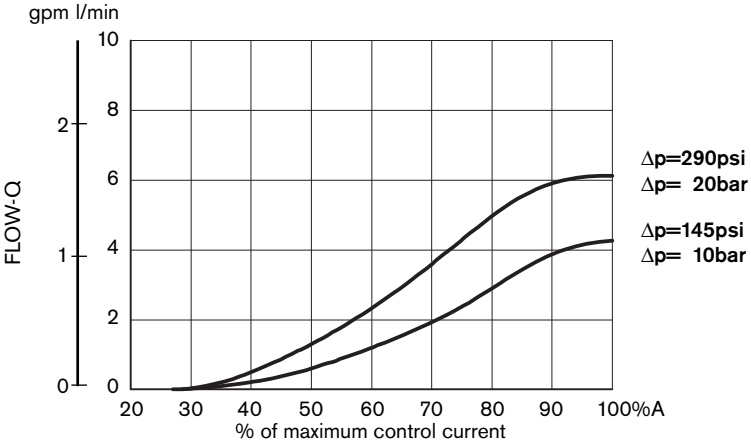
Electronic feed regulators [1]	Upon request

1) An electronic, open loop type, regulator with plug-in pins EN 175301-803 is available and can be fitted onto the solenoid directly. For valve elements with two solenoids, two electronic regulators are needed.

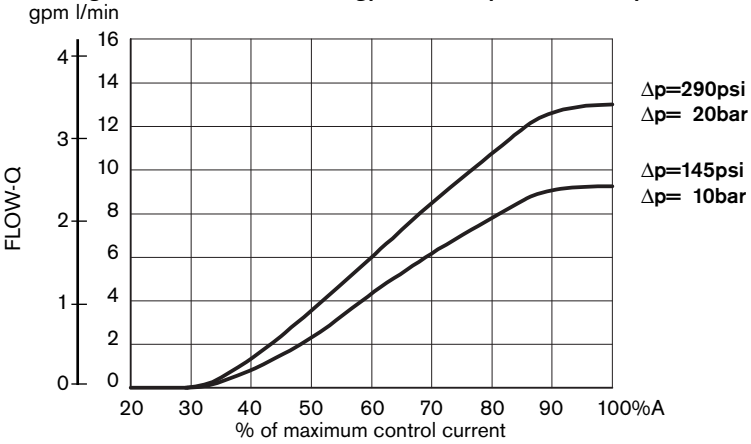
Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.

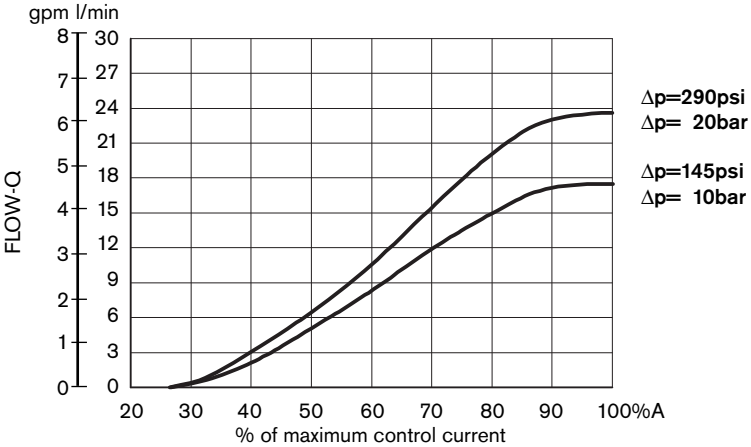
Ordering code S3: 4 l/min *[1.06 gpm]* with Δp 10 bar *[145 psi]*.



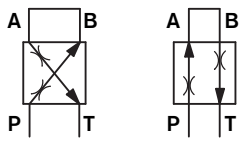
Ordering code S4: 9 l/min *[2.38 gpm]* with Δp 10 bar *[145 psi]*.



Ordering code S5: 17 l/min *[4.50 gpm]* with Δp 10 bar *[145 psi]*.

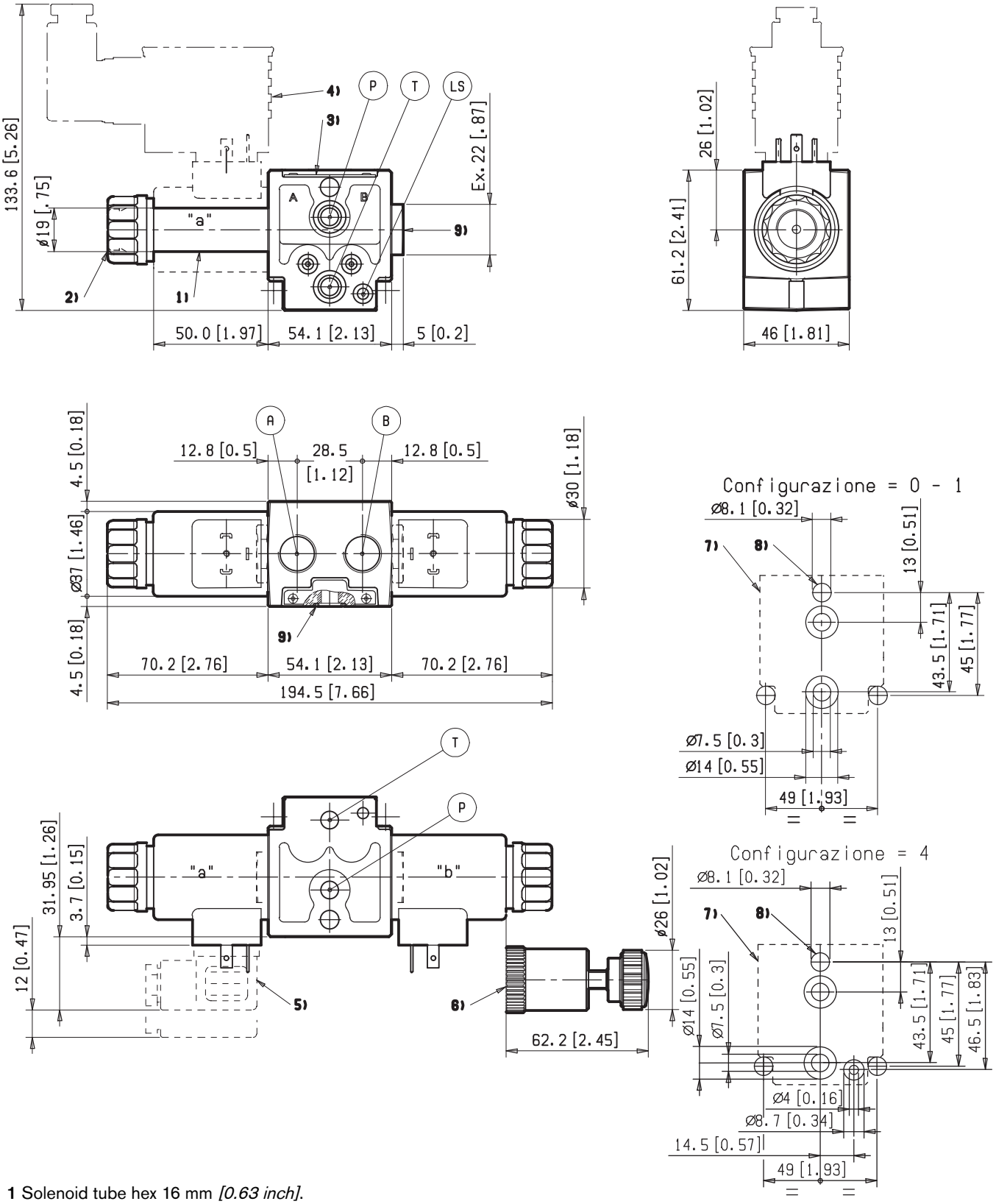


Δp= is the actual one-way pressure drop across the open spool (Inlet pressure minus outlet – port pressure)



The curves refer to the spool fully open.

External Dimensions and Fittings



1 Solenoid tube hex 16 mm *[0.63 inch]*.
Torque 20-22 Nm *[14.6-16.2 ft-lb]*.

2 Ring nut for coil locking OD 30 mm [1 .18 In]; torque 6–7 Nm *[4.4 – 5.2 ft-lb]*.

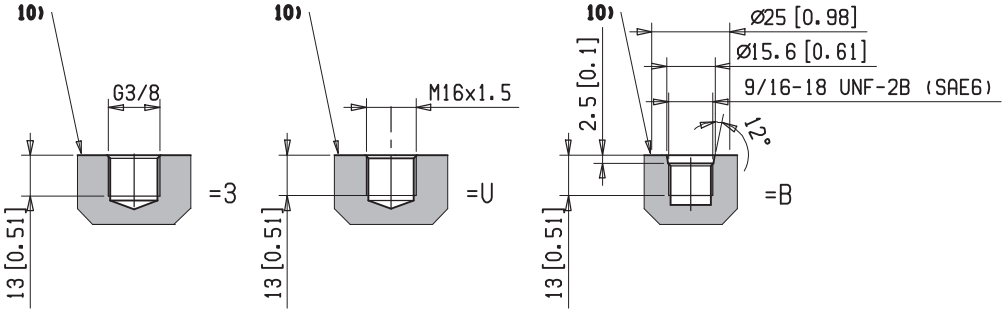
3 Identification label.

4 Dimension with electronic feed regulator.

5 Clearance needed for connector removal.

6 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut.
Mat no. R933003848.

External Dimensions and Fittings



7 Flange specifications for coupling to ED intermediate elements.

8 One through hole for coupling of the ED Directional Valve Elements. Recommended tie rod M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

9 Plug for 2 positions versions (4/2); hex 22 mm, torque 20-22 Nm *[14.6-16.2 ft-lb]*.

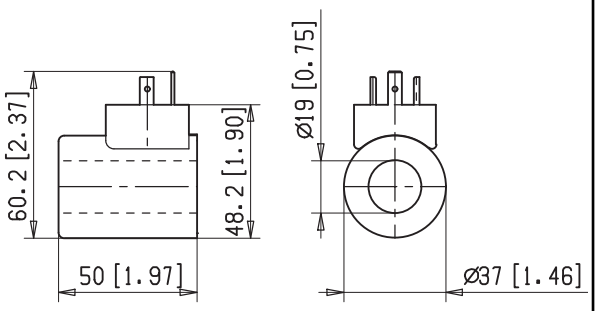
10 A and B ports.

Electric connection (or connections, in case of two solenoids)

=01

With coils having plug-in pins DIN 43650 – ISO 4400, without connectors.

Protection class: IP 65 when connector with seal is properly screwed down.

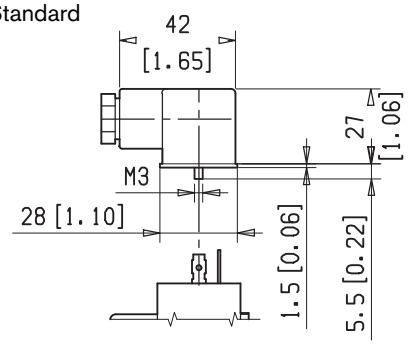


=02

With coils and with connectors non-assembled, type DIN 43650 – ISO 4400.

Protection class: IP 65 when connector with seal is properly screwed down.

182-09: Standard

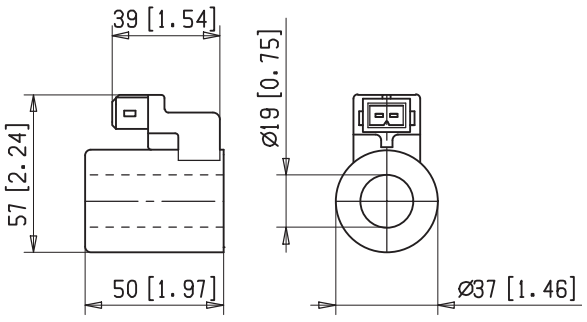


Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK

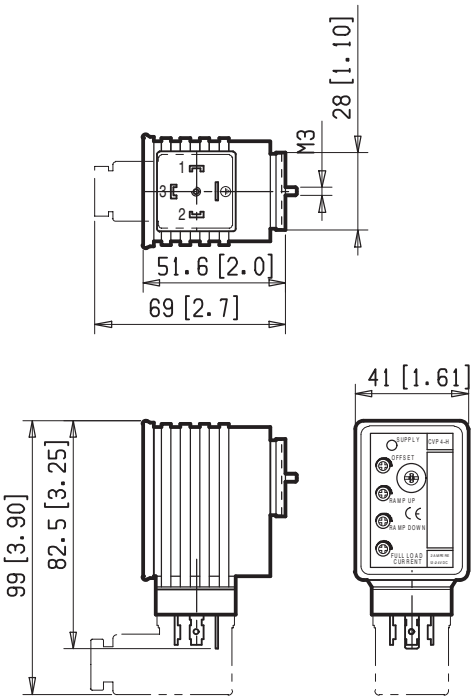
=03

With coils having AMP Junior connector, and with bi-directional diode.

Protection class: IP 65 with female connector properly fitted (see drawing).



Electronic feed regulator (or regulators, in case of two solenoids)



Supply: yellow LED, lit up with power ON.

Off Set: minimum current adjustment. Adjust solenoid current so that the desired minimum value is obtained. Clockwise rotation increases current.

Ramp up: Ramping up time adjustment.

Ramp down: Ramping down time adjustment.
For longer ramping times, turn potentiometers clockwise; for shorter ramping times, turn the potentiometers counter-clockwise.

Full load current: Maximum current adjustment. Adjust solenoid current so that the desired maximum value is obtained (up to 2A). Clockwise rotation increases current.

Frequency adjustment: it is possible to set the PWM frequency obtaining the desired control sensitivity. After removing the external plastic cover, turn the adjusting screw; clockwise rotation increases frequency from 100 to 500 Hz.

Regulator ordering code	R933003290
Supply voltage	12-30 VDC
Control Signal	0-10 VDC
Max. output current	2 A
Minimum output current	0....0.6 A
Ramp adjustment up/down	0.1 ....10 s
PWM Frequency adjustment (pre-set 120 Hz)	100....500 Hz
Ambient operating temperature	-10....+60 °C *[14....+140 °F]*
Weight	0.12Kg *[26.4 lbs]*
4 pins connector details	R933002888 (Grey) R933002890 (Black)
Electromagnetic compatibility	EN50081-1/2EN61000-4-2/3/4/5/6
Protection class with connector and seal correctly fitted and properly screwed down.	IP 65 (DIN40050 part 9)
Potentiometer resistance	5....10 κ Ω

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with or without secondary relief valves, with or without LS connections

RE 18301-01/10.09 1/12
Replaces: RIE00159/01.06

L8_10… (ED1-Z)

Size 6
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 30 l/min *[7.9 gpm]*
Ports connection G 3/8 - SAE6


DVI0008

Summary

General specifications

- Valve elements with solenoid operated directional spool.
- Control spools operated by screwed-in solenoids with extractable coils.
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; nickel plated surface.
- Coils can be rotated 360° around the tube; they can be energized by AC current through special connectors with rectifier (RAC).
- Manual override (push-button or screw type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); AMP Junior; DT04-2P (Deutsch), free leads.

Ordering Details

L	8	_	1 0	_ _ _ _	_ _	_ _	_	_	_ _

Family
Directional Valves element ED

Type
Size 6

Configuration [1]
Standard = **0**
With secondary valve on A = **1**
With secondary valve on B = **2**
With sec. valve on A and B = **3**
With channels for Load S. = **4**

Coil type
C36

Spool variants [2]
4/3 operated on both sides a and b = **_ 2 _ _**
4/2 operated on side a only = **_ 3 _ _**
4/2 operated on side b only = **_ 4 _ _**

Optional fittings
_ _ = Lever type emergency [3]
0P = Push-button type emergency
0F = Screw type emergency

Secondary valves setting
0* = 50-210 bar *[725-3045 psi]*
1 = 100-310 bar *[1450-4500 psi]*
2 = 25-50 bar *[362-725 psi]*
3 = 50-100 bar *[725-1450 psi]*

Ports
0 = G 3/8 DIN 3852
1 = 9/16-18 UNF 2-B (SAE6)

Electric connection
00 = Without coils
01 = With coils, without connectors
02 = With coils and with non-assembled connectors, type EN 175301-803
03 = With coils having AMP Junior connector
04 = With coils having horizontal AMP Junior connector
07 = With coils having DEUTSCH DT 04-2P connector
31 = With coils and bipolar sheathed lead 350mm *[13.8 in]* long

Voltage supply

	31	07	04	03	02	01	00	
00 =							■	Without coils
OB =	■	■	■	■	■	■		12V DC
AD =		■			■	■		13V DC
OC =	■	■	■	■	■	■		24V DC
AC =		■			■	■		27V DC
OD =			■		■	■		48V DC
OE =					■	■		110V DC
OV =					■	■		(21.5 DC) 24V AC
OW =					■	■		(98 DC) 110V AC
OZ =					■	■		(207 DC) 230V AC

Available connections

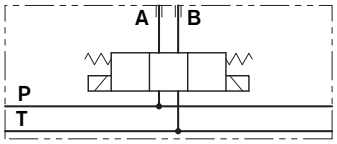
* Without secondary valves (versions L80__; 84__), the standard configuration corresponds to “0”

[1] The secondary valves have a maximum flow capacity of 6 l/min *[1.6 gpm]*

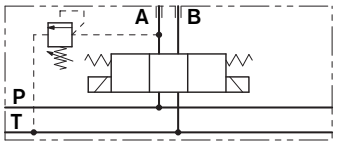
[2] The required hydraulic symbol and spool variant can be chosen by consulting page 3

[3] Each different option for the type of emergency chosen implies a specific ordering code (refer to page 9)

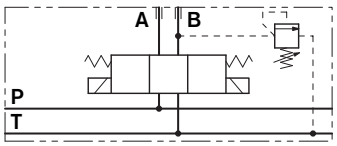
Configuration



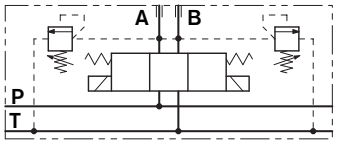
= 0



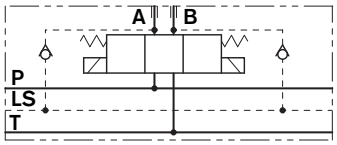
= 1



= 2

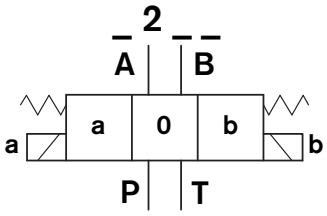


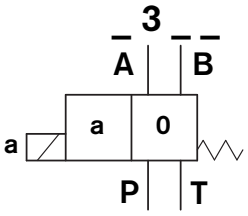
= 3

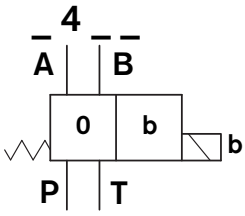


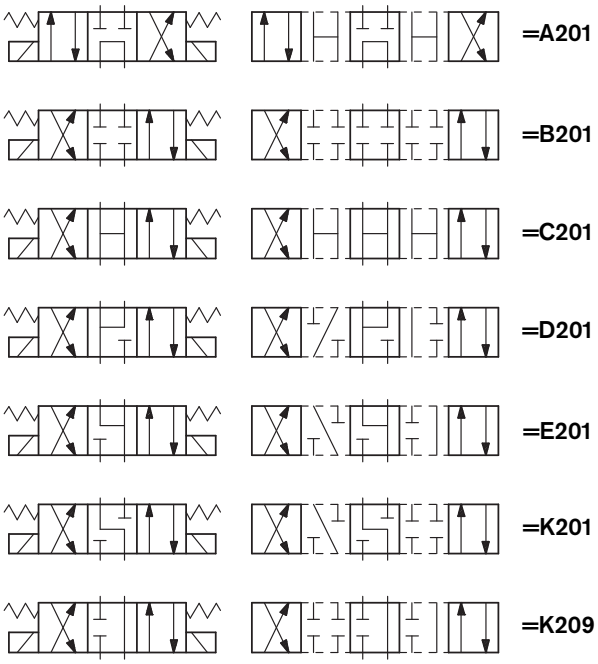
= 4

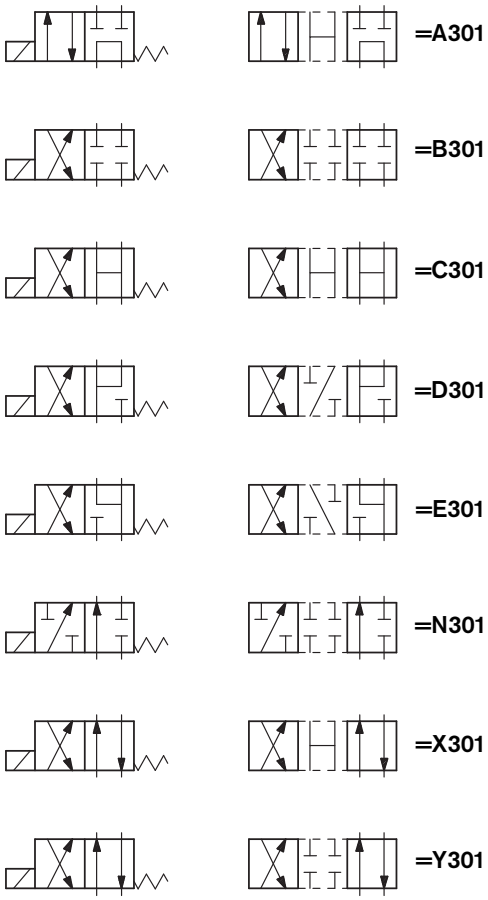
Spool variants

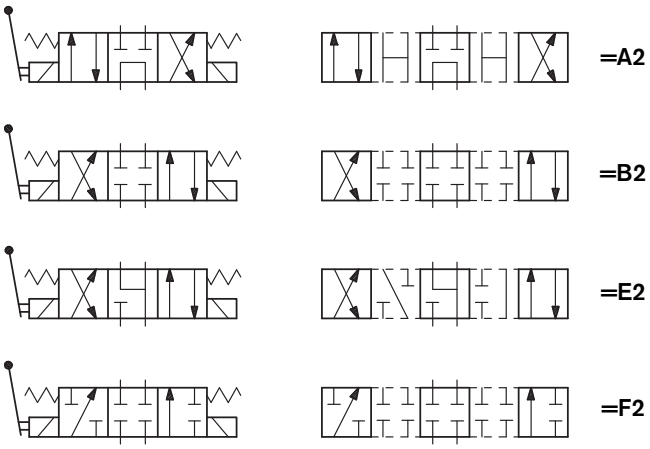










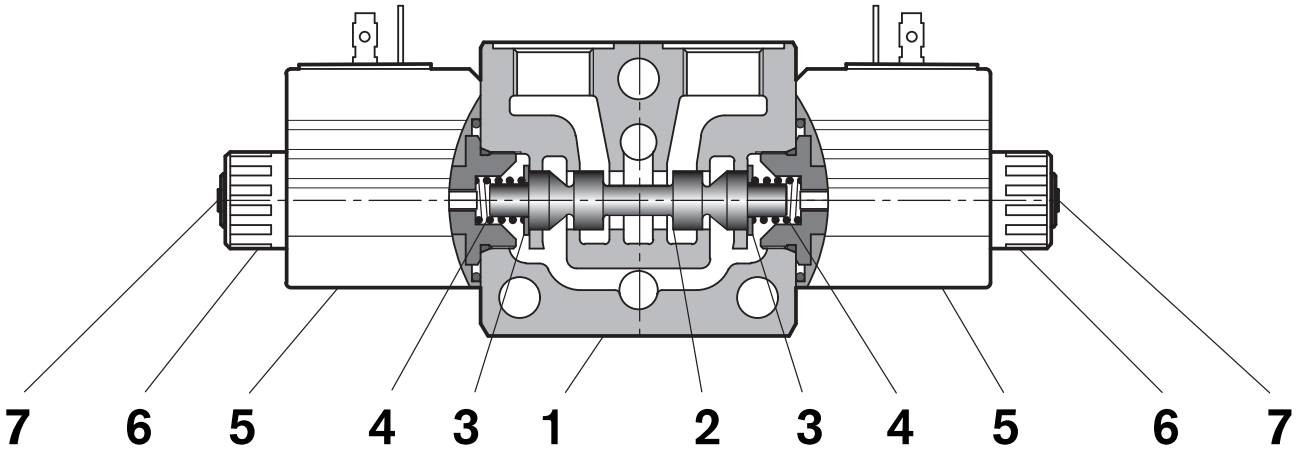


Principles of operation, cross section

The sandwich plate design directional valve elements L8_10… are compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4).

When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids	kg *[lbs]*	1.55 *[3.42]*
Valve element with 1 solenoid	kg *[lbs]*	1.25 *[2.76]*
Valve element with 2 solenoid, with lever type emergency	kg *[lbs]*	1.9 *[4.2]*
Valve element with 1 solenoid, with lever type emergency	kg *[lbs]*	1.6 *[3.5]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	310 *[4500]*
Maximum dynamic pressure at T	bar *[psi]*	180 *[2610]*
Max dynamic pressure, with lever type emergency at T	bar *[psi]*	100 *[1450]*
Maximum static pressure at T	bar *[psi]*	210 *[3045]*
Maximum inlet flow	l/min *[gpm]*	30 *[7.9]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Electrical

Voltage type		DC (AC only with RAC connection)
Voltage tolerance (nominal voltage)	%	-10 .... +10
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*
Maximum coil temperature	°C *[°F]*	150 *[302]*
Insulation class		H
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC
Coil weight with connection EN 175301-803	kg *[lbs]*	0.215 *[0.44]*

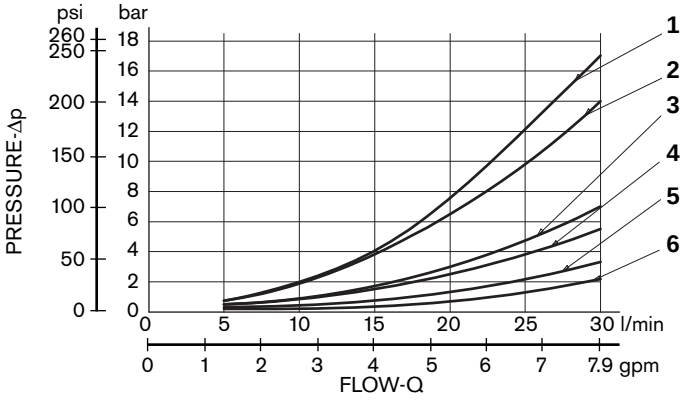
Voltage	V	12	13	24	27	48	110	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)
Voltage type		DC	DC	DC	DC	DC	DC	AC	AC	AC
Power consumption	W	26	26	26	26	26	26	29	29	29
Current [1]	A	2.15	2.00	1.10	1.00	0.54	0.27	1.20	0.29	0.14
Resistance [2]	Ω	5.5	6.5	22	28	89	413	18	338	1430

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 =OB 02	12 DC	EN 175301-803 (Ex. DIN 43650)	C3601 12DC	12 DC	R933000044
=OB 03	12 DC	AMP JUNIOR	C3603 12DC	12 DC	R933000047
=OB 04	12 DC	AMP JUNIOR Horizontal	C3604 12DC	12 DC	R933002913
=OB 07	12 DC	DEUTSCH DT 04-2P	C3607 12DC	12 DC	R933000048
=OB 31	12 DC	Cable 350 mm long	C3631 12DC	12 DC	R933000045
=AD 01 =AD 02	13 DC	EN 175301-803 (Ex. DIN 43650)	C3601 13DC	13 DC	R933000051
=AD 07	13 DC	DEUTSCH DT 04-2P	C3607 13DC	13 DC	R933000049
=OC 01 =OC 02	24 DC	EN 175301-803 (Ex. DIN 43650)	C3601 24DC	24 DC	R933000053
=OC 03	24 DC	AMP JUNIOR	C3603 24DC	24 DC	R933000057
=OC 04	24 DC	AMP JUNIOR Horizontal	C3604 24DC	24 DC	R933002914
=OC 07	24 DC	DEUTSCH DT 04-2P	C3607 24DC	24 DC	R933000058
=OC 31	24 DC	Cable 350 mm long	C3637 24DC	24 DC	R933000055
=AC 01 =AC 02	27 DC	EN 175301-803 (Ex. DIN 43650)	C3601 27DC	27 DC	R933000056
=AC 07	27 DC	DEUTSCH DT 04-2P	C3607 27DC	27 DC	R933000050
=OD 01 =OD 02	48 DC	EN 175301-803 (Ex. DIN 43650)	C3601 48DC	48 DC	R933000059
=OD 04	48 DC	AMP JUNIOR Horizontal	C3604 48DC	48 DC	R933002915
=OE 01 =OE 02	110 DC	EN 175301-803 (Ex. DIN 43650)	C3601 110DC	110 DC	R933000061
=OV 01 =OV 02	24 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 21.5DC	21.5 DC	R933000054
=OW 01 =OW 02	110 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 98DC	98 DC	R933000060
=OZ 01 =OZ 02	230 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 207DC	207 DC	R933000062

Characteristic curves

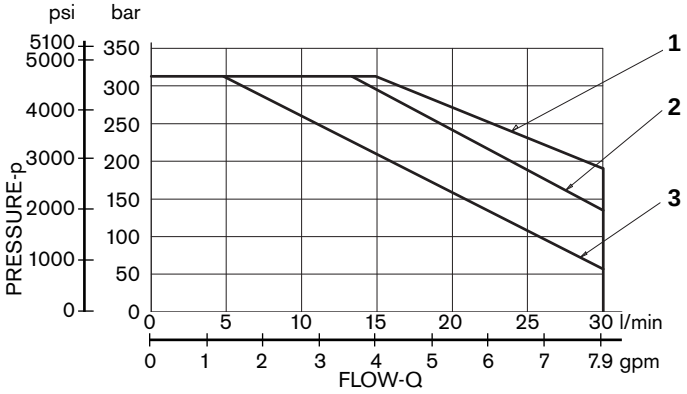
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANT	Curve No.				
	P>T	P>A	P>B	A>T	B>T
A201, A301, A401	3	2	2	1	1
X301, X401		4	4	5	5
Y301, Y401		4	4	5	5
B201, B301, B401		5	5	5	5
C201, C301, C401	5	4	4	6	6
D201, D301, D401		5	5	4	4
E201, E301, E401		4	4	6	6
N301, N401		4	4		
K201, K209		4	4	4	4

Performances limits

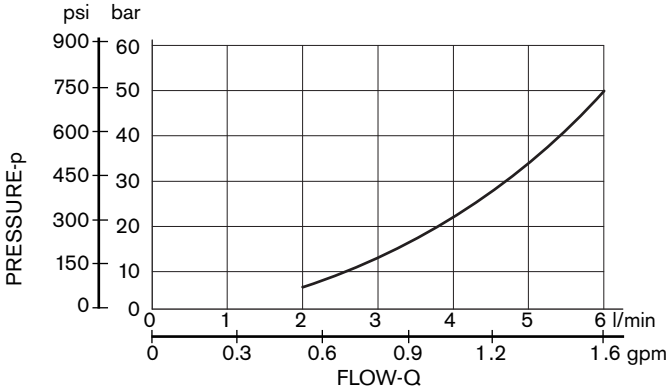
Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.



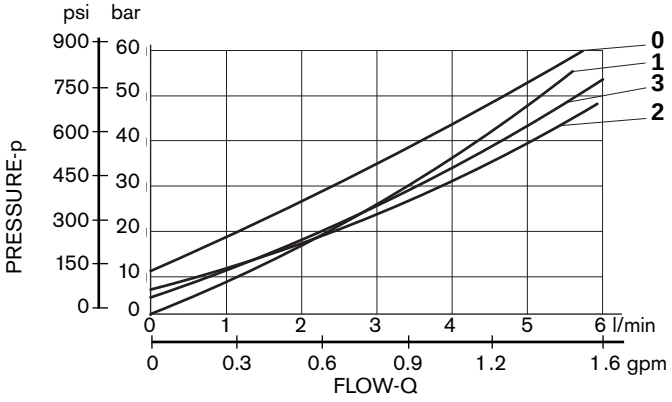
SPOOL VARIANT	Curve No.
A201-A301-A401-B201-B301-B401-Y401-X401-X301-Y301 C201-C301-C401-D201-D301-D401	1
K201-E201-E301-E401	2
N301, N401	3

The performance curves are measured with flow going across and coming back, like P>A and B>T. With “lever type” emergency control, the performance limits are slightly lower.

Minimum flow for efficiency of LS control

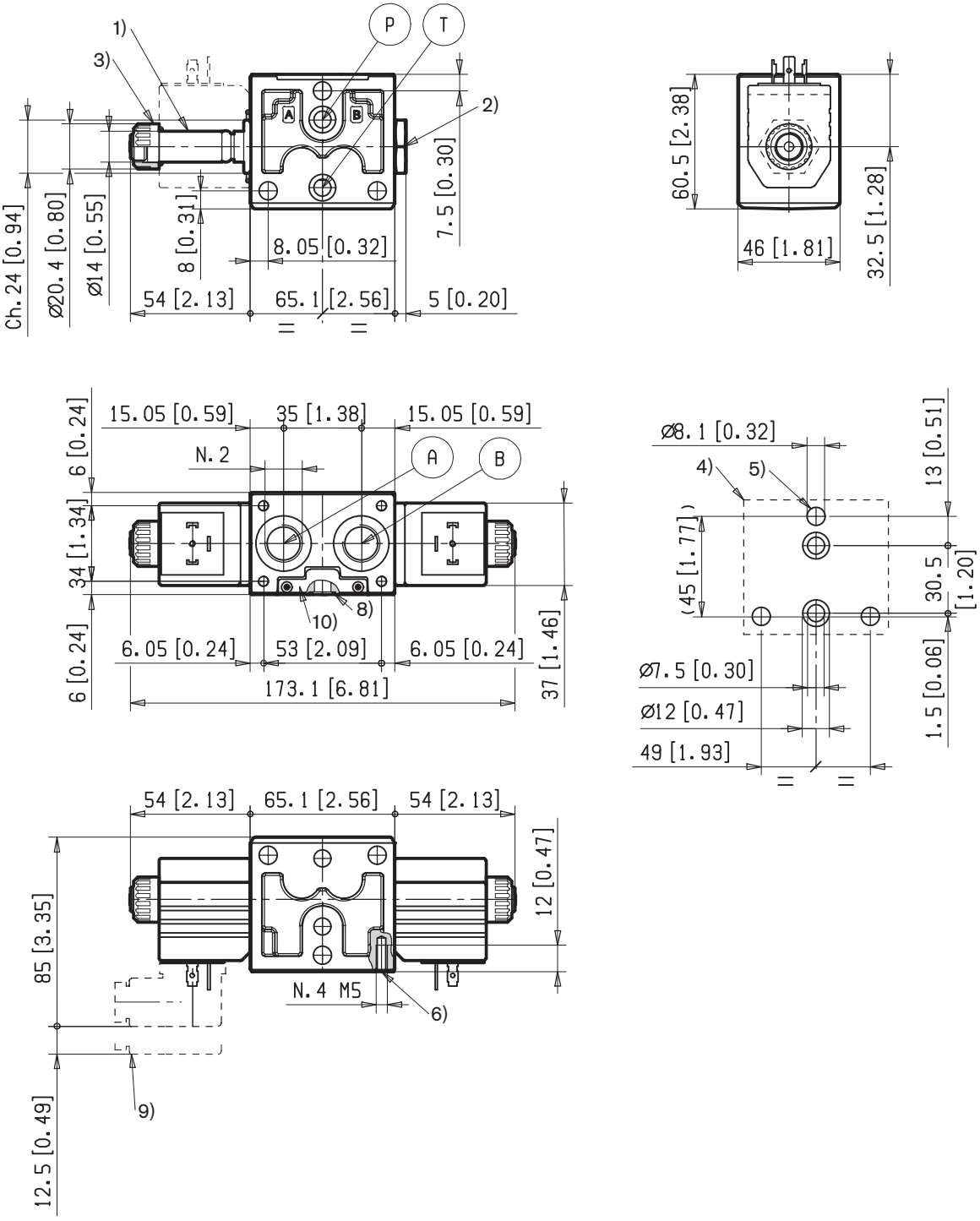


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar *[700-2950 psi]*	0
100-310 bar *[1400-4500 psi]*	1
25-50 bar *[350-700 psi]*	2
50-100 bar *[700-2950 psi]*	3

External Dimensions and Fittings



1 Solenoid tube hex 24 mm *[0.94 inch]*. Torque 22-24 Nm *[16.2-17.7 ft-lb]*.

2 Plug for 2 positions versions (4/2); hex 24 mm. Torque 22-24 Nm *[16.2-17.7 ft-lb]*.

3 Ring nut for coil locking (OD 24 mm); torque 3-4Nm *[2.2-3 ft-lb]*.

4 Flange specifications for coupling to ED intermediate elements.

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

6 Four threaded holes M5 for fitting a secondary flangeable element. Bolts M5 with recommended strength class DIN 8.8: torque 5-6 Nm *[3.6-4.4 ft-lb]*.

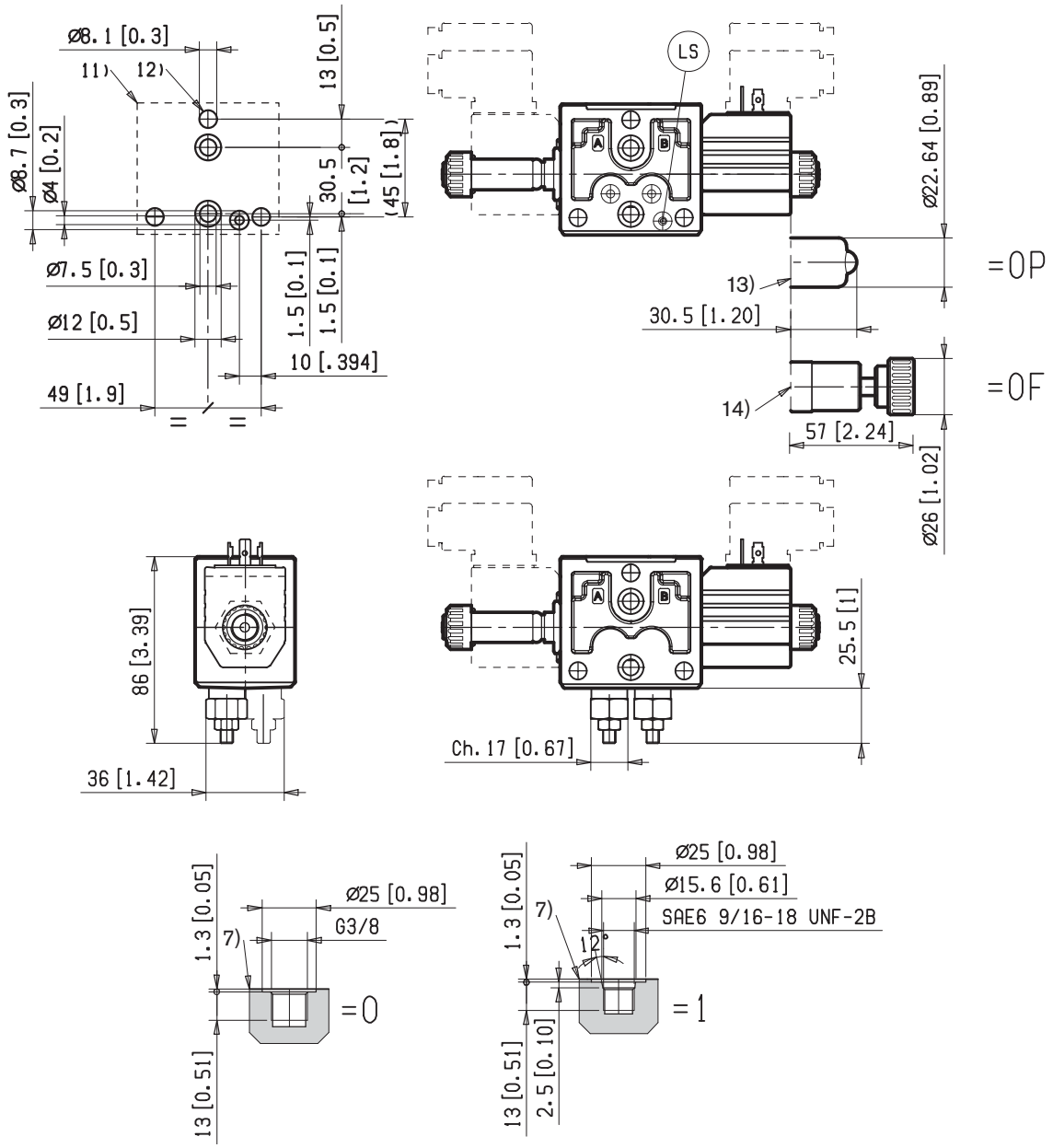
7 A and B ports.

8 O-Rings for P and T ports.

9 Clearance needed for connector removal.

10 Identification label.

External Dimensions and Fittings



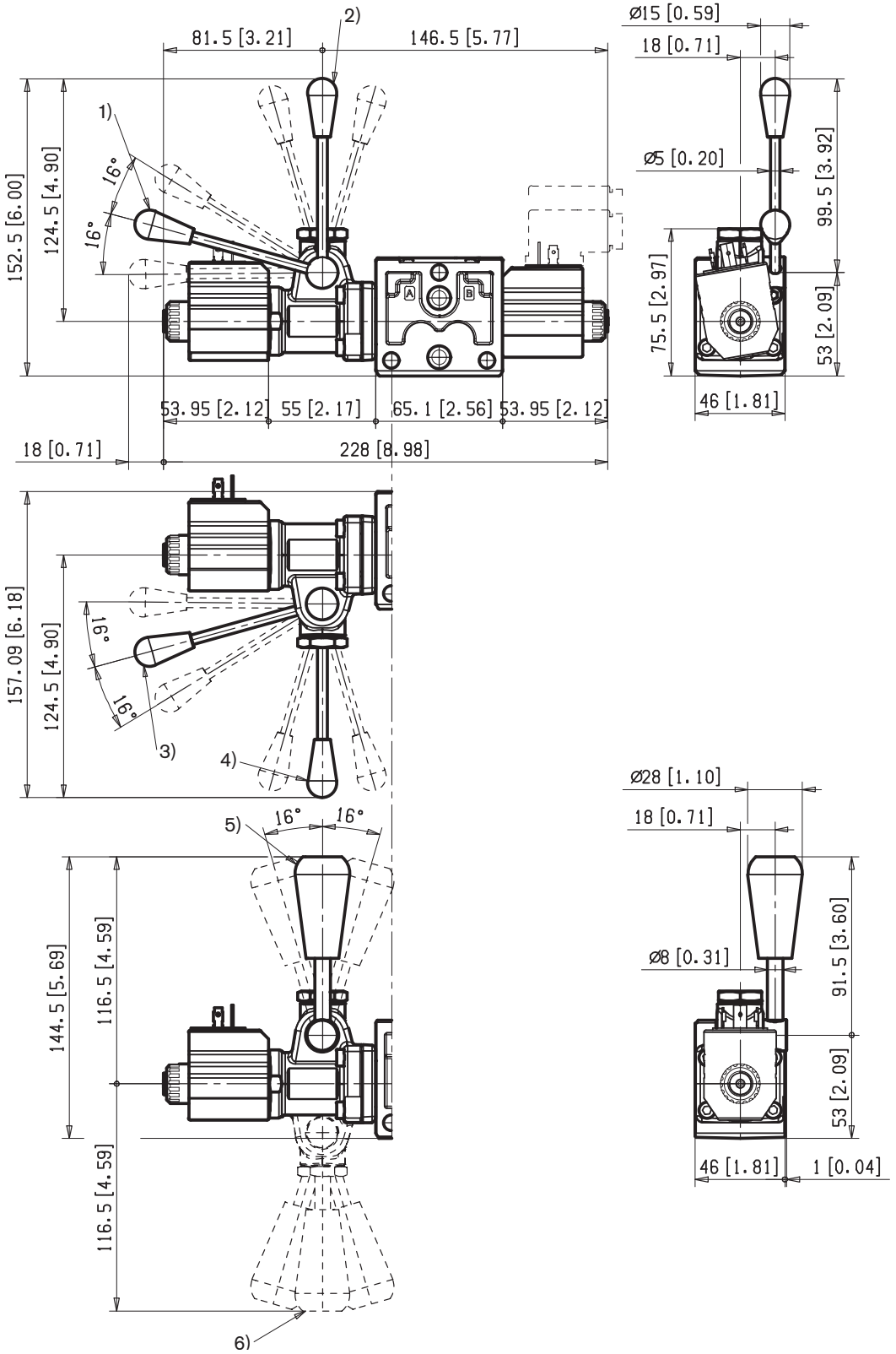
11 Flange specifications for coupling to ED intermediate elements.

12 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.75-16.2 ft-lb]*.

13 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933000042

14 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933000021 .

External Dimensions and Fittings

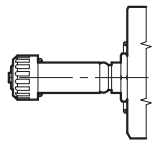


1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering Details: XA (if fitted to side A) or XB (if fitted to side B)
6 Ordering Details: X1 (if fitted to side A) or X9 (if fitted to side B)

Electric connection (or connections, in case of two solenoids)

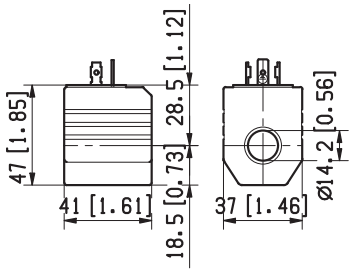
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

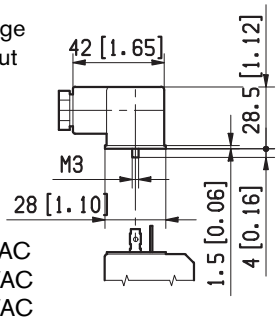


=02

With coils and with connectors non-assembled, type EN 175301-803.

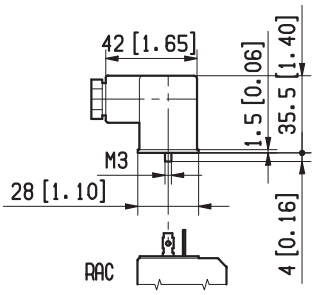
Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard.
182-LED-T-A1: with LED monitoring presence of voltage.
182-09-G-DO-2-1: with VDR (Voltage Dependent Resistor), to prevent input voltage over-shootings.



Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK
R933002893	182-LED-T-A1 12 DC/AC
R933002894	182-LED-T-A1 24 DC/AC
R933002896	182-LED-T-A1 48 DC/AC
R933002897	182-LED-T-A1 110 DC/AC
R933002898	182-LED-T-A1 230 DC/AC
R933002886	182-09-G-DO-2-1 12DC with VDR
R933002887	182-09-G-DO-2-1 24DC with VDR

532-09 RAC: special connectors with rectifier (RAC) for AC applications.

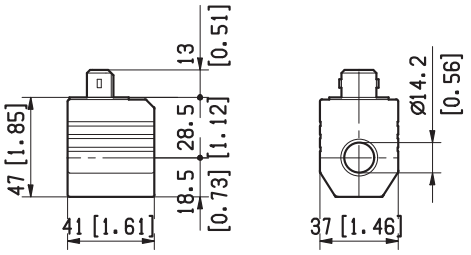


Mat. No.	Description
R933002892	532-09 RAC GRAY
R933002891	532-09 RAC BLACK

=03

With coils having AMP Junior connector, and with bi-directional diode.

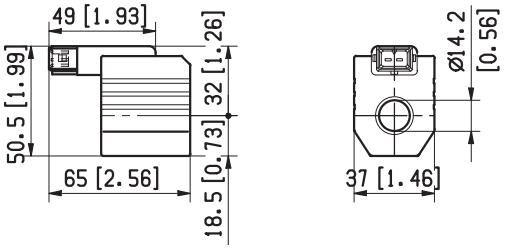
Protection class: IP 65 with female connector properly fitted (see drawing).



=04

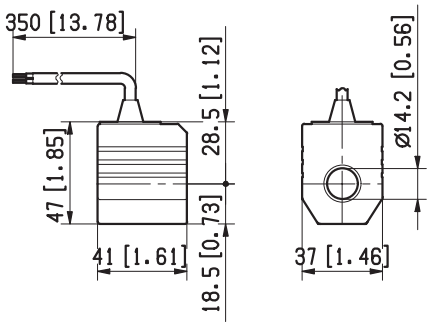
With coils having Horizontal AMP Junior connector, and with bi-directional diode.

Protection class: IP 65 with female connector properly fitted (see drawing).



=31

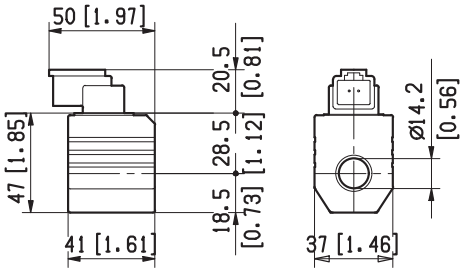
With coils having bi-directional diode and bipolar sheathed free lead, 350 mm long, without pins.



=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with or without secondary relief valves, with or without LS connections

RE 18301-02/10.09 1/10
Replaces: RIE00159/01.06

L8_11… (ED2-DZ)

Size 6
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 50 l/min *[13.2 gpm]*
Ports connection G 3/8 - SAE6 - G 1/2 - SAE8


DVI0013

Summary

General specifications

- Valve elements with solenoid operated directional spool
- Control spools operated by screwed-in solenoids with extractable coils
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; nickel plated surface
- Coils can be rotated 360° around the tube; they can be energized by AC current through special connectors with rectifier (RAC)
- Manual override (push-button or screw type) available upon request
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); AMP Junior; DT04-2P (Deutsch), free leads.

Ordering Details

L	8	_	1	1	_ _ _ _	_ _	_ _	_	_	_ _

Family
Directional Valve elements ED

Type
Size 6

Configuration [1]

Standard	= 0
With secondary valve on A	= 1
With secondary valve on B	= 2
With sec. valves on A and B	= 3
With channels for Load Sens.	= 4

Coil type
C45

Spool Variants [2]

4/3 operated on both sides a and b	= _ 2 _ _
4/2 operated on side a only	= _ 3 _ _
4/2 operated on side b only	= _ 4 _ _

Optional fittings

_ _ =	Lever type emergency [3]
0P =	Push-button type emergency
0F =	Screw type emergency

Secondary valves setting*

0* =	50-210 bar *[725-3045 psi]*
1 =	100-310 bar *[1450-4500 psi]*
2 =	25-50 bar *[362-725 psi]*
3 =	50-100 bar *[725-1450 psi]*

Ports

0 =	G 3/8 DIN 3852
1 =	9/16-18 UNF 2-B (SAE6)
2 =	G 1/2 DIN 3852
3 =	3/4-16 UNF 2-B (SAE8)

Electric connection

00 =	Without coils
01 =	With coils, without connectors
02 =	With coils and with non-assembled connectors, type EN 175301-803.
03 =	With coils having AMP Junior connector
07 =	With coils having DEUTSCH DT 04-2P connector

Voltage supply

	07	03	02	01	00	
00 =					■	Without coil
OB =	■	■	■	■		12V DC
AD =	■	■	■	■		13V DC
OC =	■	■	■	■		24V DC
AC =	■	■	■	■		27V DC
OD =			■	■		48V DC
OE =			■	■		110V DC
OV =			■	■		(21.5 DC) 24V AC
OW =			■	■		(98 DC) 110V AC
OZ =			■	■		(207 DC) 230V AC
	07	03	02	01	00	

Available connections

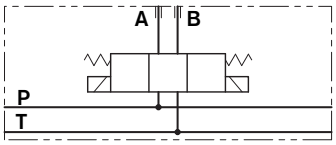
* Without secondary valves (versions L80__; L84__), the standard configuration corresponds to “0”.

[1] The secondary valves, with maximum flow capacity of 6 l/min *[1.6 gpm]*, are available only for elements with port sizes G 3/8 and SAE 6.

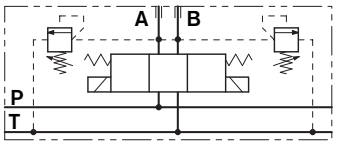
[2] The required hydraulic symbol and spool variant can be chosen by consulting page 3.

[3] Each different option for the type of emergency chosen implies a specific ordering code (refer to page 9).

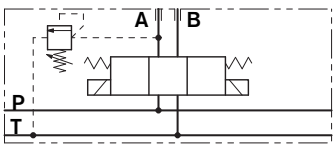
Configuration



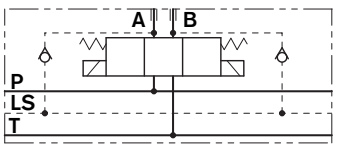
= 0



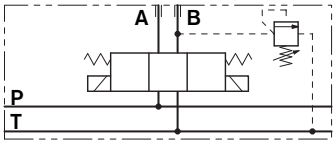
= 3



= 1

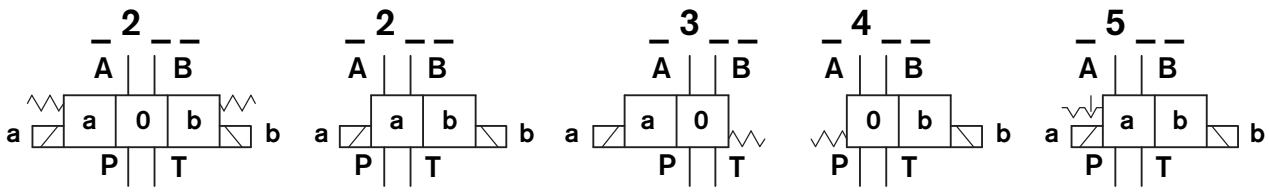


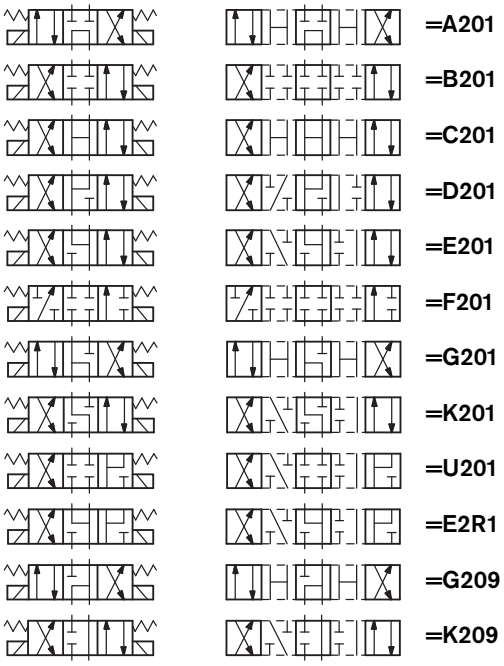
= 4

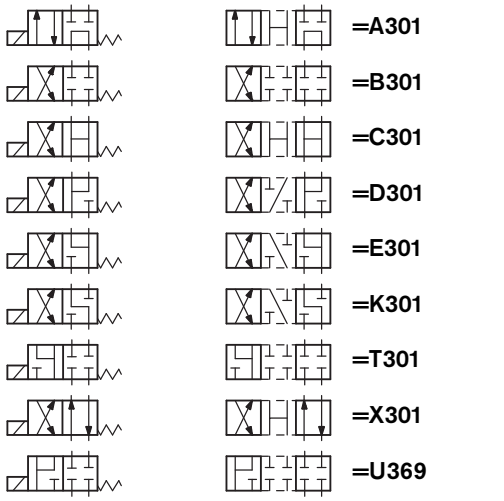


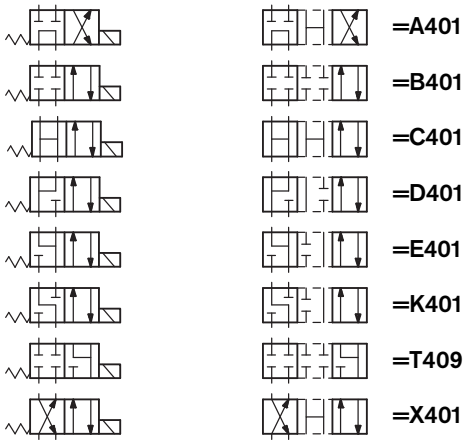
= 2

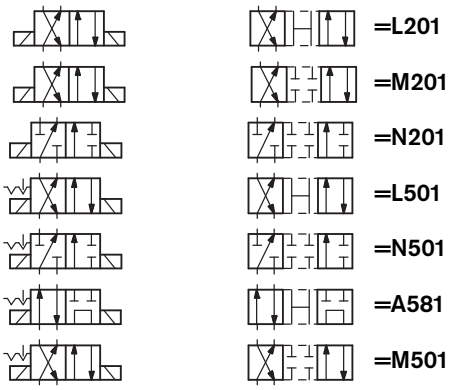
Spool variants

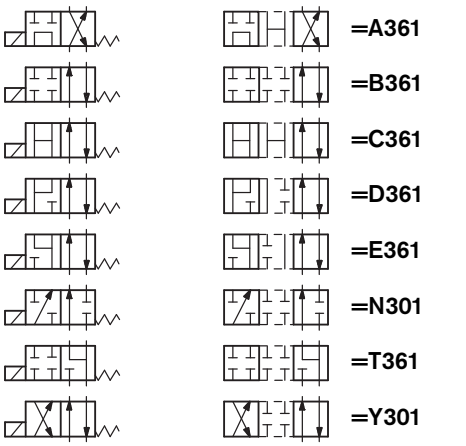


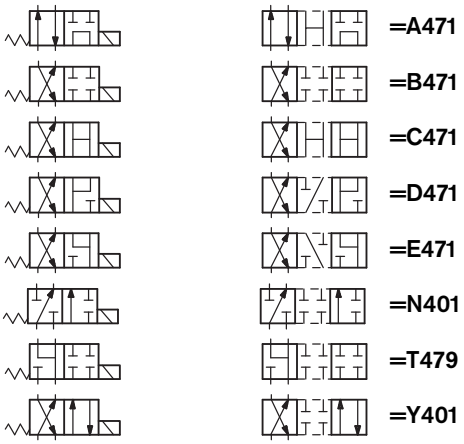


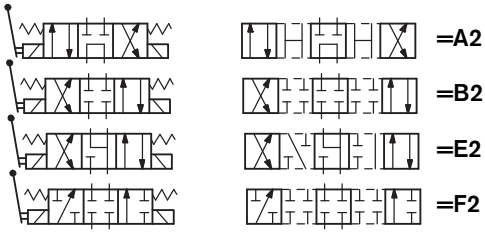










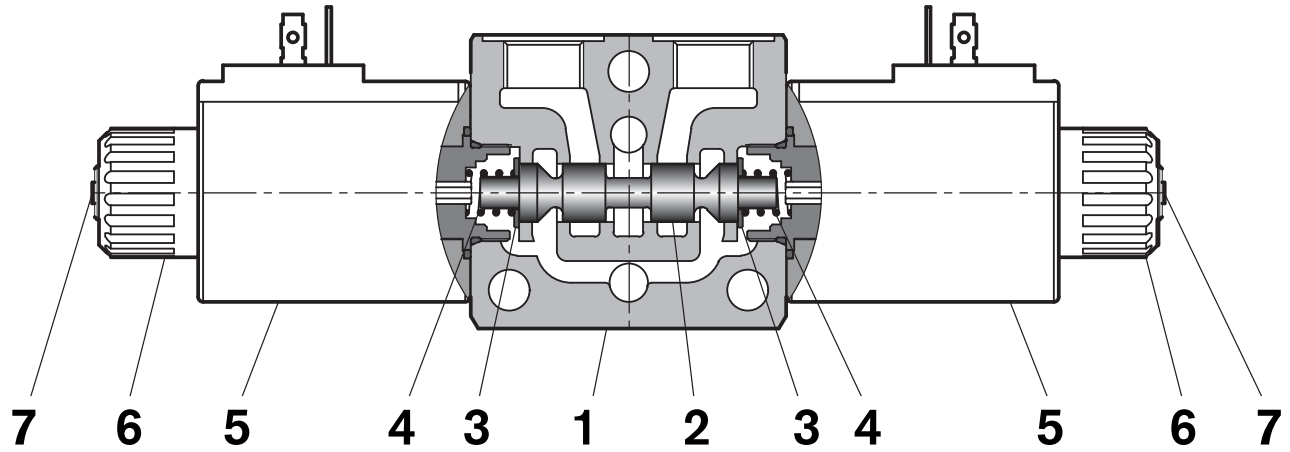


Principles of operation, cross section

The sandwich plate design directional valve elements L8_11… are compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4).

When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids	kg *[lbs]*	1.95 *[4.3]*
Valve element with 1 solenoid	kg *[lbs]*	1.45 *[3.2]*
Valve element with 2 solenoid, with lever type emergency	kg *[lbs]*	2.2 *[4.85]*
Valve element with 1 solenoid, with lever type emergency	kg *[lbs]*	1.7 *[3.75]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	310 *[4500]*
Maximum dynamic pressure at T	bar *[psi]*	250 *[3625]*
Max dynamic pressure, with lever type emergency at T	bar *[psi]*	100 *[1450]*
Maximum static pressure at T	bar *[psi]*	310 *[4500]*
Max static pressure, with lever type emergency at T	bar *[psi]*	290 *[4200]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-68....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Electrical

Voltage type		DC (AC only with RAC connection)
Voltage tolerance (nominal voltage)	%	-10 .... +10
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*
Maximum coil temperature	°C *[°F]*	150 *[302]*
Insulation class		H
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC
Coil weight with connection EN 175301-803	kg *[lbs]*	0.335 *[0.74]*

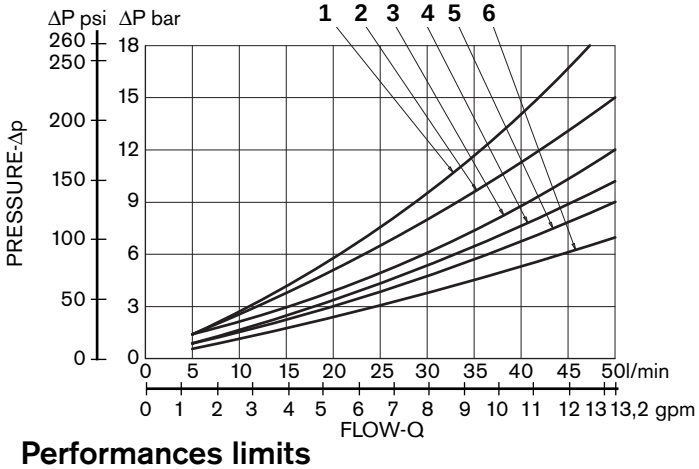
Voltage	V	12	13	24	27	48	110	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)
Voltage type		DC	DC	DC	DC	DC	DC	DC	DC	DC
Power consumption	W	33	31	33	33	33	35	33	33	35
Current (1)	A	2.8	2.3	1.4	1.2	0.7	0.32	1.6	0.34	0.16
Resistance (2)	Ω	4.24	5.42	17	21.8	69.8	341.8	13.6	285	1229

1) Nominal - 2) ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Code	Marking	Coil Mat no.
=OB 01 =OB 02	12 DC	EN 175301-803 (Ex. DIN 43650)	C4501 12DC	12 DC	R933000026
=OB 03	12 DC	AMP JUNIOR	C4503 12DC	12 DC	R933000027
=OB 07	12 DC	DEUTSCH DT 04-2P	C4507 12DC	12 DC	R933000030
=AD 01 =AD 02	13 DC	EN 175301-803 (Ex. DIN 43650)	C4501 13DC	13 DC	R933000028
=AD 03	13 DC	AMP JUNIOR	C4503 13DC	13 DC	R933000029
=AD 07	13 DC	DEUTSCH DT 04-2P	C4507 13DC	13 DC	R933000031
=OC 01 =OC 02	24 DC	EN 175301-803 (Ex. DIN 43650)	C4501 24DC	24 DC	R933000034
=OC 03	24 DC	AMP JUNIOR	C4503 24DC	24 DC	R933003630
=OC 07	24 DC	DEUTSCH DT 04-2P	C4507 24DC	24 DC	R933000032
=AC 01 =AC 02	27 DC	EN 175301-803 (Ex. DIN 43650)	C4501 27DC	27 DC	R933000035
=AC 03	27 DC	AMP JUNIOR	C4503 27DC	27 DC	R933000036
=AC 07	27 DC	DEUTSCH DT 04-2P	C4507 27DC	27 DC	R933000033
=OD 01 =OD 02	48 DC	EN 175301-803 (Ex. DIN 43650)	C4501 48DC	48 DC	R933000037
=OE 01 =OE 02	110 DC	EN 175301-803 (Ex. DIN 43650)	C4501 110DC	110 DC	R933000040
=OV 01 =OV 02	24 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 21.5DC	21.5 DC	R933000038
=OW 01 =OW 02	110 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 98DC	98 DC	R933000039
=OZ 01 =OZ 02	230 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 207DC	207 DC	R933000041

Characteristic curves

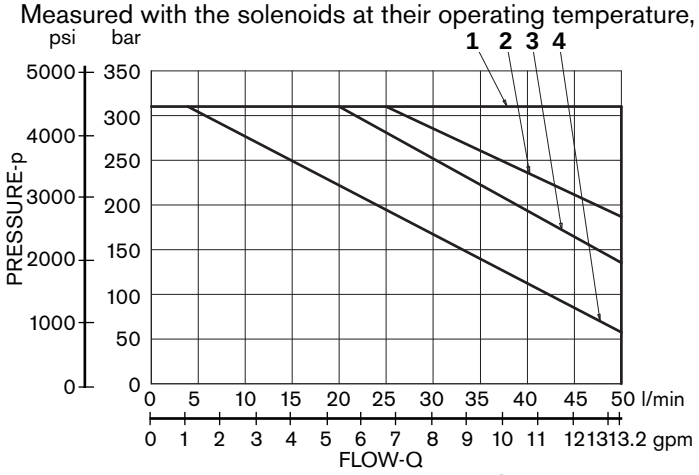
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANT	Curve No.				
	P>T	P>A	P>B	A>T	B>T
A201-A301-A401-A401-A471-A361-G201-G209	2	1	1	1	1
B201-B301-B401-B471-B361-L201-M201-U201-L501-M501		4	4	4	4
C201-C301-C401-C471-C361	6	5	5	6	6
D201-D301-D471-D401-D361		6	6	5	5
E201-E301-E401-E471-E361-E2R1-T301-T409		5	5	6	6
K201-K209-K301-T361-K401-T479		5	5	3	3
X301-X401-Y301-Y401		4	4	4	4
N301-N201-N401-F201-U361-N501		4	4		

Performances limits

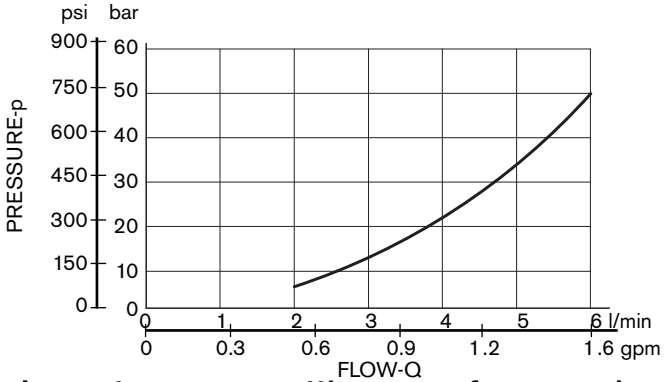
Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.



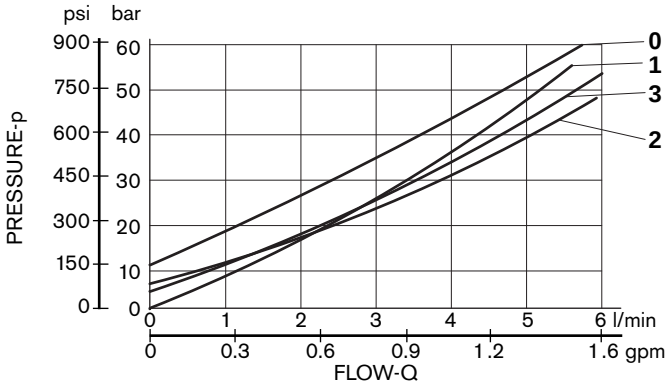
SPOOL VARIANT	Curve No.
A201-A301-A401-A471-A361- C201-C301-C401-C471-C361-G201-G209 - T301-T401-T479- T361	1
B201-B301-B401-B471-B361- D201-D301-D401- D471-D361 -K201-K209-K301-K401	2
X301-X401-Y301-Y401-M201-L201-U201-U369 -E201-E301-E401-E471-E361-E2R1	3
N301-N401-N201-N501-L501-M501-F201	4

The performance curves are measured with flow going across and coming back, like P>A and B>T. With “lever type” emergency control, the performance limits are slightly lower.

Minimum flow for efficiency of LS control

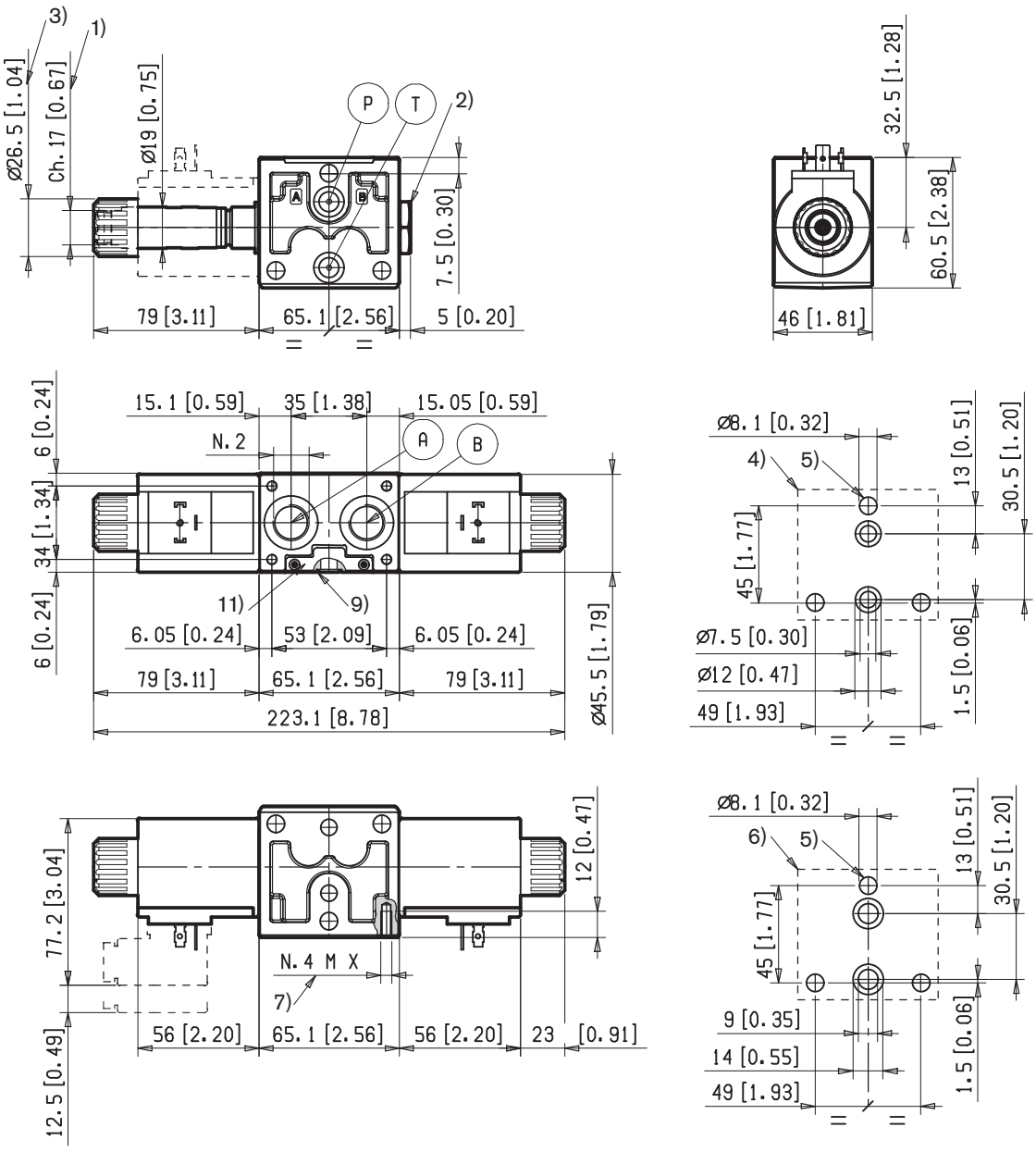


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar *[700-2950 psi]*	0
100-310 bar *[1400-4500 psi]*	1
25-50 bar *[350-700 psi]*	2
50-100 bar *[700-2950 psi]*	3

External Dimensions and Fittings



1 Solenoid tube hex 17 mm *[0.7 inch]*. Torque 22-24 Nm *[16.2-17.7 ft-lb]*.

2 Plug for 2 positions versions (4/2); hex 24 mm, torque 22-24 Nm *[16.2-17.7 ft-lb]*.

3 Ring nut for coil locking (OD 26.5 mm); torque 3 – 4 Nm *[2.2-3 ft-lb]*.

4 Flange specifications for coupling to ED intermediate elements with ports G 3/8 and SAE 6.

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

6 Flange specifications for coupling to ED intermediate elements with ports G 1/2 and SAE 8.

7 Four threaded holes M5 for fitting a secondary flangeable element (only for elements with ports G 3/8 and SAE 6). Bolts M5 with recommended strength class DIN 8.8: torque 5 – 6 Nm *[3.6-4.4 ft-lb]*.

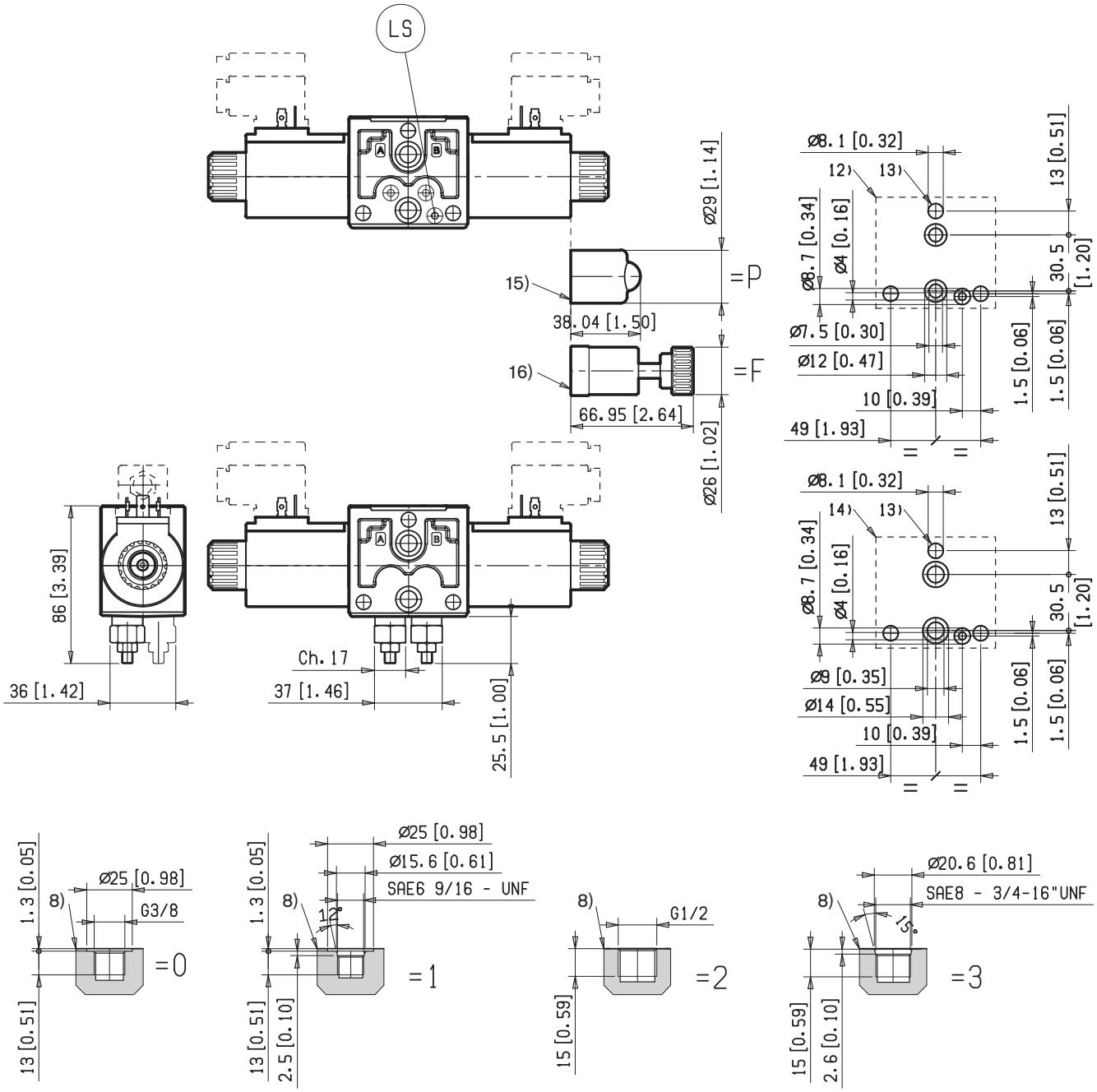
8 A and B ports.

9 O-Rings for P and T ports.

10 Clearance needed for connector removal.

11 Identification label.

External Dimensions and Fittings



12 Flange specifications for coupling to the ED intermediate elements with LS channels (for port sizes G 3/8 and SAE6).

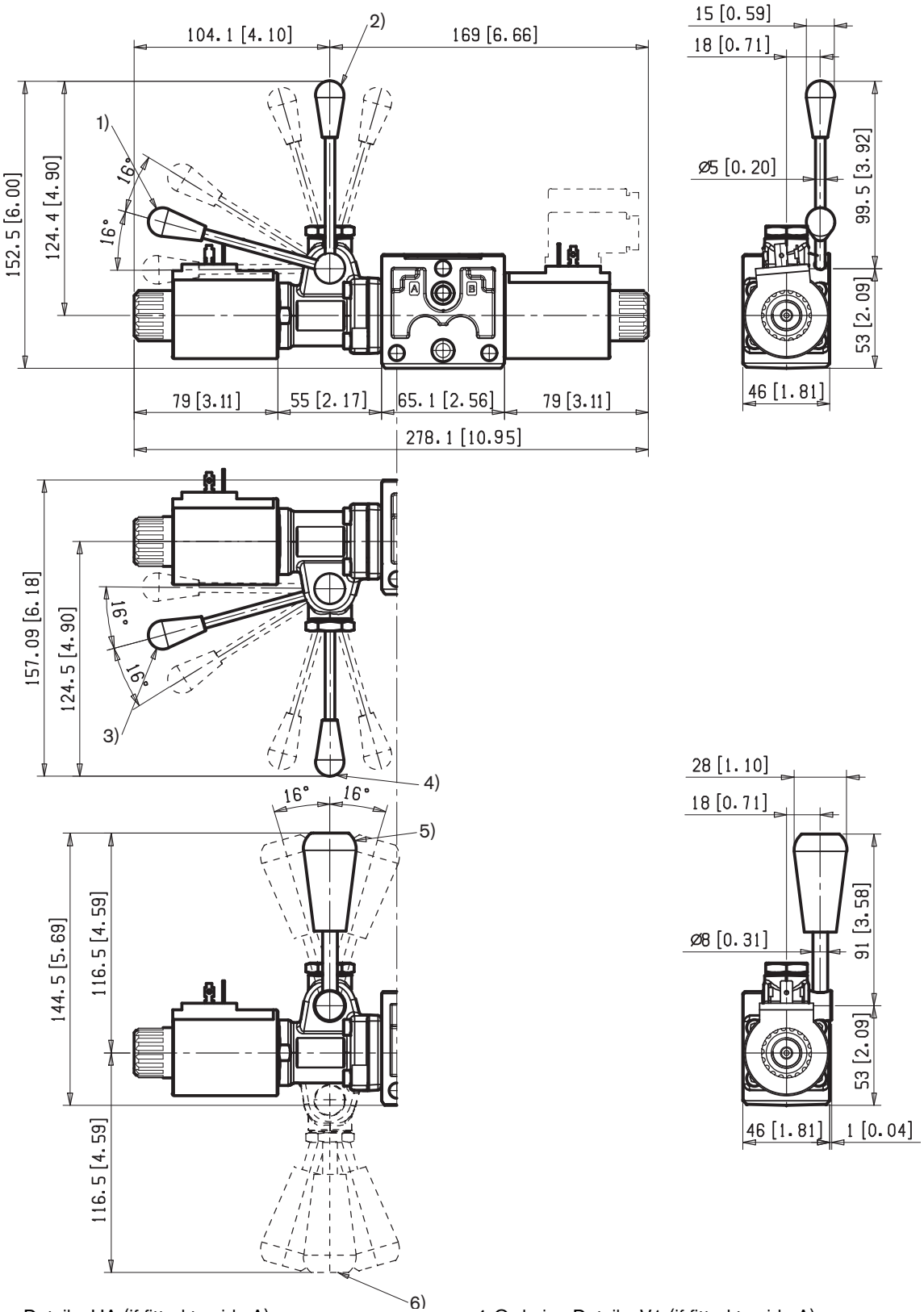
13 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class: DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

14 Flange specifications for coupling to the ED intermediate elements with LS channels (for port sizes G 1/2 and SAE 8)

15 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933000043.

16 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933000022

External Dimensions and Fittings

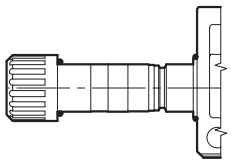


1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering Details: XA (if fitted to side A) or XB (if fitted to side B)
6 Ordering Details: X1 (if fitted to side A) or X9 (if fitted to side B)

Electric connection (or connections, in case of two solenoids)

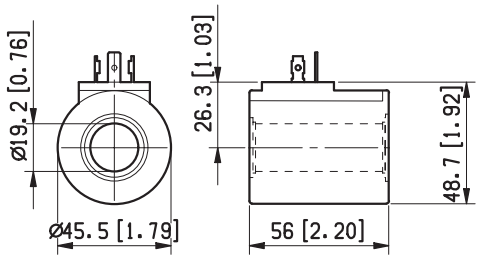
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

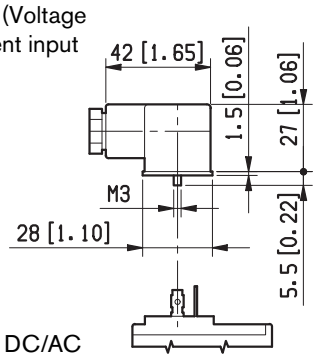


=02

With coils and with connectors non-assembled, type EN 175301-803.

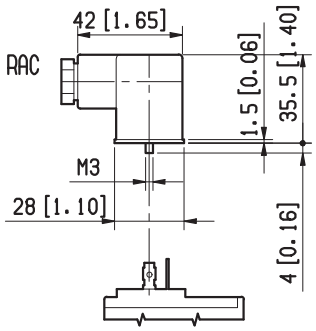
Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard.
182-LED-T-A1: with LED monitoring presence of voltage.
182-09-G-DO-2-1: with VDR (Voltage Dependent Resistor), to prevent input voltage over-shootings.



Mat. No.	Description
R933002885	182-09 GREY
R933002889	182-09 BLACK
R933002893	182-LED-T-A1 12 DC/AC
R933002894	182-LED-T-A1 24 DC/AC
R933002896	182-LED-T-A1 48 DC/AC
R933002897	182-LED-T-A1 110 DC/AC
R933002898	182-LED-T-A1 230 DC/AC
R933002886	182-09-G-DO-2-1 12DC with VDR
R933002887	182-09-G-DO-2-1 24DC with VDR

532-09 RAC: special connectors with rectifier (RAC) for AC applications.

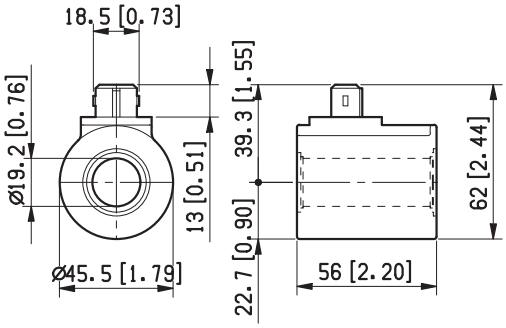


Mat. No.	Description
R933002892	532-09 RAC GRAY
R933002891	532-09 RAC BLACK

=03

With coils having AMP Junior connector, and with bi-directional diode.

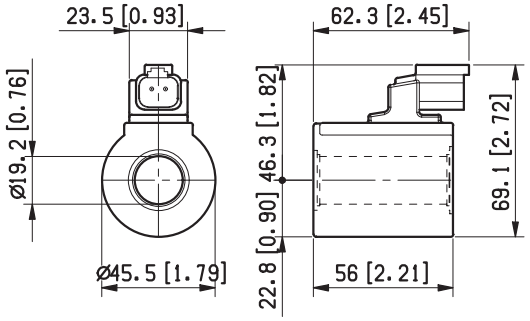
Protection class: IP 65 with female connector properly fitted (see drawing).



=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with soft-shift

RE 18301-03/10.09 1/8

L8011… (ED2S-DZ)

Size 6
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 50 l/min *[13.2 gpm]*
Ports connection G 3/8


DVI0007

Summary

General specifications

- Valve elements with solenoid operated directional spool.
- Switching time adjustment by calibrated orifices.
- Control spools operated by screwed-in solenoids with extractable coils.
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; nickel plated surface.
- Coils can be rotated 360° around the tube; they can be energized by AC current through special connectors with rectifier (RAC).
- Manual override (push-button or screw type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650); AMP Junior; DT04-2P (Deutsch), free leads.

Ordering Details

L	8	0	1	1	_	_	_	_	_ _	_ _	0	0	_	_

Family
Directional valve elements ED

Type
Size 6

Configuration
Standard

Coil type
C45

Spool variants (refer to page 3)
With two solenoids, side a and b = _ 2 _ _
With one solenoid, side a only = _ 3 _ _

Emergency operation
_ = Standard
F = Screw type emergency
P = Push button type emergency

Orifice type
D = 0.5 mm hole, with 0.4 mm wire (Equivalent to 0.3 mm hole *[0,012inch]*)
E = 0.4 mm *[0,016inch]* hole
G = 0.5 mm *[0,020inch]* hole

Ports
G 3/8 ISO 228

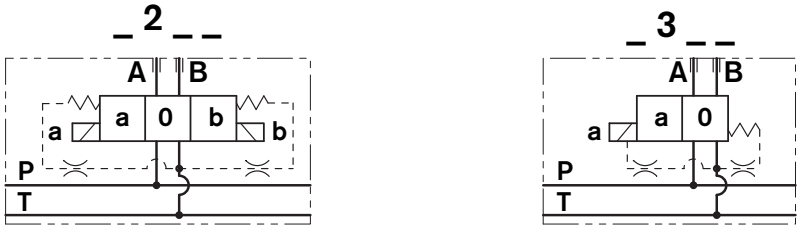
Electric connection
00 = Without coils
01 = With coil, without connector
02 = With coils and with connectors non-assembled, type EN 175301-803
03 = With coils having AMP Junior connector
07 = With coils having DEUTSCH DT 04-2P connector

Voltage supply

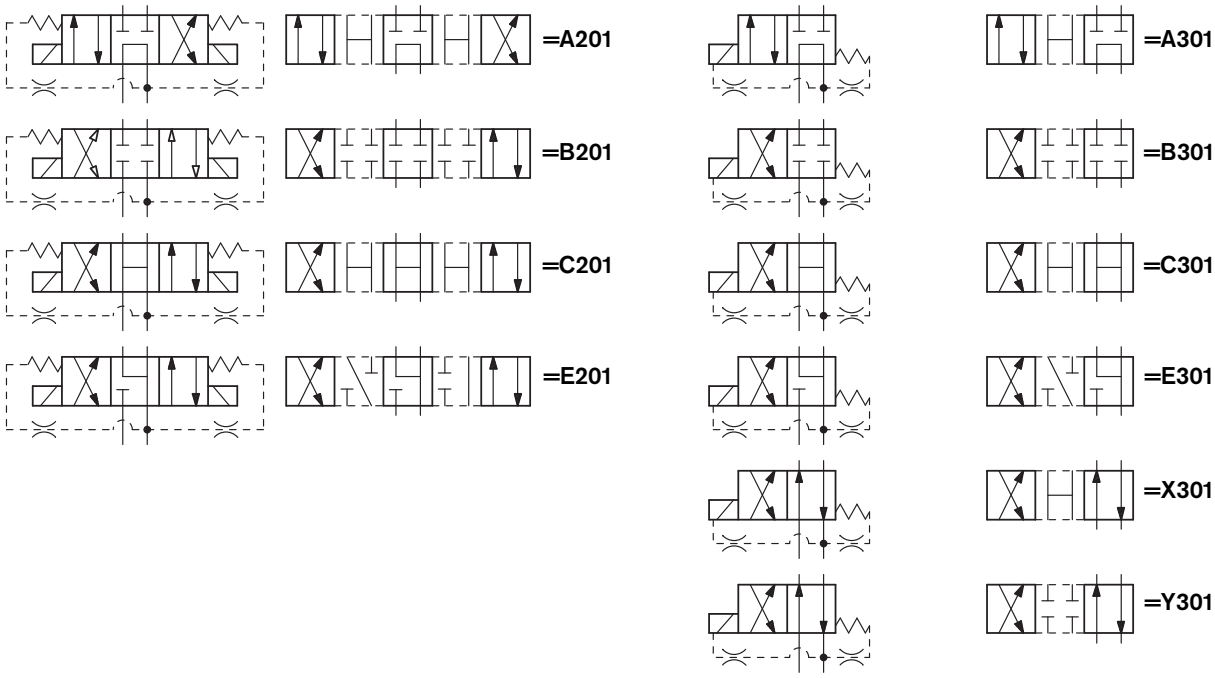
	07	03	02	01	00	
00 =					■	Without coil
OB =	■	■	■	■		12V DC
AD =	■	■	■	■		13V DC
OC =	■		■	■		24V DC
AC =	■	■	■	■		27V DC

Available connections

Configuration



Spool variants



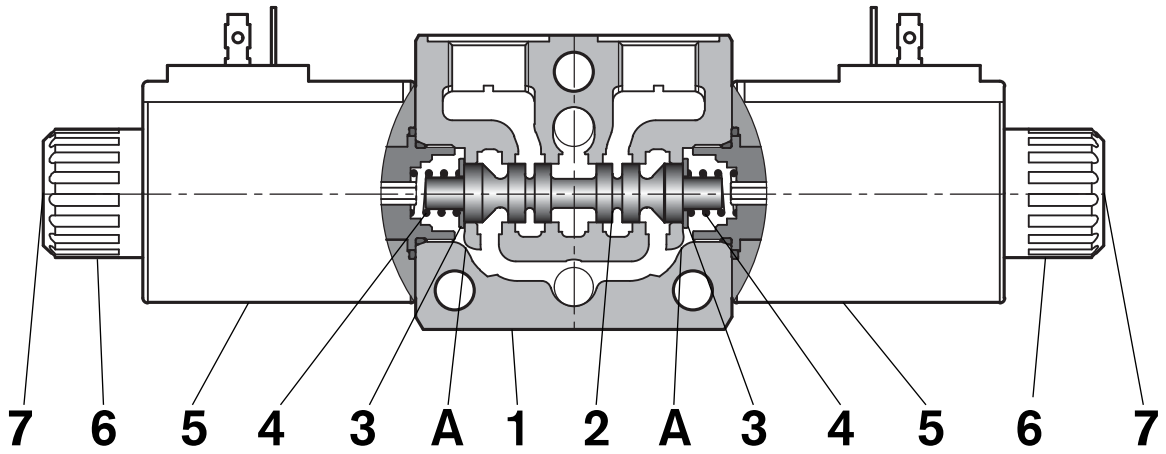
Principles of operation, cross section

The sandwich plate design directional valve elements L8011… are compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow, with the option to adjust the spool switching time. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4).

The spring chambers are connected to the tank port through orifices. When energized, the spool (2) travels and oil is pushed to tank from one of the spring chambers: if the cross section of the orifices changes, the switching time changes as well. Three orifice sizes are available: smaller orifice diameter results in longer switching time, even though the actual time is dependent upon pressure, flow and viscosity.

When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position to the required end position, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids	kg *[lbs]*	1.95 *[4.3]*
Valve element with 1 solenoid	kg *[lbs]*	1.45 *[3.2]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	310 *[4496]*
Maximum dynamic pressure at T	bar *[psi]*	180 *[2611]*
Maximum static pressure at T	bar *[psi]*	250 *[3626]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Orifice sizes available in A position	Orifice type	Ø mm *[inch]*	Code
	D	0,3 *[0,012]*	18-00944
	E	0,4 *[0,016]*	18-0093
	G	0,5 *[0,020]*	18-0094

Electric

Voltage type		DC								
Available voltages	V	12 27								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Power consumption	W	33								
Duty		Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Switching time	ms	max 400, depending from orifice diameter								
Insulation class		H								
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight	kg *[lbs]*	0.335 *[0.739]*								
Voltage	V	12	13	24	27					
Voltage type		DC	DC	DC	DC					
Power consumption	W	33	31	33	33					
Current (1)	A	2.8	2.4	1.4	1.2					
Resistance (2)	Ω	4.2	5.2	17	21.7					

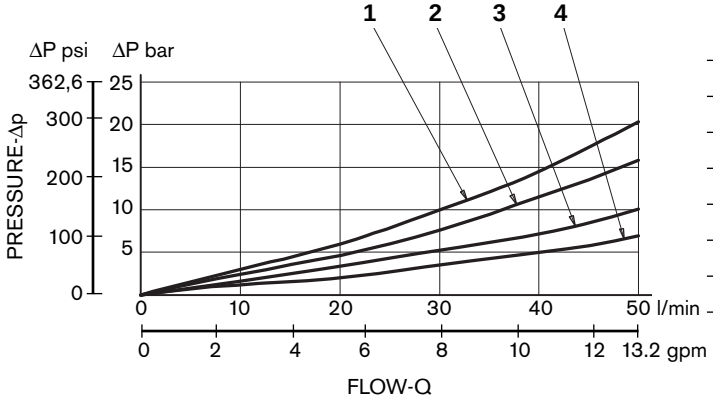
1) Nominal

2) ± 7% at temperature 20°C *[68° F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	C4501 12DC	12 DC	R933000026
=OB 03	12 DC	AMP JUNIOR	C4503 12DC	12 DC	R933000027
=OB 07	12 DC	DEUTSCH DT 04-2P	C4507 12DC	12 DC	R933000030
=AD 01 **=AD 02**	13 DC	EN 175301-803 (Ex. DIN 43650)	C4501 13DC	13 DC	R933000028
=AD 03	13 DC	AMP JUNIOR	C4503 13DC	13 DC	R933000029
=AD 07	13 DC	DEUTSCH DT 04-2P	C4507 13DC	13 DC	R933000031
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	C4501 24DC	24 DC	R933000034
=OC 07	24 DC	DEUTSCH DT 04-2P	C4507 24DC	24 DC	R933000032
=AC 01 **=AC 02**	27 DC	EN 175301-803 (Ex. DIN 43650)	C4501 27DC	27 DC	R933000035
=AC 03	27 DC	AMP JUNIOR	C4503 27DC	27 DC	R933000036
=AC 07	27 DC	DEUTSCH DT 04-2P	C4507 27DC	27 DC	R933000033

Characteristic curves

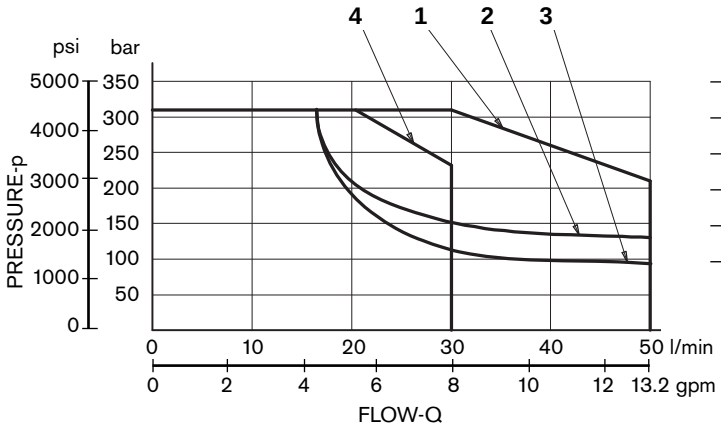
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



SPOOL VARIANT	Curve No.				
	P>T	P>A	P>B	A>T	B>T
A201, A301	2	1	1	1	1
B201, B301		3	3	3	3
C201, C301	4	3	3	4	4
E201, E301		3	3	4	4
X301, Y301		3	3	3	3

Performances limits

Measured with the solenoids at their operating temperature, 10% under voltage and without pre-loading of the tank.

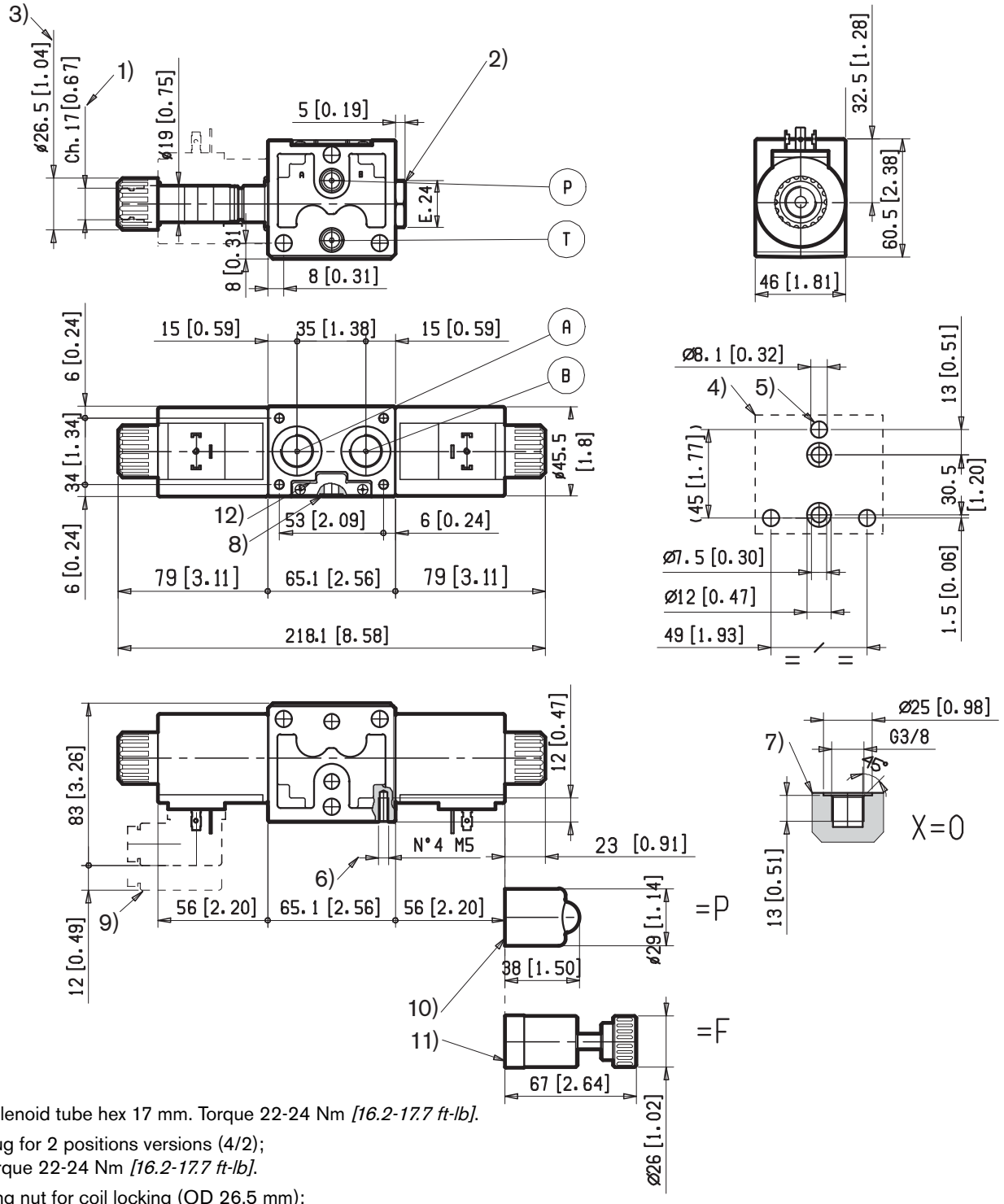


SPOOL VARIANT	Curve No.
A201, A301	1
B201, B301, C201, C301	2
E201, E301	3
X301, Y301	4

The performance range has been established by employing a 0.3 mm orifice. The performance range is wider with larger orifices.

The performance curves are measured with flow going across and coming back, like P>A and B>T. With “lever type” emergency control, the performance limits are slightly lower.

External Dimensions and Fittings



1 Solenoid tube hex 17 mm. Torque 22-24 Nm *[16.2-17.7 ft-lb]*.

2 Plug for 2 positions versions (4/2); torque 22-24 Nm *[16.2-17.7 ft-lb]*.

3 Ring nut for coil locking (OD 26,5 mm); torque 5-6 Nm *[3.7-4.4 ft-lb]*.

4 Flange specifications for coupling to ED intermediate elements.

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

6 Four threaded holes M5 for fitting a secondary flangeable element. Bolts M5 with recommended strength class DIN 8.8: torque 5-6 Nm *[3.6-4.4 ft-lb]*.

7 A and B ports.

8 O-Rings for P and T ports.

9 Clearance needed for connector removal.

10 Optional push-button, EP type, for emergency spool opening: it is pressure stuck to the ring nut for coil locking. Mat. Number R933000043.

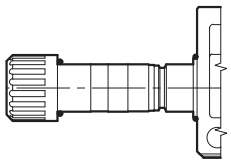
11 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 Nm *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933000022.

12 Identification label.

Electric connection (or connections, in case of two solenoids)

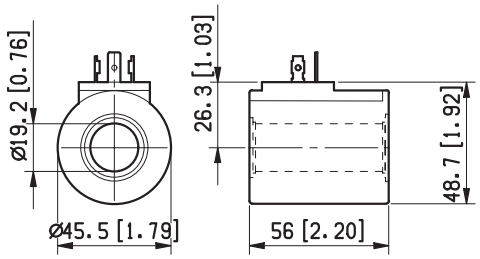
=00

Without coils, but with ring nut and O-Rings for coil fitting (solution recommended for flexible stock handling)



=01

With coils having plug-in pins EN 175301-803, without connectors

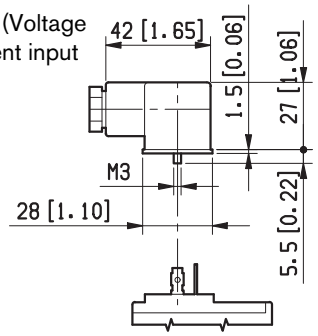


=02

With coils and with connectors non-assembled, type EN 175301-803.

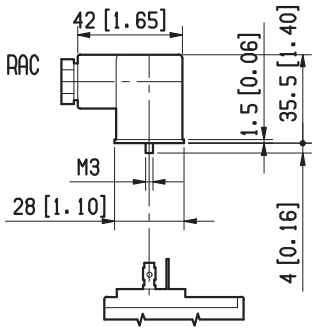
Protection class: IP 65 when connector with seal is properly screwed down, and cable clamp is correctly tightened.

182-09: Standard.
182-LED-T-A1: with LED monitoring presence of voltage.
182-09-G-DO-2-1: with VDR (Voltage Dependent Resistor), to prevent input voltage over-shootings.



Mat. No.	Description
R933002885	182-09 GREY
R933002889	182-09 BLACK
R933002893	182-LED-T-A1 12 DC/AC
R933002894	182-LED-T-A1 24 DC/AC
R933002896	182-LED-T-A1 48 DC/AC
R933002897	182-LED-T-A1 110 DC/AC
R933002898	182-LED-T-A1 230 DC/AC
R933002886	182-09-G-DO-2-1 12DC with VDR
R933002887	182-09-G-DO-2-1 24DC with VDR

532-09 RAC: special connectors with rectifier (RAC) for AC applications.

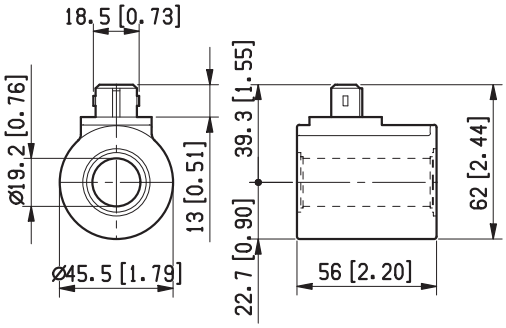


Mat. No.	Description
R933002892	532-09 RAC GREY
R933002891	532-09 RAC BLACK

=03

With coils having AMP Junior connector, and with bi-directional diode.

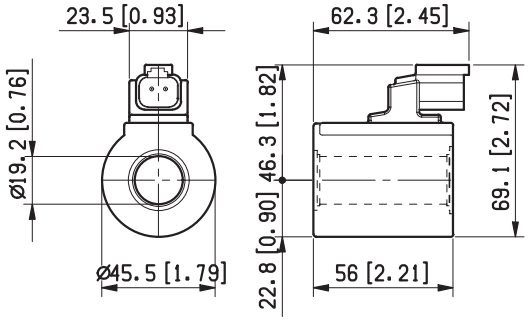
Protection class: IP 65 with female connector properly fitted (see drawing).



=07

With coils having DEUTSCH DT 04-2P connector, and with bi-directional diode.

Protection class: IP 69 K with female connector properly fitted (see drawing).



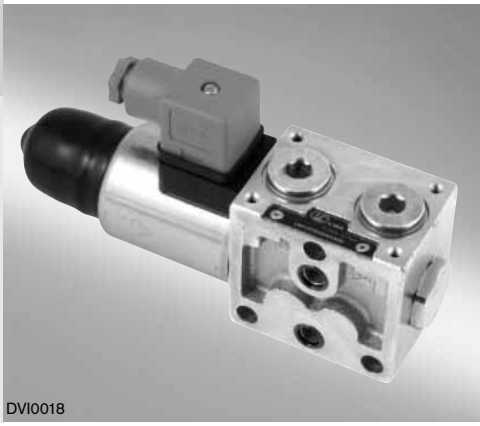
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

Directional valve elements with proportional control of Tank unloaded excess flow

RE 18301-04/10.09 1/10
Replaces: RIE00159/01.06

L808003P… (ED4-PT)

Size 6
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 28 l/min *[7.4 gpm]*


DVI0018

Summary

General specifications

- Valve element with direct proportional control of spool.
- Proportional, non pressure compensated, valve element for partial or total unloading to Tank of P flow.
- Control spool operated by screwed-in solenoids with extractable coils.
- In the de-energized condition, the control spool is held in normal position by return spring.
- Wet pin proportional tubes for DC coils, with push rod for mechanical override; nickel plated surface.
- Manual override (push-button, screw or lever type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650) and DT04-2P (Deutsch).

Ordering Details

L	8 0	8 0	0 3 P	_	_ _	_ _	0 0	_ _

Family
Directional valve elements ED

Type
Size 6, proportional

Coil type
D15

Spool variant
2/2 normally open proportional P to T, controlled side a

Nominal flow *
12 l/min *[3.2 gpm]* = 1
18 l/min *[4.75 gpm]* = 2
25 l/min *[6.6 gpm]* = 3

Optional fittings
_ _ = Without emergency
0P = Push-button type emergency
0F = Screw type emergency
_ _ = Lever type emergency [1)]

Electric connection
01 = With coils, without connectors
02 = With coils and with non-assembled connectors, type EN 175301-803
03 = With coils having AMP Junior connector
07 = With coils having DEUTSCH DT 04-2P connector

Voltage supply

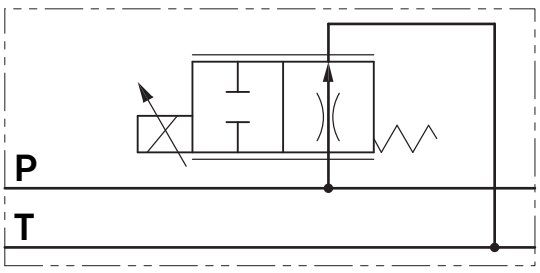
	31	07	03	02	01
OB = 12V DC					
OC = 24V DC					

Available Connections

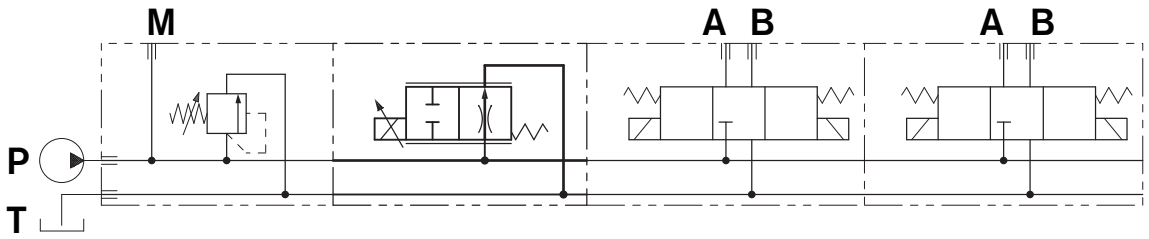
[1)] As lever type emergency a choice of options is available and each one implies a specific ordering code (refer to page 7).

* With ΔP (P > T) 10 bar *[145 psi]*.

Spool variant



Example of application



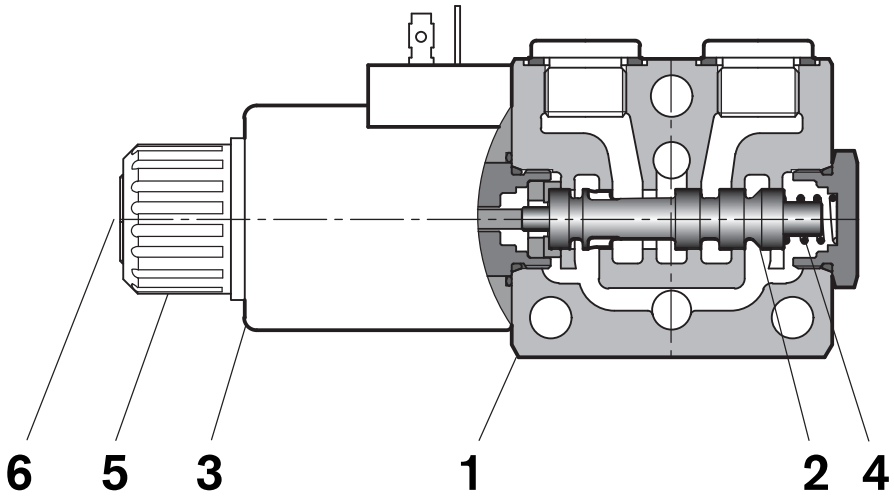
Principles of operation, cross section

The sandwich plate design valve elements L808003P… are compact direct operated proportional solenoid valves which divert totally or partially the inlet P flow to Tank.

These elements basically consist of a stackable housing (1) with a control spool (2), one solenoid (3), and one return spring (4).

With the solenoid de-energized, the return spring (4) keeps the spool (2) in its rest position “0” and all the inlet P flow passes through the valve and is unloaded to Tank. When energized by the electronic feed regulator, the solenoid (3) displaces the control spool (2) from its rest position proportionally to the current received and proportionally restricts the flow area to Tank. A regulated, non pressure compensated, oil flow is diverted from P to T and the remaining amount of inlet flow in the P line remains available for the downstream operators.

The coil (3) is fastened to the solenoid tube by a ring nut (5). A pin (6) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 1 solenoid, pins EN175301-803	kg *[lbs]*	1.70 *[3.75]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P	bar *[psi]*	310 *[4500]*
Maximum inlet flow	l/min *[gpm]*	28 *[7.4]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=10...12 ISO 4406: class 19/17/14 NAS 1638: class 8
Viscosity range	mm^2/s	20....380 (optimal 30....46)

Electrical

Voltage type		PWM	Power Wave Modulation pre-set at 120 Hz								
Voltage tolerance (nominal voltage)		%	-10 .... +10								
Duty			Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature		°C *[°F]*	150 *[302]*								
Insulation class			H								
Compliance with			Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight		kg *[lbs]*	0.335 *[0.739]*								
Voltage		V	12	24							
Current [1]		A	1.76	0.88							
Coil resistance [2]	- Cold value at 20°C	Ω	4	16							
	- Max. hot value	Ω	6.1	24.4							

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	12 DC	R933000092
=OB 03	12 DC	AMP JUNIOR	D1530	12 DC	R933002877
=OB 07	12 DC	DEUTSCH DT 04-2P	D15 07	12 DC	R933000094
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	24 DC	R933000093
=OC 07	24 DC	DEUTSCH DT 04-2P	D15 07	24 DC	R933002798

Electronic control

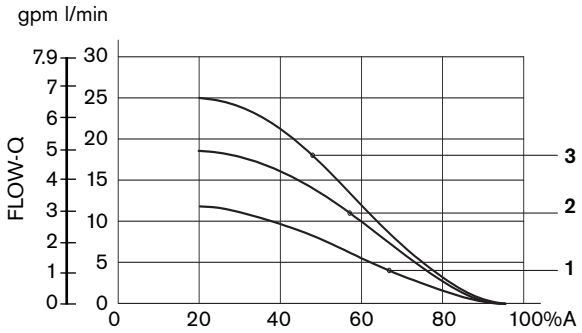
Electronic feed regulators [1]	Upon request

[1] An electronic, open loop type, regulator with plug-in pins EN 175301-803 is available and can be fitted onto the solenoid directly. For valve elements with two solenoids, two electronic regulators are needed.

Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.

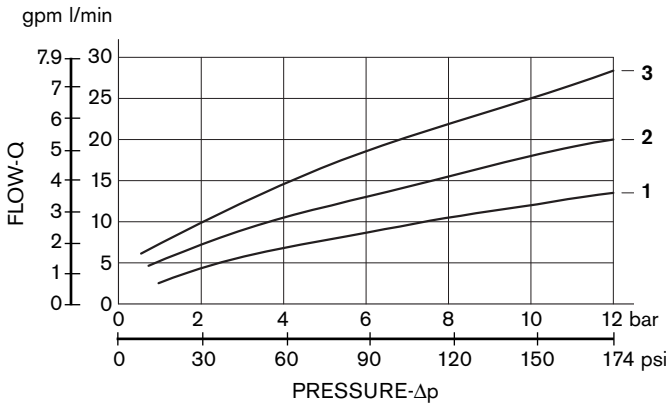
P → T, vs %A = Percentage of the maximum current supplied to the coil



%A = Percentage of the maximum current supplied to the coil

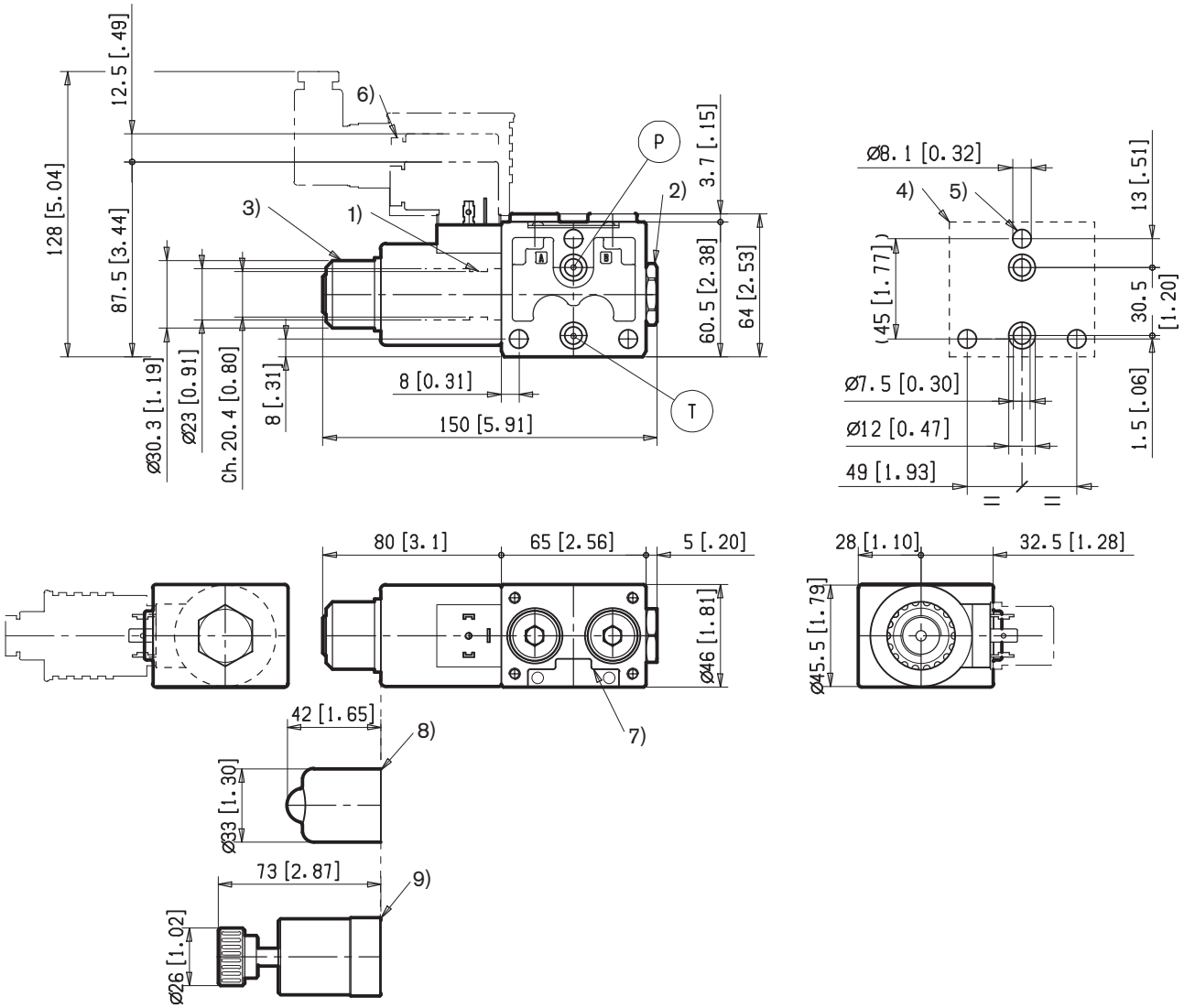
Curve No.	Nominal Flow With ΔP (P > T) 10bar *[145psi]*	Max flow	Max pressure at P
1	12 l/min *[3.17gpm]*	14 l/min *[3.7gpm]*	310 bar *[4500psi]*
2	18 l/min *[4.75gpm]*	20 l/min *[5.3gpm]*	310 bar *[4500psi]*
3	25 l/min *[6.6 gpm]*	28 l/min *[7.4gpm]*	310 bar *[4500psi]*

Pressure Drop



Curve No.	Nominal Flow With ΔP (P > T) 10bar *[145psi]*	Max flow	Max pressure at P
1	12 l/min *[3.17gpm]*	14 l/min *[3.7gpm]*	310 bar *[4500psi]*
2	18 l/min *[4.75gpm]*	20 l/min *[5.3gpm]*	310 bar *[4500psi]*
3	25 l/min *[6.6 gpm]*	28 l/min *[7.4gpm]*	310 bar *[4500psi]*

External Dimensions and Fittings



1 Solenoid tube key.20,4. Torque 22-24 Nm *[16.2-17.7 ft-lb]*.

2 Plug for 2 positions versions; hex 24 mm, torque 22-24 Nm *[16.2-17.7 ft-lb]*.

3 Ring nut for coil locking (OD 30.3 mm [1.18 In]); torque 6–7 Nm *[4.4 – 5.2 ft-lb]*.

4 Flange specifications for coupling to ED intermediate elements.

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

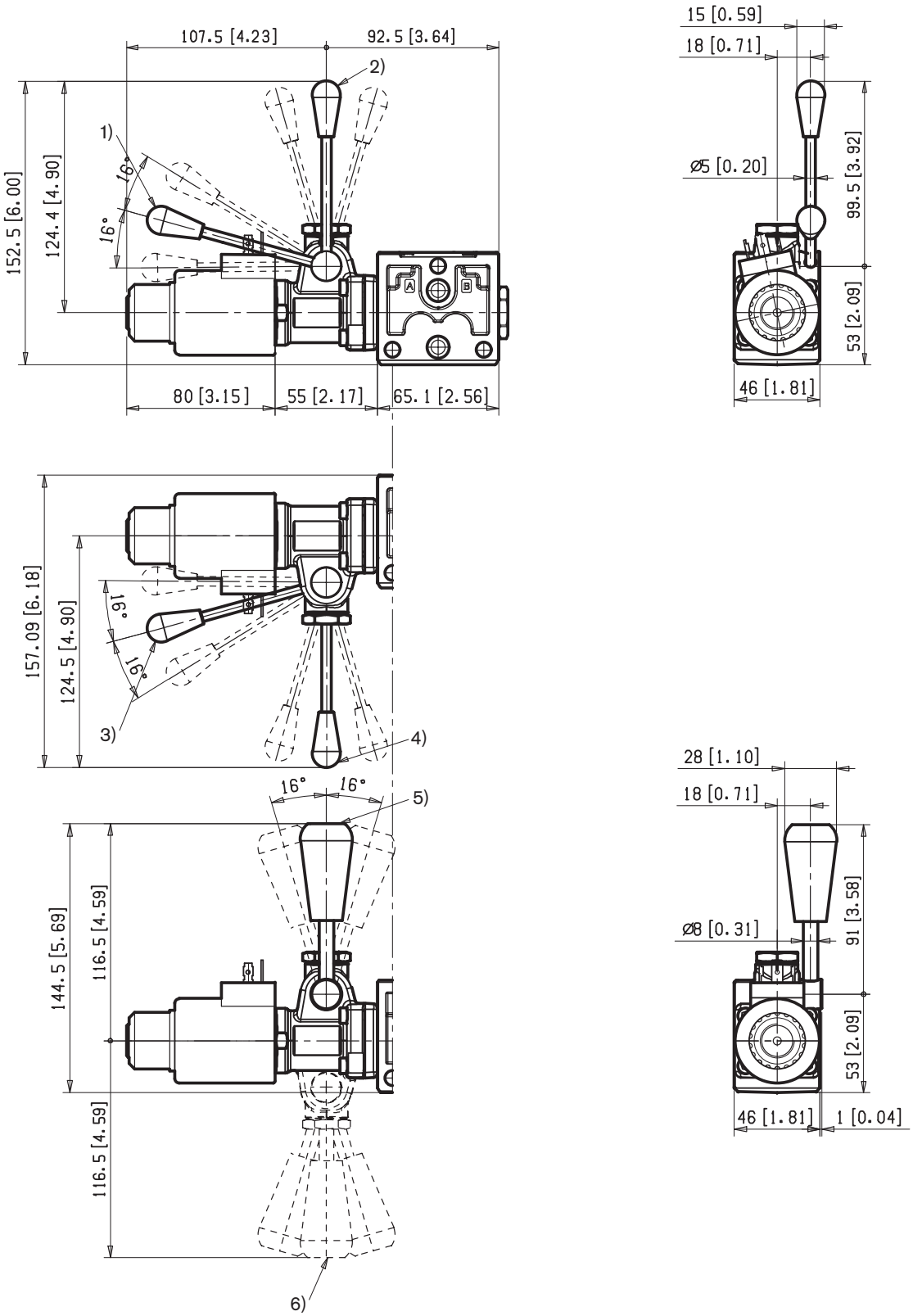
6 Clearance needed for connector removal.

7 Identification label.

8 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933003289.

9 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933003116.

External Dimensions and Fittings

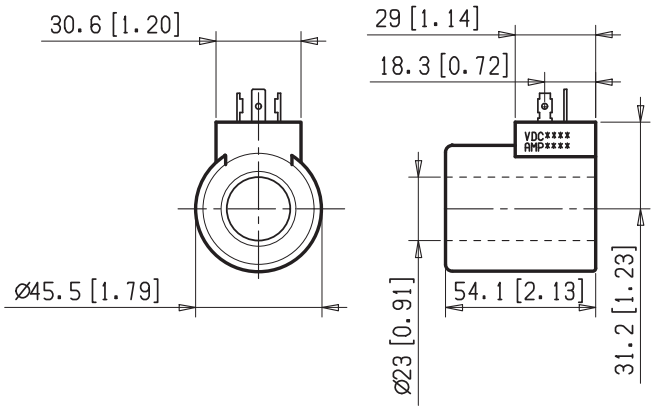


1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering Details: XA (if fitted to side A) or XB (if fitted to side B)
6 Ordering Details: X1 (if fitted to side A) or X9 (if fitted to side B)

Electric connection

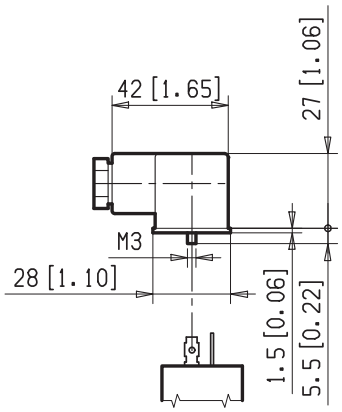
=01

With coil having plug-in pins EN 175301-803 – ISO 4400, without connector.
Protection class: IP 65 when connector with seal is properly screwed down.



=02

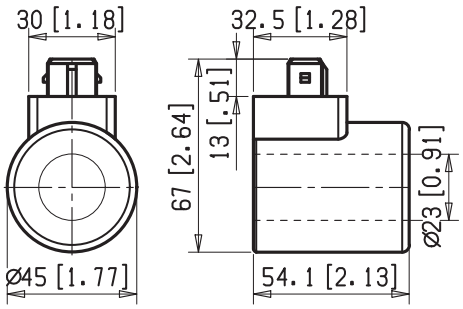
With coil and with connector non-assembled, type EN 175301-803 – ISO 4400.
Protection class: IP 65 when connector with seal is properly screwed down.



Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK

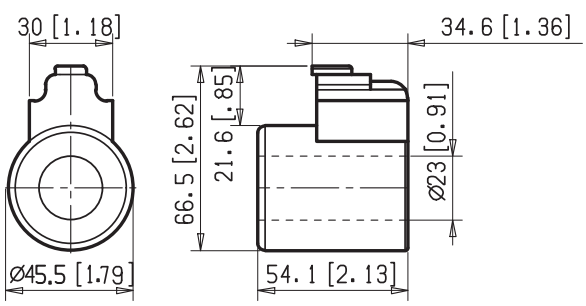
=03

With coils having AMP Junior connector, and with bi-directional diode.
Protection class: IP 65 with female connector properly fitted (see drawing).

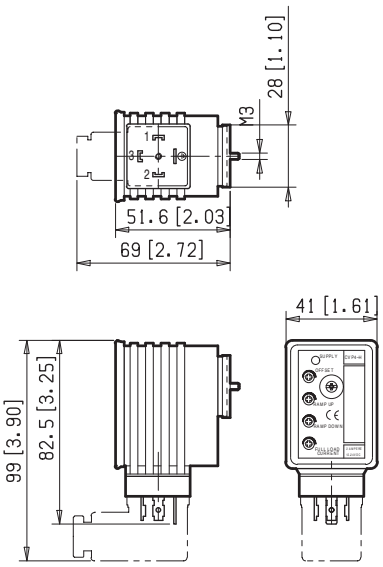


=07

With coils having DEUTSCH DT 04-2P connector.
Protection class: IP 69 K with female connector properly fitted.



Electronic feed regulator



Supply: yellow LED, lit up with power ON.

Off Set: minimum current adjustment. Adjust solenoid current so that the desired minimum value is obtained. Clockwise rotation increases current.

Ramp up: Ramping up time adjustment.

Ramp down: Ramping down time adjustment.
For longer ramping times, turn potentiometers clockwise; for shorter ramping times, turn the potentiometers counter-clockwise.

Full load current: Maximum current adjustment. Adjust solenoid current so that the desired maximum value is obtained (up to 2A). Clockwise rotation increases current.

Frequency adjustment: it is possible to set the PWM frequency obtaining the desired control sensitivity. After removing the external plastic cover, turn the adjusting screw; clockwise rotation increases frequency from 100 to 500 Hz.

Regulator ordering code	R933003290
Supply voltage	12-30 VDC
Control Signal	0-10 VDC
Max. output current	2 A
Minimum output current	0....0.6 A
Ramp adjustment up/down	0.1 ....10 s
PWM Frequency adjustment (pre-set 120 Hz)	100....500 Hz
Ambient operating temperature	-10....+60 °C *[14....+140 °F]*
Weight	0.12Kg *[26.4 lbs]*
4 pins connector details	R933002888 (Grey) R933002890 (Black)
Electromagnetic compatibility	EN50081-1/2EN61000-4-2/3/4/5/6
Protection class with connector and seal correctly fitted and properly screwed down.	IP 65 (DIN40050 part 9)
Potentiometer resistance	5....10 κ Ω

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

Directional valve elements with compensated proportional control of Tank unloaded excess flow

RE 18301-05/10.09 1/8

L808003C... (ED4-PTC)

Size 6
Series 00
Maximum operating pressure 250 bar *[3625 psi]*
Maximum flow 40 l/min *[10.6 gpm]*


DVI0031

Summary

General specifications

- Valve element with direct proportional pressure compensated control of inlet, P line, flow.
- Three way pressure compensator included.
- Wet pin proportional screwed-in tube for extractable DC coil.
- In the de-energized condition, the control spool is held in normal position by return spring.
- Solenoid tube with push rod for mechanical override; nickel plated surface.
- Manual override (push-button, screw type) available upon request.
- Plug-in connectors available: EN 175301-803 (Was DIN 43650) and DT04-2P (Deutsch).

Ordering Details

L	8 0	8 0	0 3	_ _	_ _	_ _	0 0	_ _

Family
Directional valve elements ED

Type
Size 6, proportional

Coil type
D15

Spool variant
Proportional pressure compensated flow control

Nominal flow
10 l/min *[2.6 gpm]* = **C2**
20 l/min *[5.3 gpm]* = **C4**
30 l/min *[7.9 gpm]* = **C6**
40 l/min *[10.6 gpm]* = **C8**

Optional fittings
_ _ = Without emergency
0P = Push-button type emergency
0F = Screw type emergency

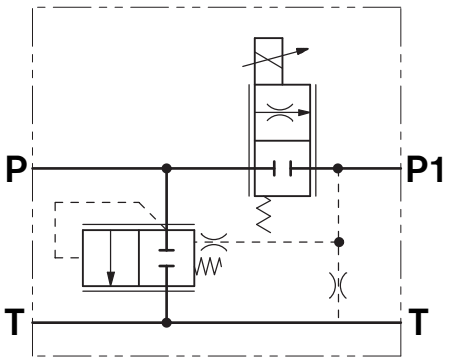
Electric connections
01 = With coil, without connector
02 = With coils and with non-assembled connector, type EN 175301-803
03 = With coils having AMP Junior connector
07 = With coils having DEUTSCH DT 04-2P connector *

Voltage supply

OB =					12V DC
OC =					24V DC
	31	**07**	**03**	**02**	**01**
	Available connections				

* DEUTSCH DT 04-2P available upon request.

Spool variant



Principles of operation, cross section

The sandwich plate design elements L808003C… are 3 way proportional pressure compensated direct solenoid operated valves. They control the inlet (P) flow and allow through (out of P1) only the flow required by the downstream operators; the excess oil, pressurized at working pressure, is diverted from the inlet P line to Tank. The combination of the proportional regulator with the unloading compensator guarantees stable and constant flow, independently from the working pressure.

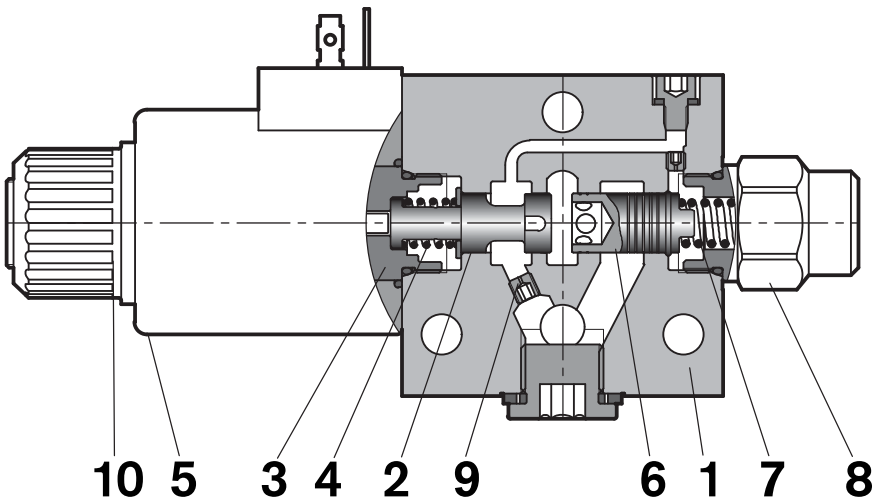
The proportional control is achieved by a wet pin proportional screwed-in tube, with extractable coil which is energized by an external electronic feed regulator; the electronic regulator performs an “open loop” control of the current supplied to the coil.

These elements basically consist of a stackable housing (1) with a control spool (2), a solenoid (3), and one return spring (4); additionally there is a compensator (6), with a preset spring (7), a spring retainer plug (8) and a drain orifice (9). A coil (5) is held to the solenoid tube by the ring nut (10).

With the solenoid de-energized, the spool stays in the closed position; the pressure overcomes the compensator spring (7) and the inlet (P) oil is unloaded to Tank at the p value shown by the characteristic curve. Pressure at (P1) is drained to Tank through the orifice and drops to zero.

By energizing the solenoid (3) through the electronic feed regulator, the control spool (2) is displaced from its rest position proportionally to the current; the corresponding opening allows a pressure compensated flow to proceed to P1, while the excess flow is diverted to Tank.

With the solenoid (3) de-energized, the return spring (4) pushes the spool (2) to its rest position “0” fully closed. No flow goes to P1 and any residual pressure at P1 is drained through the orifice. The compensator (6) is pushed fully open all the oil is unloaded to Tank.



Technical Data (for applications with different specifications consult us)

General

Valve element with 1 solenoid	kg *[lbs]*	1.53 *[3.37]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P	bar *[psi]*	250 *[3625]*
Maximum flow rated at **P1**	l/min *[gpm]*	40 *[10.6]*
Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=10...12 ISO 4406: class 19/17/14 NAS 1638: class 8
Viscosity range	mm^2/s	20....380 (optimal 30....46)

Electrical

Voltage type		PWM	Power Wave Modulation pre-set at 120 Hz								
Voltage tolerance (nominal voltage)		%	-10 .... +10								
Duty			Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature		°C *[°F]*	150 *[302]*								
Insulation class			H								
Compliance with			Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight		kg *[lbs]*	0.335 *[0.739]*								
Voltage		V	12	24							
Current [1]		A	1.76	0.88							
Coil resistance [2]	- Cold value at 20°C	Ω	4	16							
	- Max. hot value	Ω	6.1	24.4							

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	12 DC	R933000092
=OB 03	12 DC	AMP JUNIOR	D1530	12 DC	R933002877
=OB 07	12 DC	DEUTSCH DT 04-2P	D15 07	12 DC	R933000094
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	24 DC	R933000093
=OC 07	24 DC	DEUTSCH DT 04-2P	D15 07	24 DC	R933002798

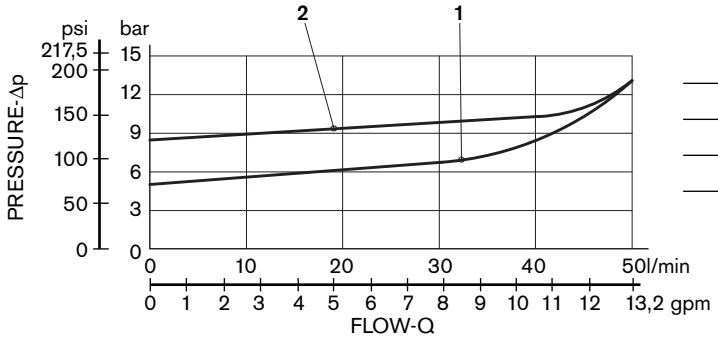
Electronic control

Electronic feed regulators [1]	Upon request

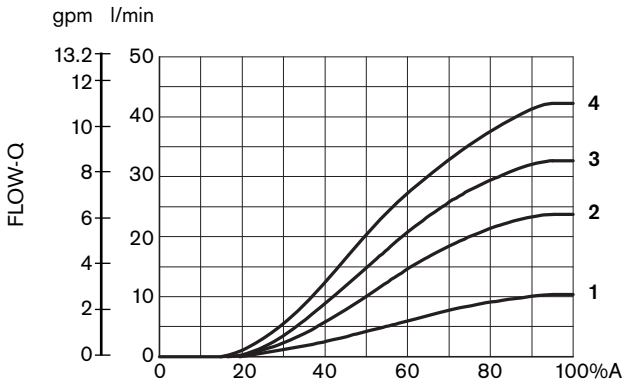
[1] An electronic, open loop type, regulator with plug-in pins EN 175301-803 is available and can be fitted onto the solenoid directly. For valve elements with two solenoids, two electronic regulators are needed.

Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.

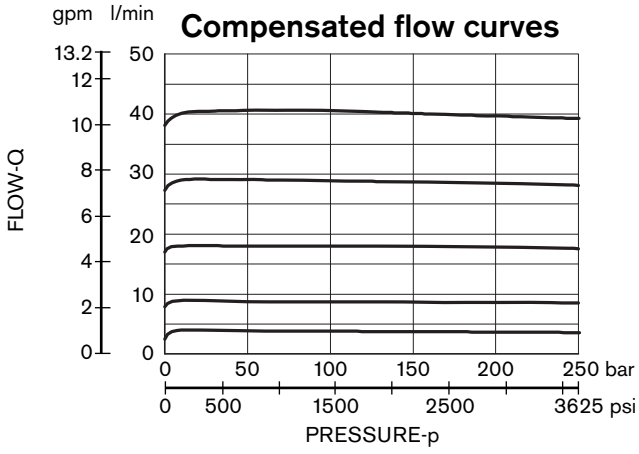


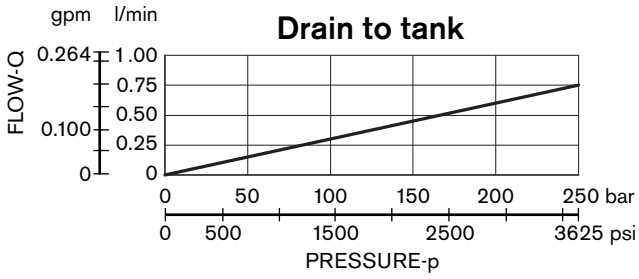
NOMINAL FLOW	Curve No.
C2 - C4 - C6	1
C8	2



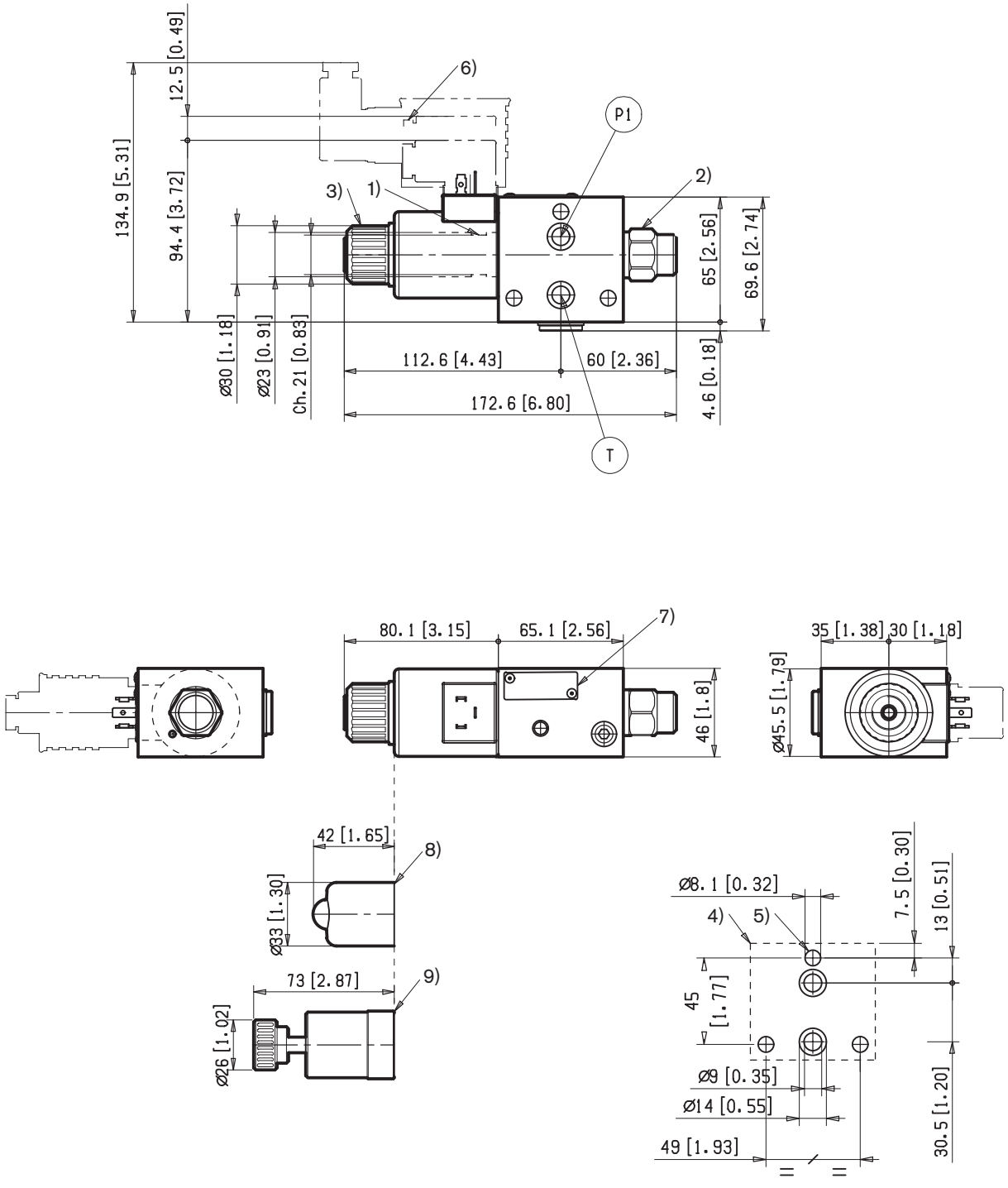
NOMINAL FLOW	Curve No.
C2	1
C4	2
C6	3
C8	4

%A = Percentage of the maximum current supplied to the coil





External Dimensions and Fittings



1 Solenoid tube key 21 . Torque 22-24 Nm *[16.2-17.7 ft-lb]*.

2 Plug for spring housing hex 24 mm, torque 22-24 Nm *[16.2-17.7 ft-lb]*.

3 Ring nut for coil locking (OD 30.3 mm *[1.18 In]*); torque 6–7 Nm *[4.4 – 5.2 ft-lb]*.

4 Flange specifications for coupling to ED intermediate elements.

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

6 Clearance needed for connector removal.

7 Identification label.

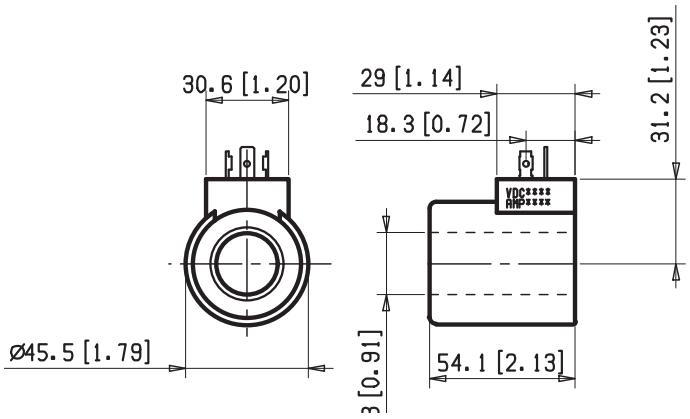
8 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933003289.

9 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933003116.

Electric connection

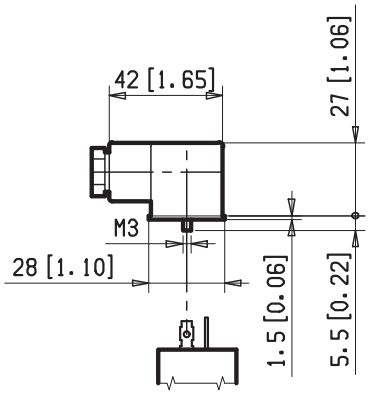
=01

With coil having plug-in pins EN 175301-803 – ISO 4400, without connector.
Protection class: IP 65 when connector with seal is properly screwed down.



=02

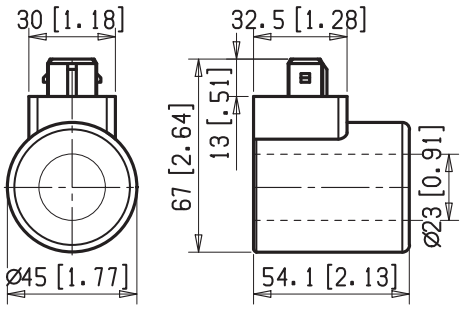
With coil and with connector non-assembled, type EN 175301-803 – ISO 4400.
Protection class: IP 65 when connector with seal is properly screwed down.



Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK

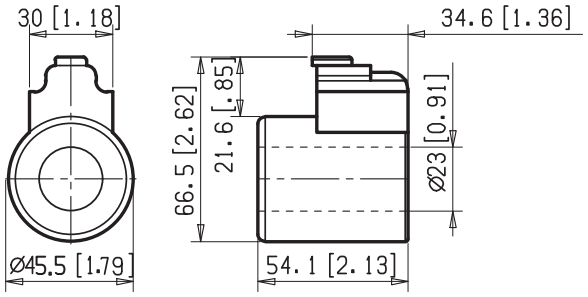
=03

With coils having AMP Junior connector,
and with bi-directional diode.
Protection class: IP 65 with female connector
properly fitted (see drawing).

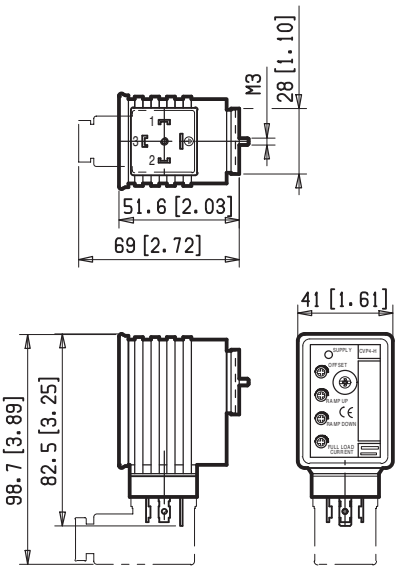


=07

With coils having DEUTSCH DT 04-2P connector.
Protection class: IP 69 K
with female connector properly fitted.



Electronic feed regulator



Supply: yellow LED, lit up with power ON.

Off Set: minimum current adjustment. Adjust solenoid current so that the desired minimum value is obtained. Clockwise rotation increases current.

Ramp up: Ramping up time adjustment.

Ramp down: Ramping down time adjustment.
For longer ramping times, turn potentiometers clockwise; for shorter ramping times, turn the potentiometers counter-clockwise.

Full load current: Maximum current adjustment. Adjust solenoid current so that the desired maximum value is obtained (up to 2A). Clockwise rotation increases current.

Frequency adjustment: it is possible to set the PWM frequency obtaining the desired control sensitivity. After removing the external plastic cover, turn the adjusting screw; clockwise rotation increases frequency from 100 to 500 Hz.

Regulator ordering code	R933003290
Supply voltage	12-30 VDC
Control Signal	0-10 VDC
Max. output current	2 A
Minimum output current	0....0.6 A
Ramp adjustment up/down	0.1 ....10 s
PWM Frequency adjustment (pre-set 120 Hz)	100....500 Hz
Ambient operating temperature	-10....+60 °C *[14....+140 °F]*
Weight	0.12Kg *[26.4 lbs]*
4 pins connector details	R933002888 (Grey) R933002890 (Black)
Electromagnetic compatibility	EN50081-1/2EN61000-4-2/3/4/5/6
Protection class with connector and seal correctly fitted and properly screwed down.	IP 65 (DIN40050 part 9)
Potentiometer resistance	5....10 κ Ω

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with proportional control and with or without LS connections

RE 18301-06/10.09 1/10
Replaces: RIE00159/01.06

L8_80… (ED4-P)

Size 6
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 45 l/min *[11.9 gpm]*
Ports connection G 3/8 - SAE6


DVI0017

Summary

General specifications

- Valve element with direct proportional control of spool
- Control spool operated by screwed-in solenoid with extractable coil
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin proportional tubes for DC coils, with push rod for mechanical override; nickel plated surface
- Manual override (push-button or screw type) available upon request
- Plug-in connectors available: EN 175301-803 (Was DIN 43650) and DT04-2P (Deutsch)

Ordering Details

L	8	_	8	0	_ _	S	_	_ _	_ _	_	0	_ _

Family
Directional valve elements ED

Type
Size 6, proportional

Configurations
Standard = 0
With Load Sensing control = 4

Coil type
D15

Spool variants [1)]
4/3 operated both sides a and b; P – T closed in neutral = B2
4/2 operated on side a only; P – T closed in neutral = B3
4/2 operated on side b only; P – T closed in neutral = B4
4/3 operated on both sides a and b; A and B to T in neutral = E2
4/2 operated on side a only; A and B to T in neutral = E3
4/2 operated on side b only; A and B to T in neutral = E4

Flow pattern
Symmetrical

Nominal flow *
10 l/min *[2.64 gpm]* = 2
20 l/min *[5.28 gpm]* = 4
30 l/min *[7.9 gpm]* = 6

Optional fittings
_ _ = Without emergency
0F = Screw type emergency
0P = Push-button type emergency
EA = Lever type emergency [2)]

Ports
0 = G 3/8 DIN 3852
1 = 9/16-18 UNF 2-B (SAE6)
2 = G 1/2 DIN 3852
3 = 3/4-16 UNF 2-B (SAE8)

Electric connections
01 = With coils, without connectors
02 = With coils and with non-assembled connectors, type EN 175301-803
03 = With coils having AMP Junior connector
07 = With coils having DEUTSCH DT 04-2P connector

Voltage supply
OB = 12V DC
OC = 24V DC

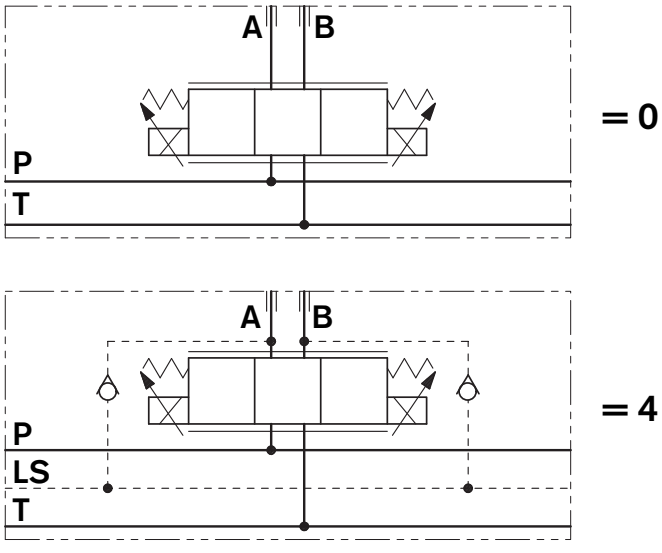
01	02	03	07
Available Connections			

[1)] The required hydraulic symbol and spool variant can be chosen by consulting page 3.

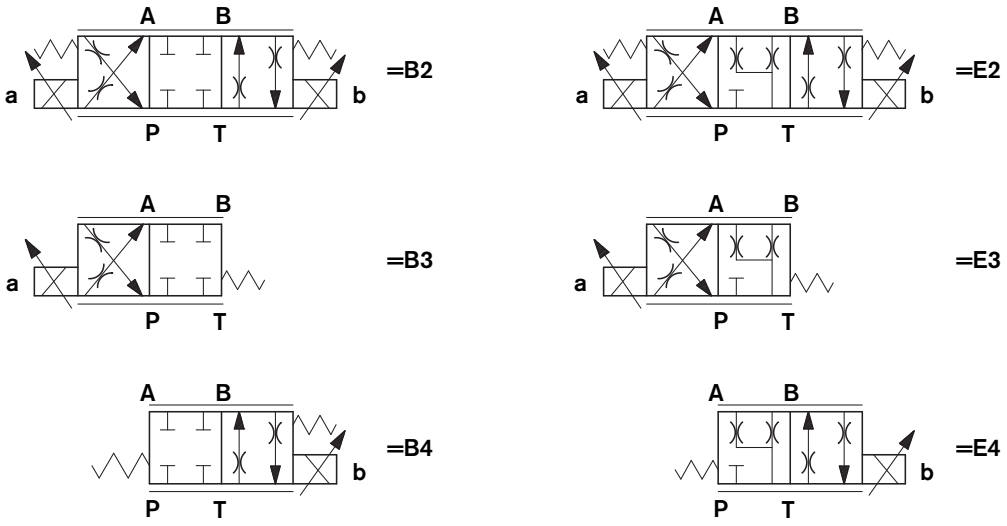
[2)] Each different option for the type of emergency chosen implies a specific ordering code (refer to page 7).

* With Δp (P > T) 10 bar *[145 psi]*.

Configuration



Spool variants

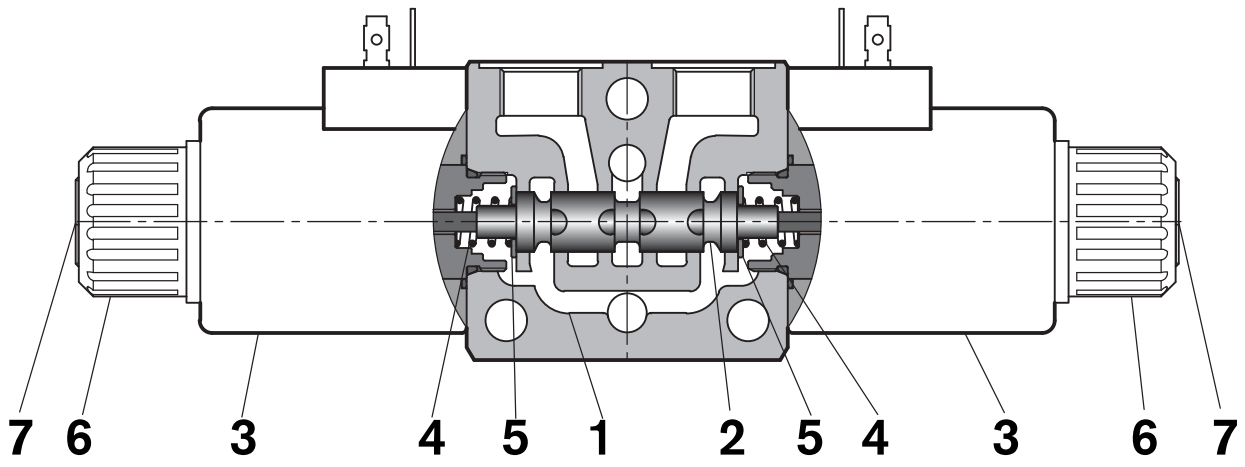


Principles of operation, cross section

The sandwich plate design directional valve elements L8080… are compact direct operated proportional solenoid valves which control the start, the stop, the direction and the quantity of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (3), and one or two return springs (4).

Energized by an electronic feed regulator, each solenoid (3) displaces the control spool (2) from its neutral-central position “0” proportionally to the current received; a regulated oil flow P to A , or P to B, is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (5) back against the housing and the spool returns in its neutral-central position.

Each coil (3) is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids	kg *[lbs]*	2.20 *[4.85]*
Valve element with 1 solenoid	kg *[lbs]*	1.70 *[3.75]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P	bar *[psi]*	310 *[4500]*
Maximum dynamic pressure at T	bar *[psi]*	210 *[3050]*
Maximum static pressure at T	bar *[psi]*	250 *[3625]*
Maximum inlet flow	l/min *[gpm]*	45 *[11.9]*
Nominal flow with ΔP = 10 bar	l/min *[gpm]*	10, 20, 30 *[2.64, 5.28, 7.9]*
E-schemes closed pass in the neutral position (connection from A to T and B to T)		Approx. 2% of the nominal cross-section
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=10...12 ISO 4406: class 19/17/14 NAS 1638: class 8
Viscosity range	mm^2/s	20....380 (optimal 30....46)

Electrical

Voltage type		PWM	Power Wave Modulation pre-set at 120 Hz								
Voltage tolerance (nominal voltage)		%	-10 .... +10								
Duty			Continuous, with ambient temperature ≤ 50°C *[122°F]*								
Maximum coil temperature		°C *[°F]*	150 *[302]*								
Insulation class			H								
Compliance with			Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC								
Coil weight		kg *[lbs]*	0.335 *[0.739]*								
Voltage		V	12	24							
Current [1]		A	1.76	0.88							
Coil resistance [2]	- Cold value at 20°C	Ω	4	16							
	- Max. hot value	Ω	6.1	24.4							

[1] Nominal - [2] ± 7% at temperature 20°C *[68°F]*

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01 **=OB 02**	12 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	12 DC	R933000092
=OB 03	12 DC	AMP JUNIOR	D1530	12 DC	R933002877
=OB 07	12 DC	DEUTSCH DT 04-2P	D15 07	12 DC	R933000094
=OC 01 **=OC 02**	24 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	24 DC	R933000093
=OC 07	24 DC	DEUTSCH DT 04-2P	D15 07	24 DC	R933002798

Electronic control

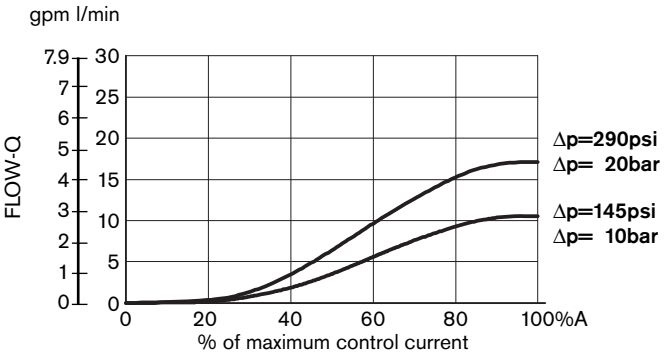
Electronic feed regulators [1]	Upon request

1) An electronic, open loop type, regulator with plug-in pins EN 175301-803 is available and can be fitted onto the solenoid directly. For valve elements with two solenoids, two electronic regulators are needed.

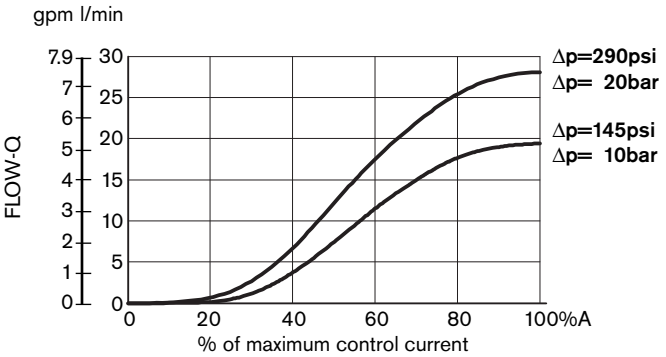
Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.

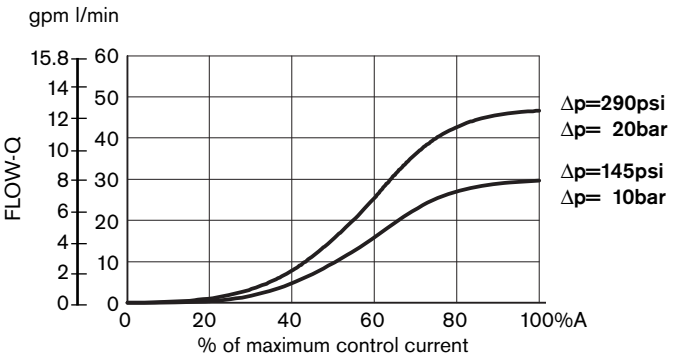
Ordering code 2: 10 l/min *[2.64 gpm]* with Δp = 10 bar *[145 psi]*.

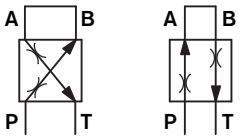


Ordering code 4: 20 l/min *[5.28 gpm]* with Δp = 10 bar *[145 psi]*.



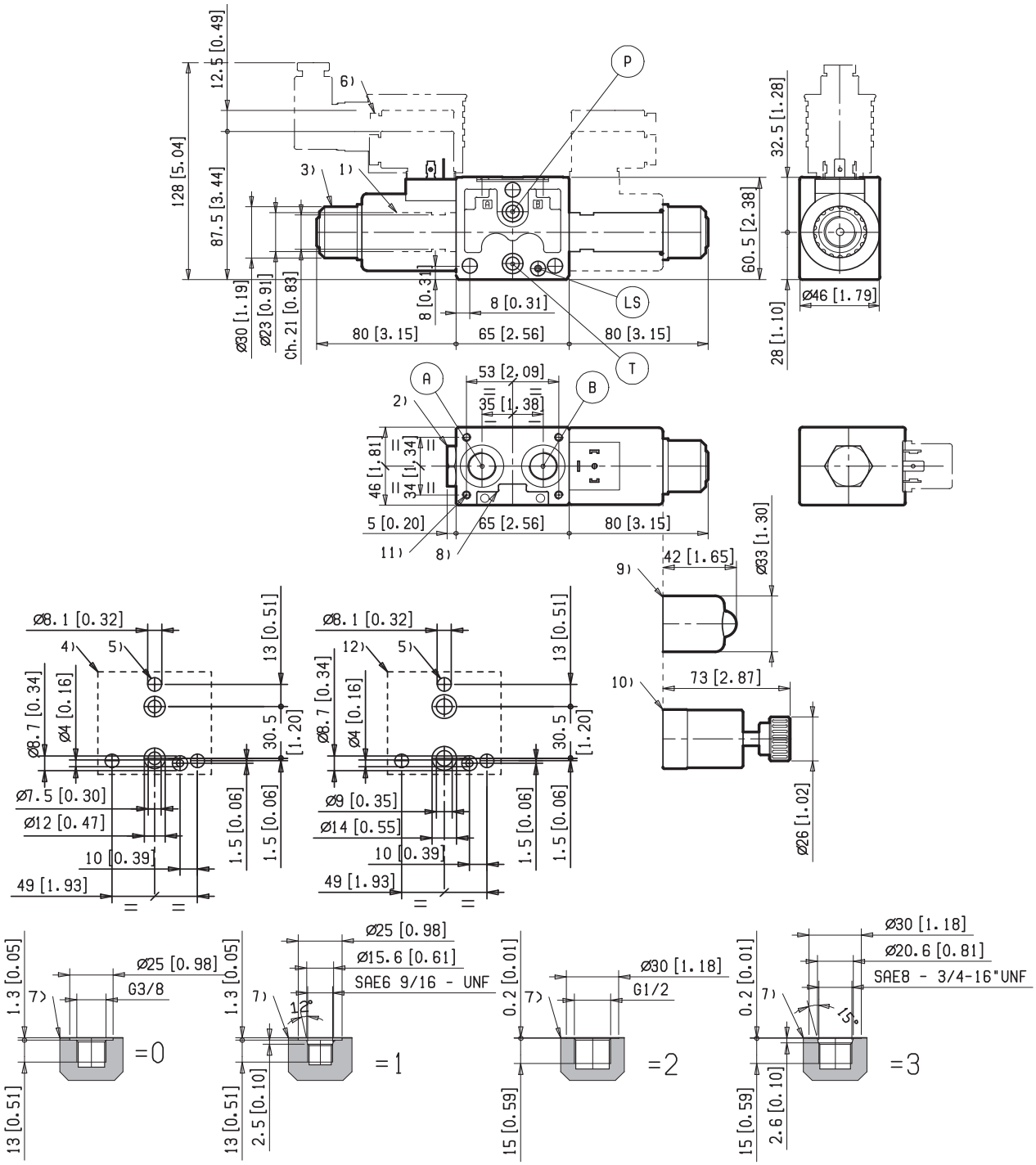
Ordering code 6: 30 l/min *[7.92 gpm]* with Δp = 10 bar *[145 psi]*.





The curves refer to the spool fully open.

External Dimensions and Fittings



1 Solenoid tube key 21 mm. Torque 22-24 Nm *[16.2-17.7 ft-lb]*.

2 Plug for 2 positions versions (4/2); hex 24 mm, torque 22-24 Nm *[16.2-17.7 ft-lb]*.

3 Ring nut for coil locking (OD 30 mm); torque 6 – 7 Nm *[4.4 – 5.2 ft-lb]*.

4 Flange specifications for coupling to ED intermediate elements with ports G 3/8 and SAE 6.

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

6 Clearance needed for connector removal.

7 A and B ports.

8 Identification label.

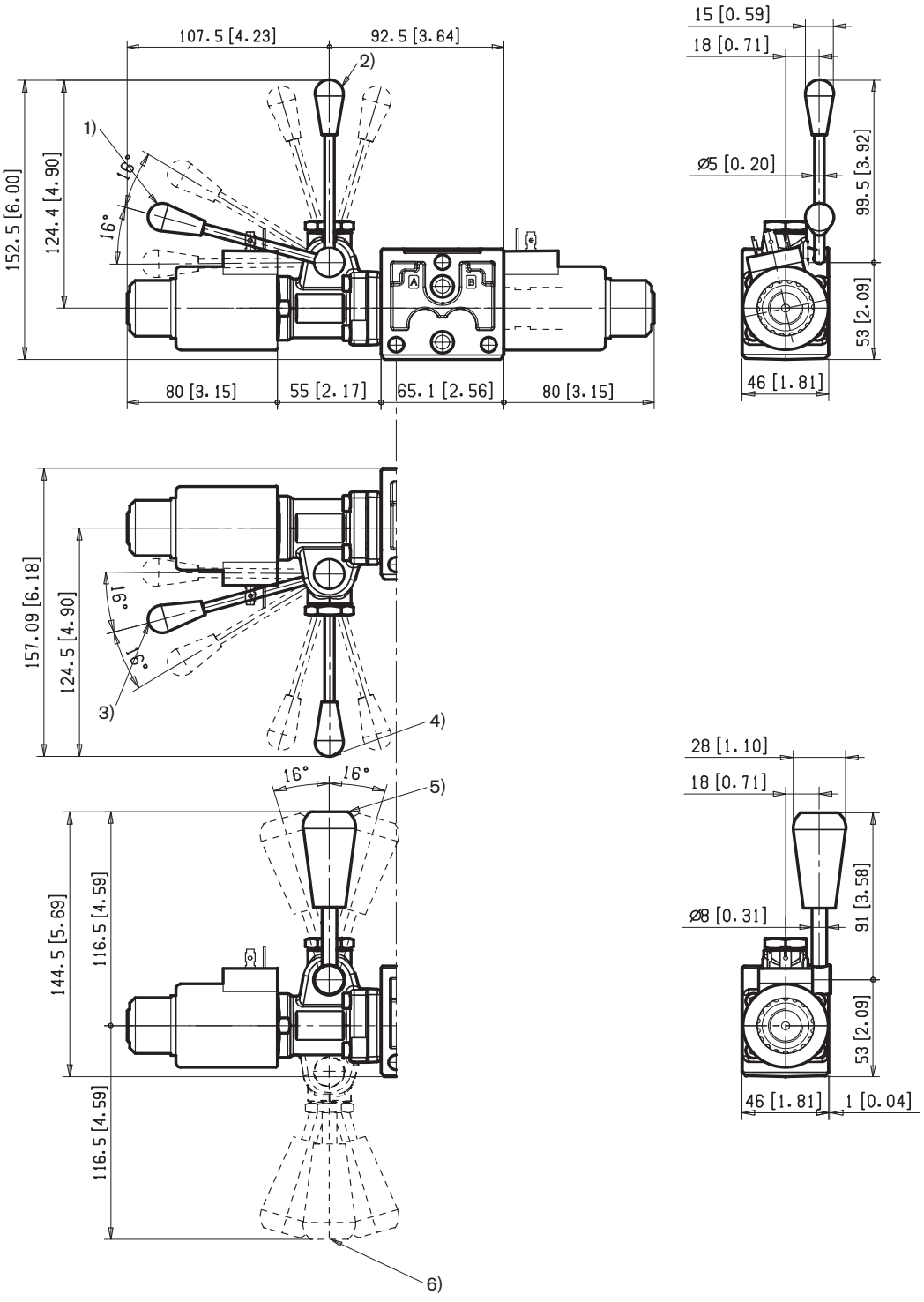
9 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933003289.

10 Optional screw type emergency, EF type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933003116.

11 Four threaded holes M5 for fitting a secondary flangeable element (only for elements with ports G 3/8 and SAE 6). Bolts M5 with recommended strength class DIN 8.8: torque 5 – 6 Nm *[3.6-4.4 ft-lb]*.

12 Flange specifications for coupling to ED intermediate elements with ports G 1/2 and SAE 8.

External Dimensions and Fittings

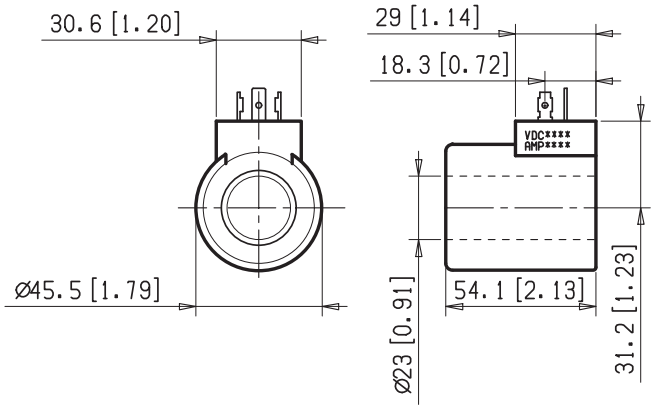


1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering Details: XA (if fitted to side A) or XB (if fitted to side B)
6 Ordering Details: X1 (if fitted to side A) or X9 (if fitted to side B)

Electric connection (or connections, in case of two solenoids)

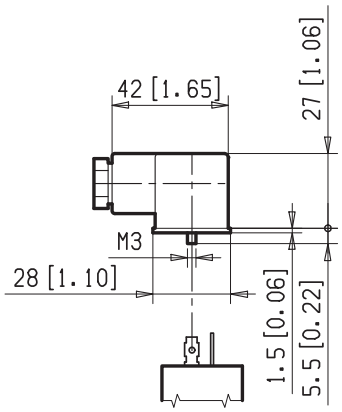
=01

With coils having plug-in pins DIN 43650 – ISO 4400, without connectors.
Protection class: IP 65 when connector with seal is properly screwed down.



=02

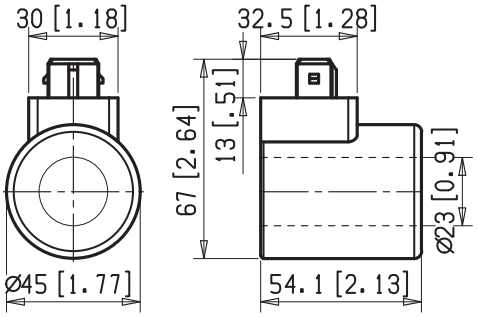
With coils and with connectors non-assembled, type DIN 43650 – ISO 4400.
Protection class: IP 65 when connector with seal is properly screwed down.



Mat. No.	Description
R933002885	182-09 GRAY
R933002889	182-09 BLACK

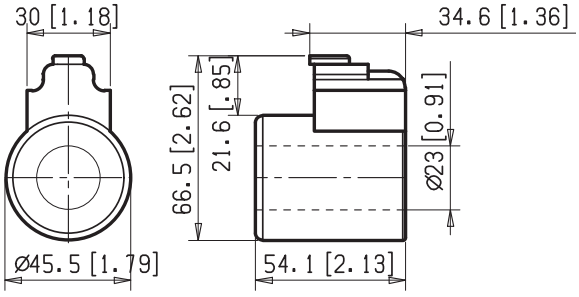
=03

With coils having AMP Junior connector, and with bi-directional diode.
Protection class: IP 65 with female connector properly fitted (see drawing).

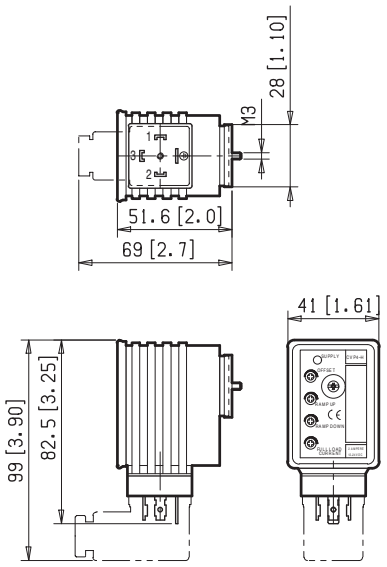


=07

With coils having DEUTSCH DT 04-2P connector.
Protection class: IP 69 K with female connector properly fitted (see drawing).



Electronic feed regulator (or regulators, in case of two solenoids)



Supply: yellow LED, lit up with power ON.

Off Set: minimum current adjustment. Adjust solenoid current so that the desired minimum value is obtained. Clockwise rotation increases current.

Ramp up: Ramping up time adjustment.

Ramp down: Ramping down time adjustment.
For longer ramping times, turn potentiometers clockwise; for shorter ramping times, turn the potentiometers counter-clockwise.

Full load current: Maximum current adjustment. Adjust solenoid current so that the desired maximum value is obtained (up to 2A). Clockwise rotation increases current.

Frequency adjustment: it is possible to set the PWM frequency obtaining the desired control sensitivity. After removing the external plastic cover, turn the adjusting screw; clockwise rotation increases frequency from 100 to 500 Hz.

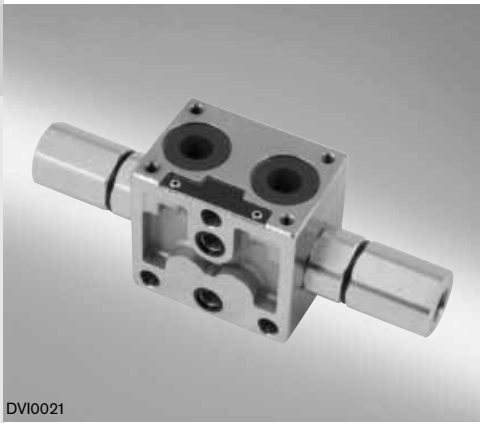
Regulator ordering code	R933003290
Supply voltage	12-30 VDC
Control Signal	0-10 VDC
Max. output current	2 A
Minimum output current	0....0.6 A
Ramp adjustment up/down	0.1 ....10 s
PWM Frequency adjustment (pre-set 120 Hz)	100....500 Hz
Ambient operating temperature	-10....+60 °C *[14....+140 °F]*
Weight	0.12Kg *[26.4 lbs]*
4 pins connector details	R933002888 (Grey) R933002890 (Black)
Electromagnetic compatibility	EN50081-1/2EN61000-4-2/3/4/5/6
Protection class with connector and seal correctly fitted and properly screwed down.	IP 65 (DIN40050 part 9)
Potentiometer resistance	5....10 κ Ω

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with proportional hydraulic control and with or without LS connections

RE 18301-07/10.09 1/6

L8_P5… (ED-IP)



DVI0021

Size 6
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 45 l/min *[11.9 gpm]*
Ports connection G 3/8 - G 1/2 - SAE6 - SAE8

Summary

General specifications

- Valve element 4 ways, 3 positions.
- Hydraulically direct operated spool.
- Hydraulic operating element bolted on.
- Hydraulic operating element available with inlet port: G1/4 DIN 3852; 9/16-18 UNF 2-B.
- The control spool is held in the central position by return springs.

Ordering Details

L	8	_	P	5	_	_	S	_	0	0	0	0	_	0

Family
Directional Valves elements ED

Type
Size 6

Configuration*
Standard = 0
With LS channels = 4

Operation type
Direct hydraulic proportional

Spool Variants [1)]
4/3 operated both sides a and b; P – T closed in neutral = B2
4/3 operated both sides a and b; A and B to T in neutral = E2

Flow pattern
Symmetrical

Nominal flow (Δp=10bar *[145 psi]*)
2 = 0-10 l/min *[0-2.6 gpm]*
4 = 0-20 l/min *[0-5.3 gpm]*
6 = 0-30 l/min *[0-7.9 gpm]*

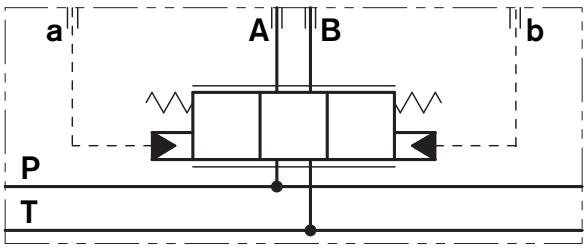
Hydraulic control pressure
10-21 bar *[145-305 psi]*

Ports
0 = G 3/8 DIN 3852
1 = 9/16-18 UNF 2-B (SAE6)
2 = G 1/2 DIN 3852
3 = 3/4-16 UNF 2-B (SAE8)

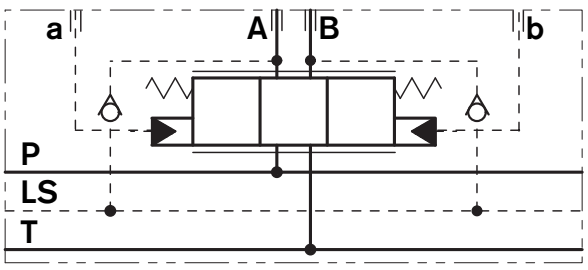
[1)] Refer to page 3 for the selection of the hydraulic symbol and circuit features.

* Without secondary valves (versions L80__; L84__), the standard configuration corresponds to “0”.

Configuration

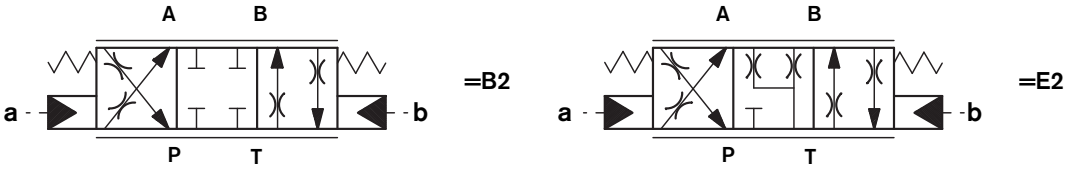


= 0



= 4

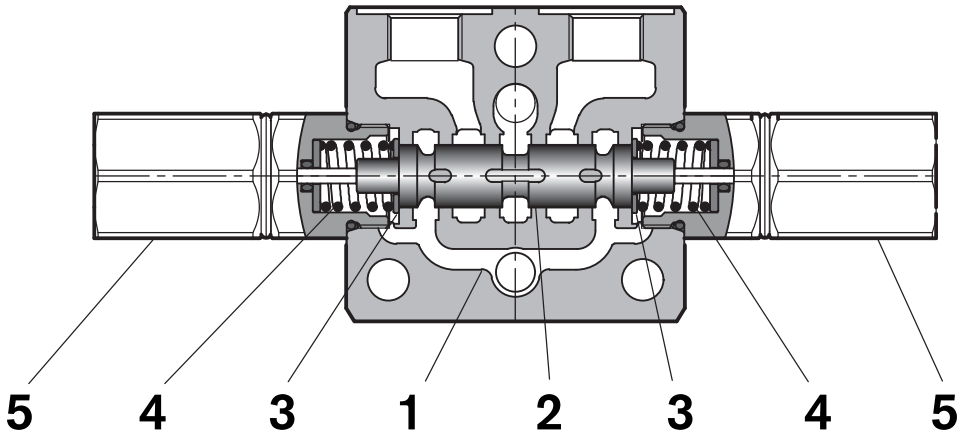
Spool variants



Principles of operation, cross section

The sandwich plate design directional valve elements L8_P5… are compact direct hydraulic operated valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), two hydraulic operating blocks (5), and two return springs (4).

The hydraulic pressure in one of the blocks (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved. When pressure is removed from either one of blocks (5), the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position “0”.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 hydraulic controls	kg *[lbs]*	1.23 *[2.71]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

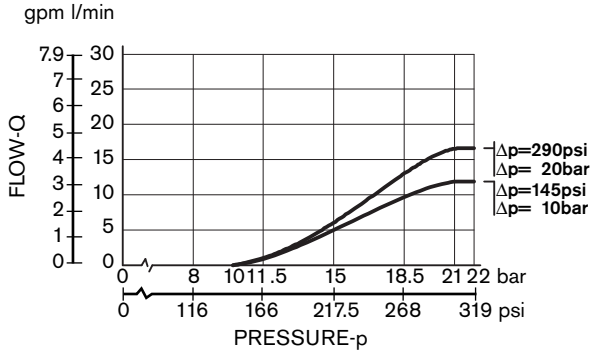
Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	310 *[4500]*
Maximum pressure at T	bar *[psi]*	100 *[1450]*
Maximum pressure at T with joystik	bar *[psi]*	10 *[145]*
Max. pilot pressure	bar *[psi]*	210 *[3045]*
Min. pilot pressure		refer to page 5
Maximum inlet flow	l/min *[gpm]*	45 *[11.9]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	–20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		IISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

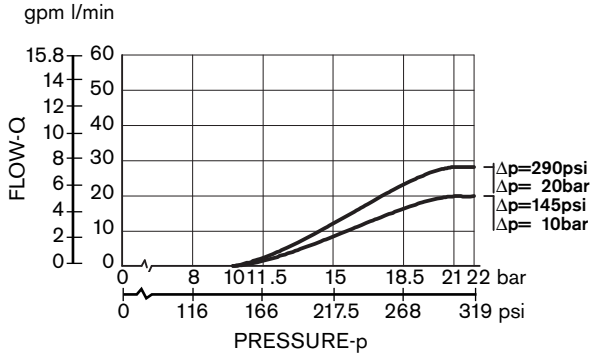
Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.

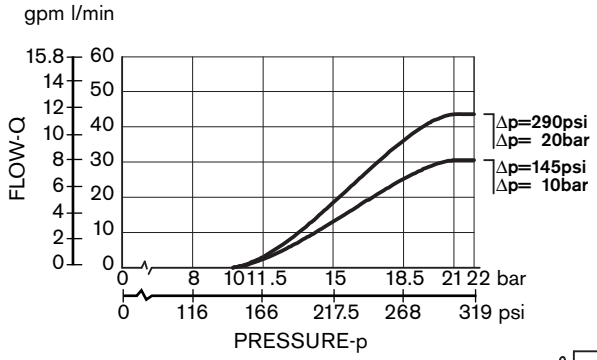
Ordering code S2: 10 l/min *[2.64 gpm]*.

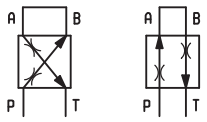


Ordering code S4: 20 l/min *[5.28 gpm]*.



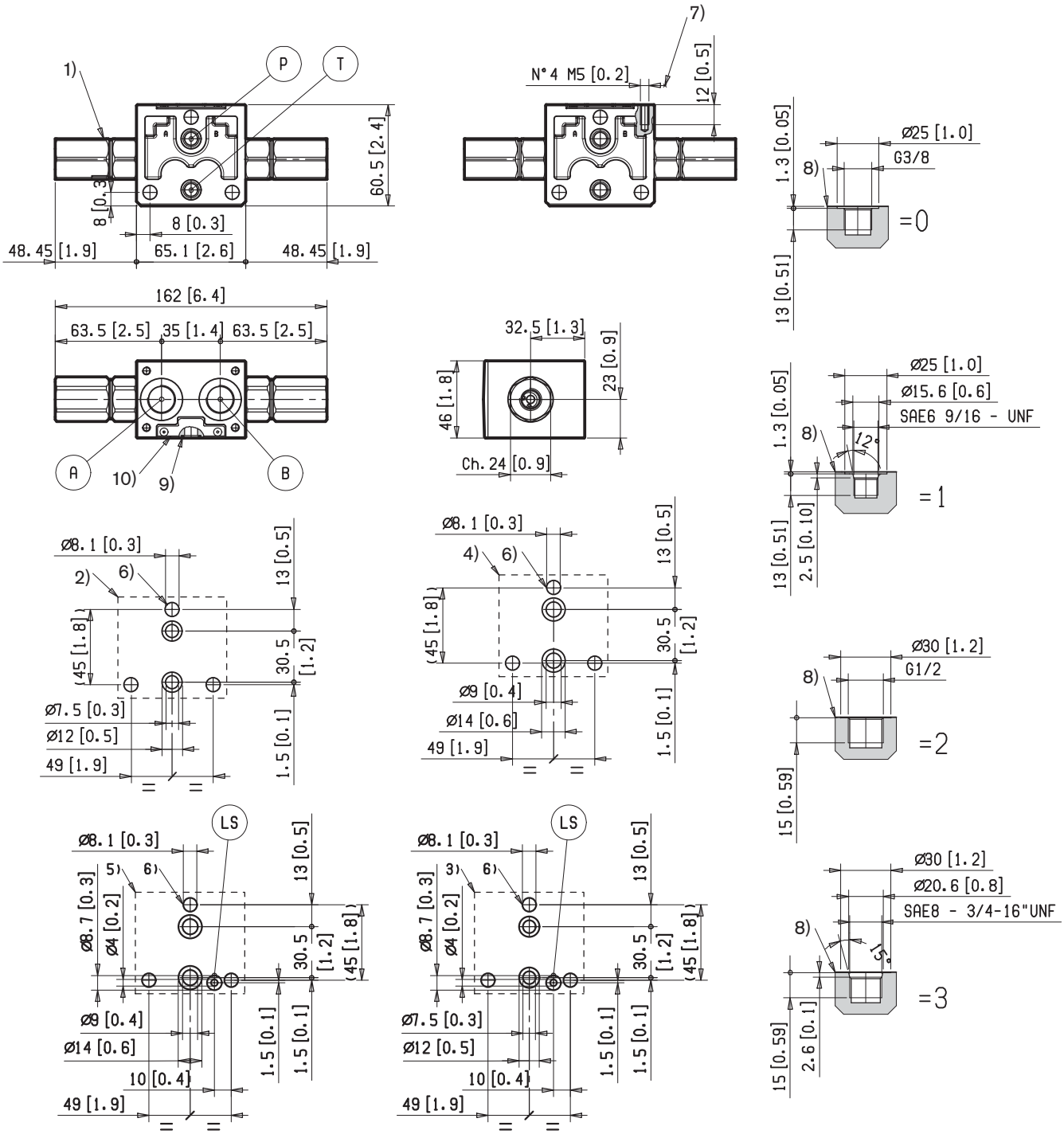
Ordering code S6: 30 l/min *[7.92 gpm]*.





The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas and with back-pressure in T ≤ 10 bar *[145 psi]*.

External Dimensions and Fittings



1 Hydraulic operating element available with inlet port: G1/4 DIN 3852; 9/16-18 UNF 2-B (SAE 6).

2 Flange specifications for coupling to ED intermediate elements with ports G 3/8 and SAE 6

3 Flange specifications for coupling to ED intermediate elements with LS channels and with ports G 3/8 and SAE 6

4 Flange specifications for coupling to ED intermediate elements with ports G 1/2 and SAE 8

5 Flange specifications for coupling to ED intermediate elements with LS channels with and ports G 3/8 and SAE 6

6 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

7 Four threaded holes M5 for fitting a secondary flangeable element (only for elements with ports G 3/8 and SAE 6). Bolts M5 with recommended strength class DIN 8.8: torque 5 – 6 Nm *[3.6-4.4 ft-lb]*.

8 A and B ports

9 O-Rings for P and T ports

10 Identification label

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

4/3 4/2 Directional valve elements with manual lever operated control and with or without LS connections

RE 18301-08/10.09 1/8

L8_L1… (ED-LV)

Size 6
Series 00
Maximum operating pressure 310 bar *[4500 psi]*
Maximum flow 60 l/min *[15.8 gpm]*
Ports connection G 3/8 - G 1/2 - SAE8


DVI0039

Summary

General specifications

- Valve elements 4 ways 3 positions.
- Control spools manual operated by hand lever.
- Control spool with return spring or mechanical detent for all three positions.

Ordering Details

L	8	_	L 1	_ _	S	8	_ _	_ _	_	0

Family
Directional valve elements ED

Type
Size 6

Configuration
Standard = 0
With channels for Load Sensing = 4

Operation type
Manual lever

Spool variants (refer to page 3)
4/3 4 ways and 3 positions = _ 2

Flow pattern
Symmetrical

Ports
0 = 3/8 G
2 = 1/2 G
3 = SAE 8

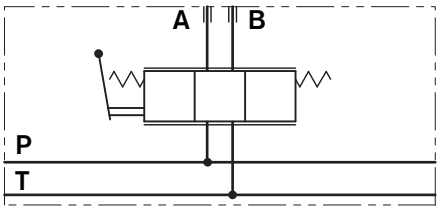
Manual lever control
M1 = With return spring
F1 = With mechanical detent for all three positions

Side with the control lever
A0 = a side with handle aiming high (A and B direction)
A2 = a side with handle aiming low (opposite to A and B)
B0 = b side with handle aiming high (A and B direction)
B2 = b side with handle aiming low (opposite to A and B)

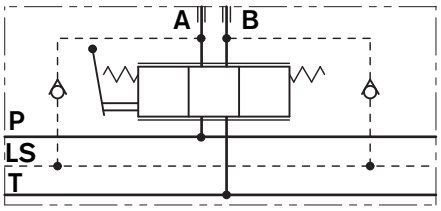
Nominal flow
40 l/min *[10.567 gpm]* *

* With Δp (P>T) 10bar *[145 psi]*.

Configuration

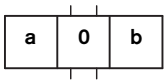


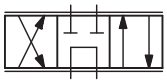
= 0



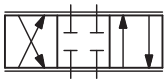
= 4

Spool variants





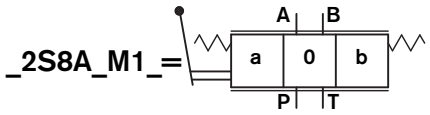
=A2

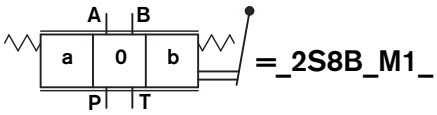


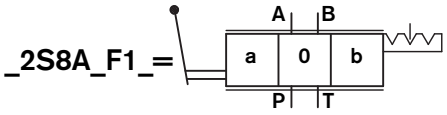
=B2

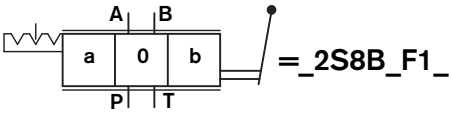
=E2

Side with the control lever









Principles of operation, cross section

The sandwich plate design directional valve elements L8_1… are compact manual operated valves which control the start, the stop and the direction of the oil flow.

These elements basically consist of a stackable housing (1) with a control spool (2), a block with the control lever (3), and a spring housing (4) with a return spring (5).

The hand operated lever moves the control spool (2) from its neutral-central position “0” to the required position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved.

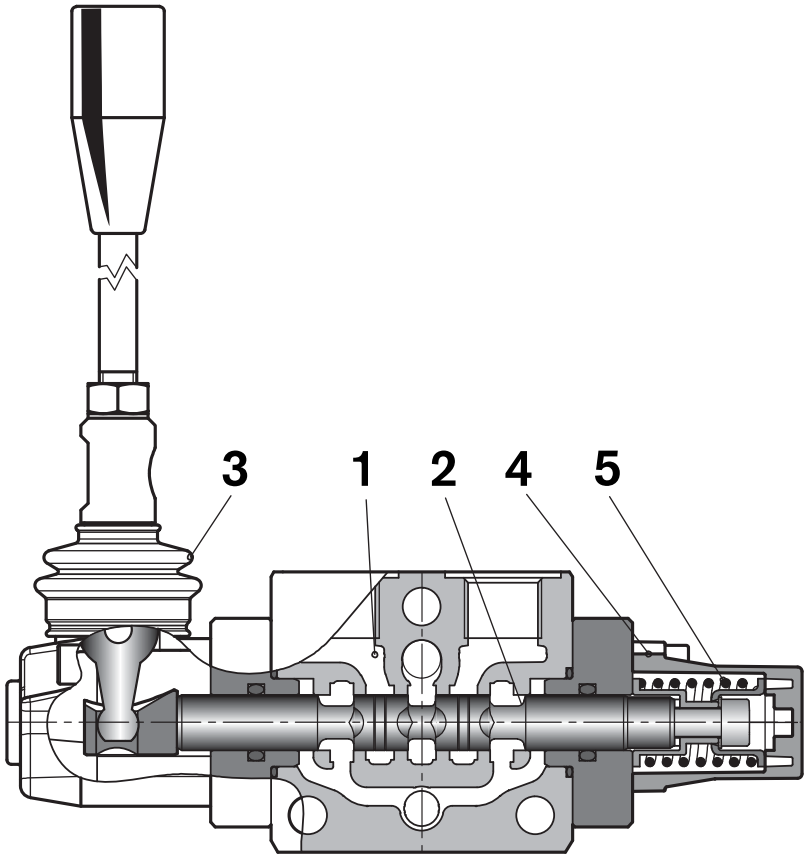
Type L8_L1_2S8__M100 is the valve version in which the return spring (5) brings the spool back to neutral-central position “0” when the manual lever is not operated.

The valve is available with a choice of spool variants (refer to page 3)

Type L8_L1_2S8__F100 is the valve version with mechanical detent in which the control spool (2) stays in anyone of the 3 achieved positions “0”, “a” or “b” when the lever is left free. With this valve, the oil delivery can continue without any action on the lever.

Also this version is available with a choice of spool variants (refer to page 3).

Special types of control are available upon request.



Technical Data (for applications with different specifications consult us)

General

Valve element weight	kg *[lbs]*	1.55 *[3.42]*
Mounting position		Unrestricted
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]* (NBR seals)

Hydraulic

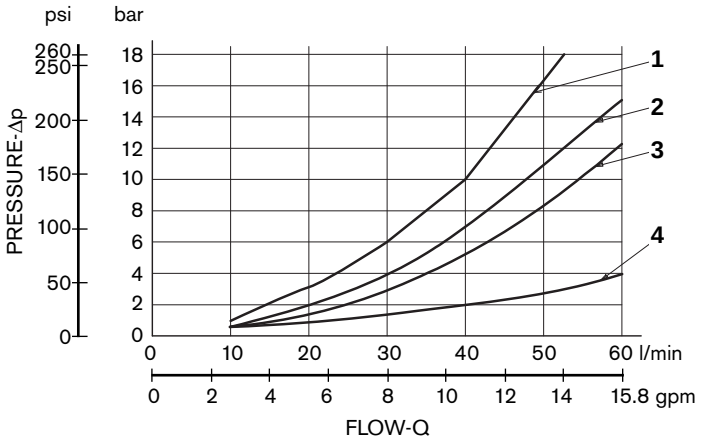
Maximum pressure at P, A and B ports	bar *[psi]*	310 *[4500]*
Maximum pressure at T	bar *[psi]*	160 *[2320]*
Maximum inlet flow	l/min *[gpm]*	60 *[15.9]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Force required for lever operation

Element with return spring	N *[lbs]*	50 *[10.3]*
Element with mechanical detent	N *[lbs]*	25 *[5.2]*

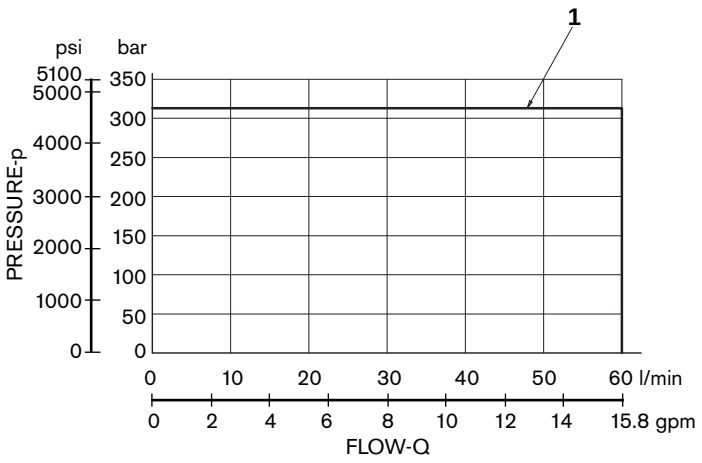
Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



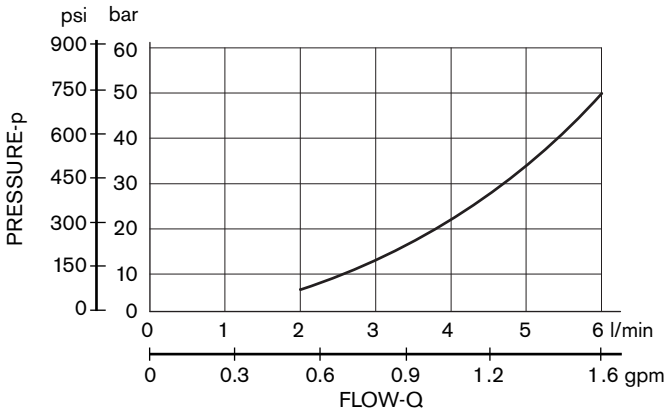
SPOOL VARIANT	Curve No.				
	P>A	P>B	A>T	B>T	P>T
B2S8, E2S8	2	2	4	4	
A2S8	3	3	3	3	1

Performances limits

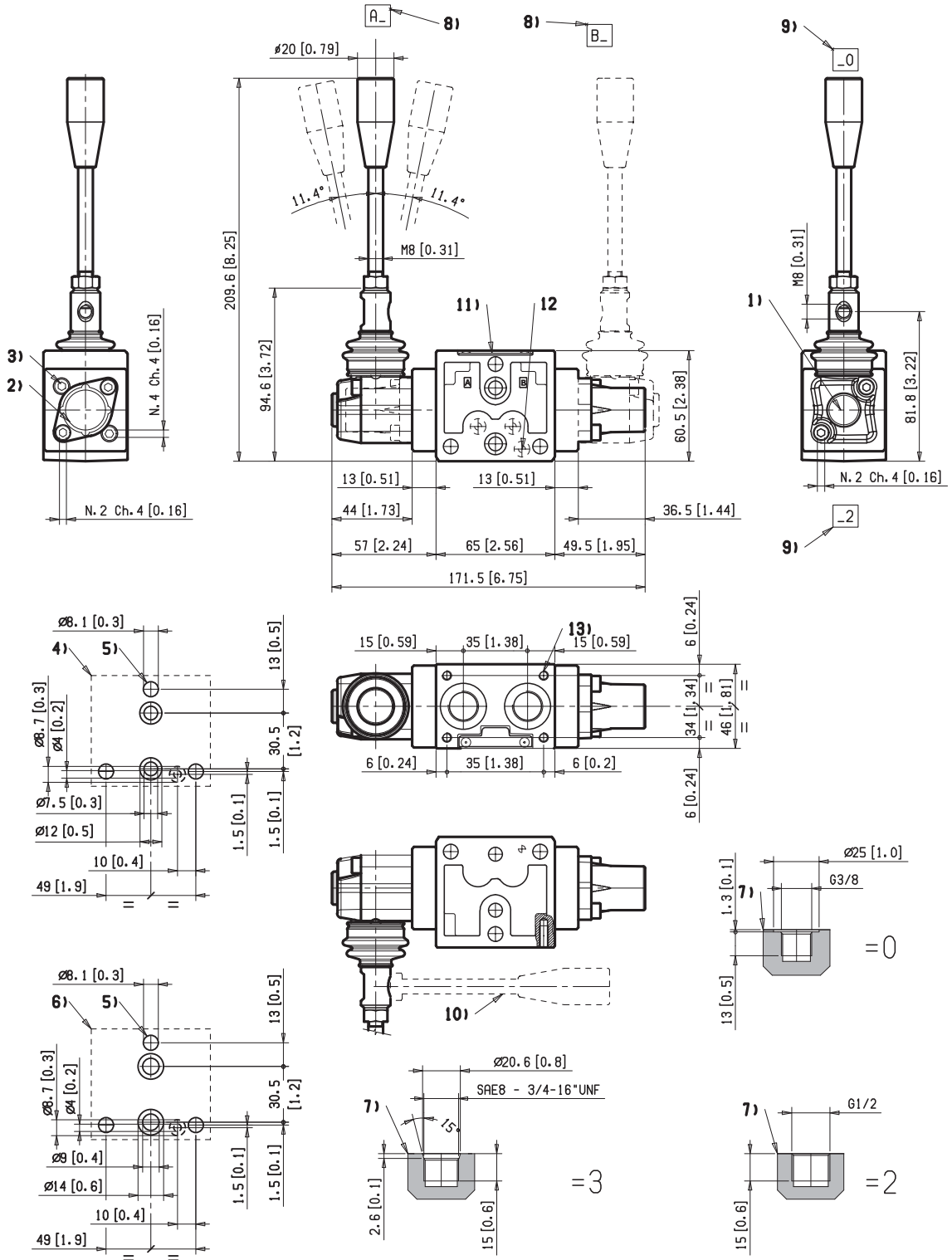


SPOOL VARIANT	Curve No.
A2S8, B2S8, E2S8	1

Minimum flow for efficiency of LS control



External Dimensions and Fittings



1 Fitting of block with the control lever: 2 screws M5, 35 mm long, torque 5-6 Nm *[3.6-4.4 ft-lb]*.

2 Cap for hand lever: 2 screws M5, 14 mm long, torque 5-6 Nm *[3.6-4.4 ft-lb]*.

3 Four screws M5, 14 mm long, torque 5-6 Nm *[3.6-4.4 ft-lb]*.

4 Flange specifications for coupling to ED intermediate elements with ports G 3/8

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

6 Flange specifications for coupling to ED intermediate elements with ports G 1/2 (SAE 8)

7 A and B ports

8 Side with the control lever (Standard is side A)

9 Hand lever orientation

10 Hand lever orientation for packing and shipment

11 Identification label

12 LS channel (only for versions L84…)

13 Four threaded holes for fitting a secondary flangeable elements:

-M5 holes on versions with ports G 3/8

-M6 holes on versions with ports G 1/2 (SAE 8)

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

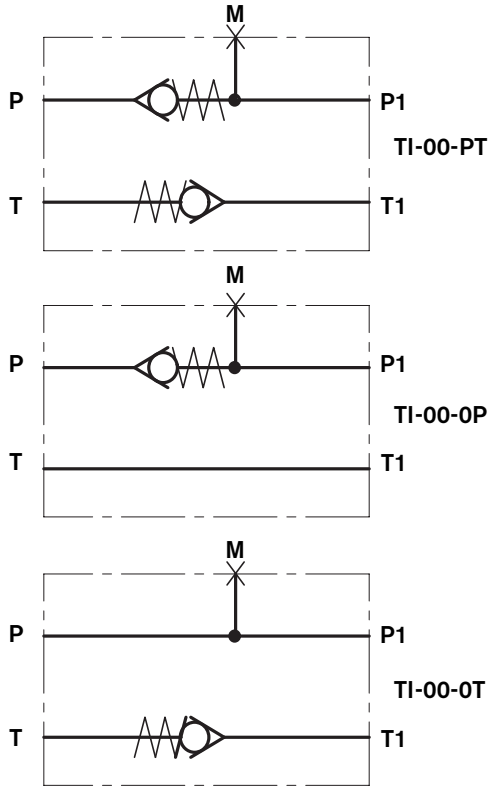
RE 18301-25/10.09 1/2
Replaces: RIE00159/01 .06

Intermediate elements with check valves for emergency pump

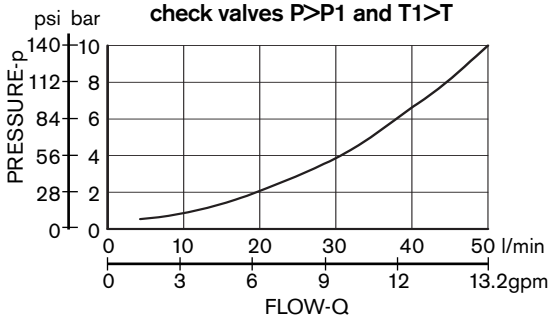

DVI0046

TI-00-__-

HYDRAULIC - SYMBOL



Pressure drop through the check valves P>P1 and T1>T



Description

The intermediate elements TI-00-__- are designed to be fitted between two directional valve elements. They are available with check valve in (P) line, or in (T) line , or in both (P) and (T) line.

With the check valve on (P) line, they are normally fitted to allow free flow from (P) to (P1) and prevent reverse flow from (P1) to (P).

With the check valve on (T) line, they are normally fitted to allow free flow from (T1) to (T), and to prevent reverse flow (T) to (T1).

Technical Data (for applications outside these parameters, please consult us)

General

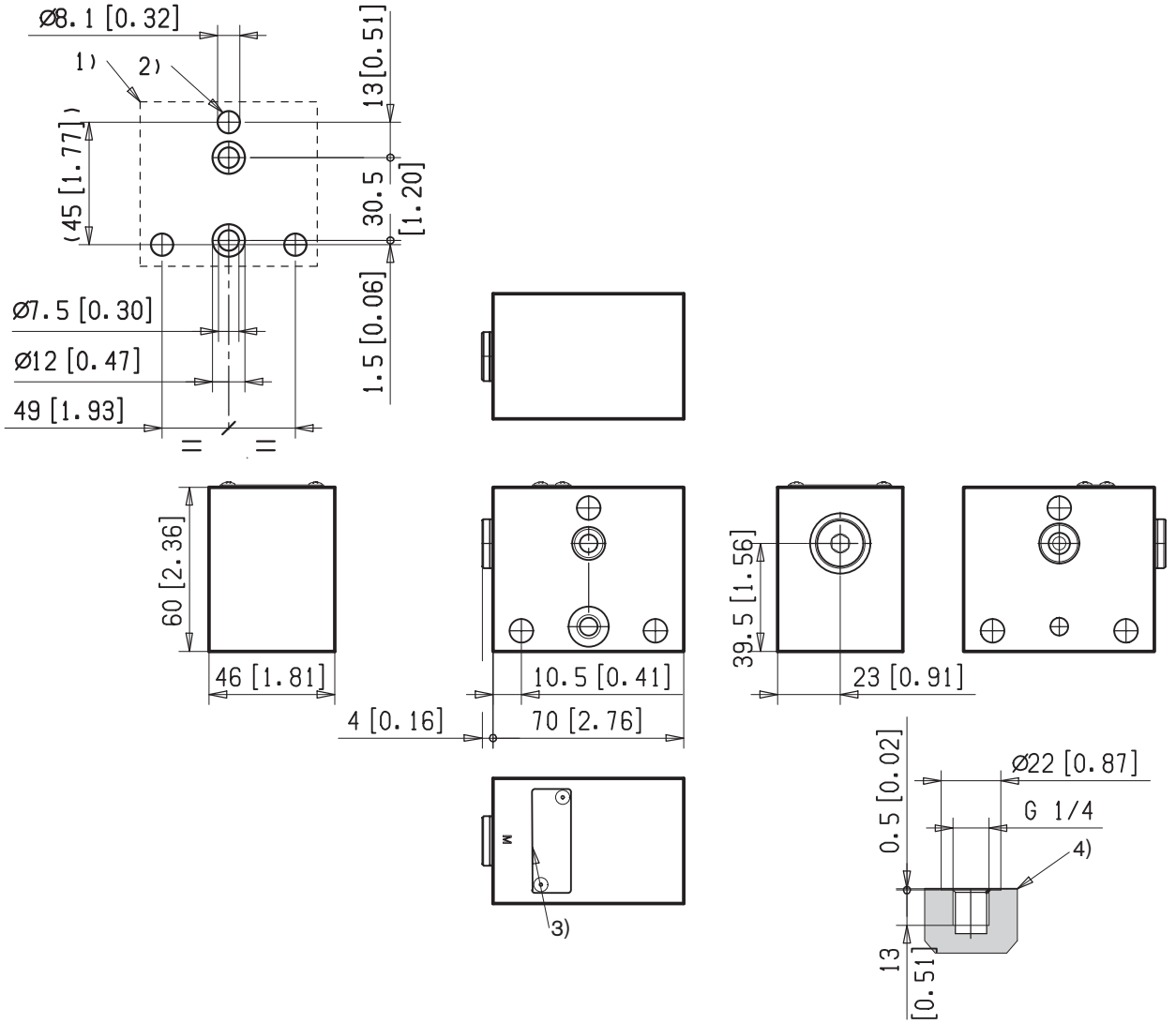
Weight TI-00-PT-..	kg *[lbs]*	0.54 *[1.19]*
Weight TI-00-0P-..	kg *[lbs]*	0.52 *[1.15]*
Weight TI-00-0T-..	kg *[lbs]*	0.52 *[1.15]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Maximum pressure	bar *[psi]*	250 *[3625]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

TI - 00 - . . -



1 Flange specifications for coupling to ED intermediate elements.

2 Three through holes (8.1 mm dia.) for coupling of the ED directional valve elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

3 Identification label.

4 Test point for pressure gauge connection.

Ordering Details

T1	-	00	-	__	-	01	-	AL

Family
Intermediate element

Configuration
with checking valves
for emergency pump

Check valve position

On pressure line P	**=0P**
On tank line T	**=0T**
On both lines P and T	**=PT**

Material
Aluminium

Cracking pressure
1 bar *[14,5 psi]*

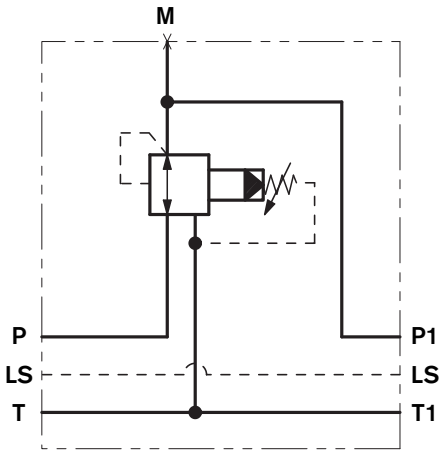
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-26/10.09 1/2

Intermediate elements with pressure reducer, and relieving

TI-03-__-

HYDRAULIC - SYMBOL



Description

The intermediate elements TI-03-__- are designed to be fitted between two directional valve elements. They have a pressure reducing and relieving cartridge which supplies a flow with constant reduced pressure to the downstream operators.

The same cartridge relieves to Tank directly any excessive pressure surge in the downstream line.

These elements basically consist of a stackable aluminium housing, with a VRPX-10A type pressure reducing cartridge.

Technical Data (for applications outside these parameters, please consult us)

General

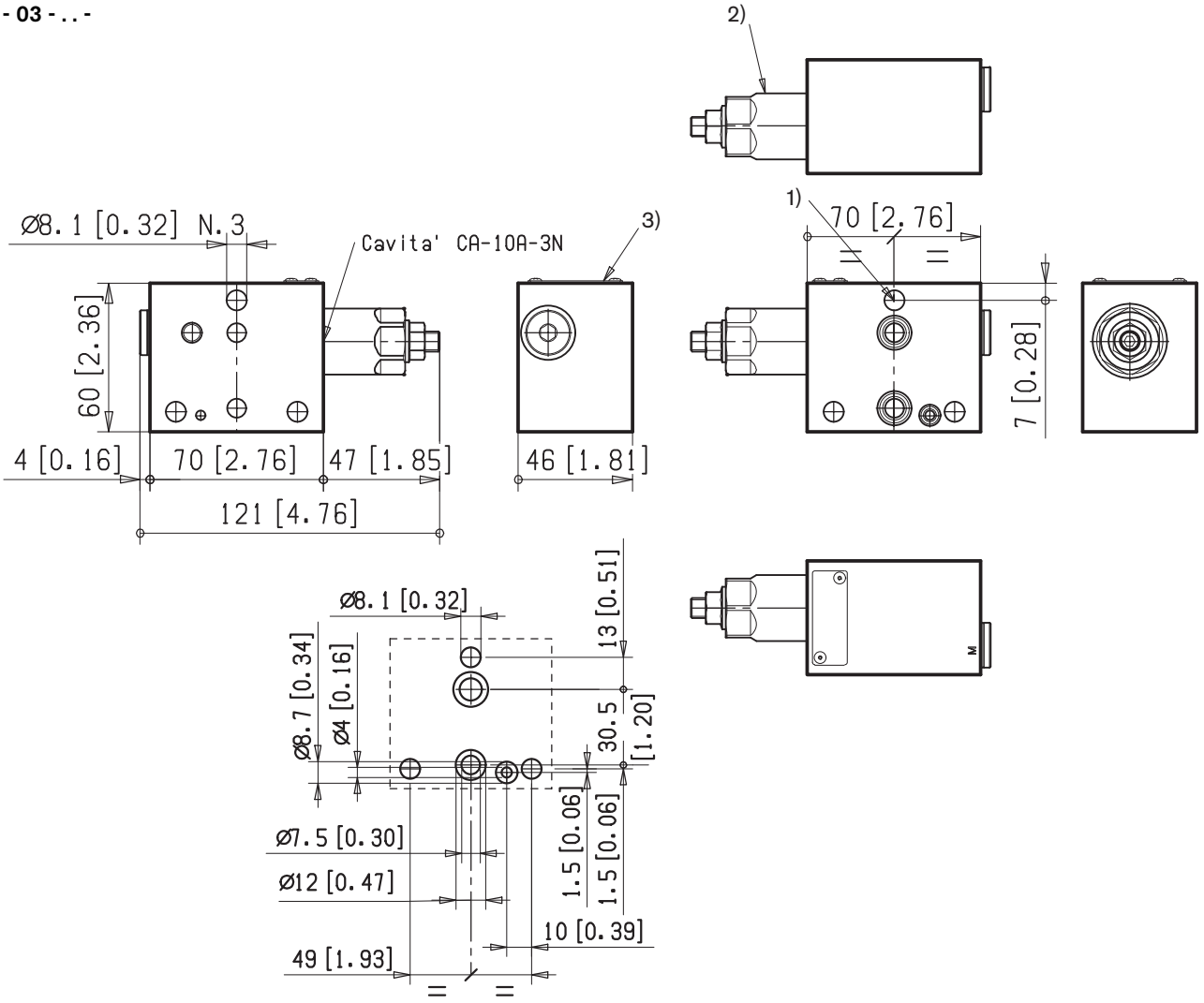
Intermediate element without cartridge TI-03-00-00-AL	kg *[lbs]*	0.42 *[0.93]*
Intermediate element with cartridge TI-03-00-_ _-AL	kg *[lbs]*	0.62 *[1.37]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Maximum pressure	bar *[psi]*	250 *[3625]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

TI - 03 - . . -



1 Three through holes (8.5 mm dia.) for coupling of the ED directional valve elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[14.7-16.2 ft-lb]*.

2 Pressure reducing and relieving cartridge VRPX (refer to RE 18301-91).

3 Identification label.

4 Test point for pressure gauge connection.

Ordering Details

TI	-	03	-	00	-	__	-	AL

Family
Intermediate element

Material
Aluminium

Configuration
with pressure reducer, and relieving

Pressure reducing valve range
V1 = 35-140bar *[500-2000 Psi]*
V2 = 70-280bar *[1000-4000 Psi]*

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

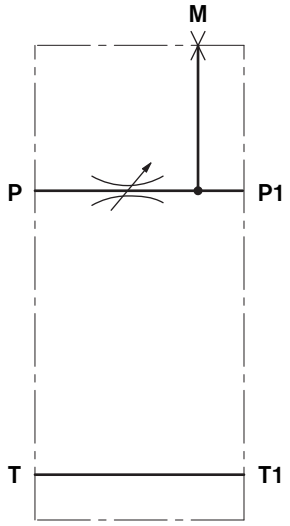
RE 18301-27/10.09 1/2

Intermediate elements with flow regulator on P line


DVI0058

TI-04-__-

HYDRAULIC - SYMBOL



Description

The intermediate elements TI-04-__- are designed to be fitted between two directional valve elements. They incorporate an adjustable flow restrictor which limits the flow at the outlet P1 for the downstream operators.

The body is made of black anodized aluminium (Al).

Technical Data (for applications outside these parameters, please consult us)

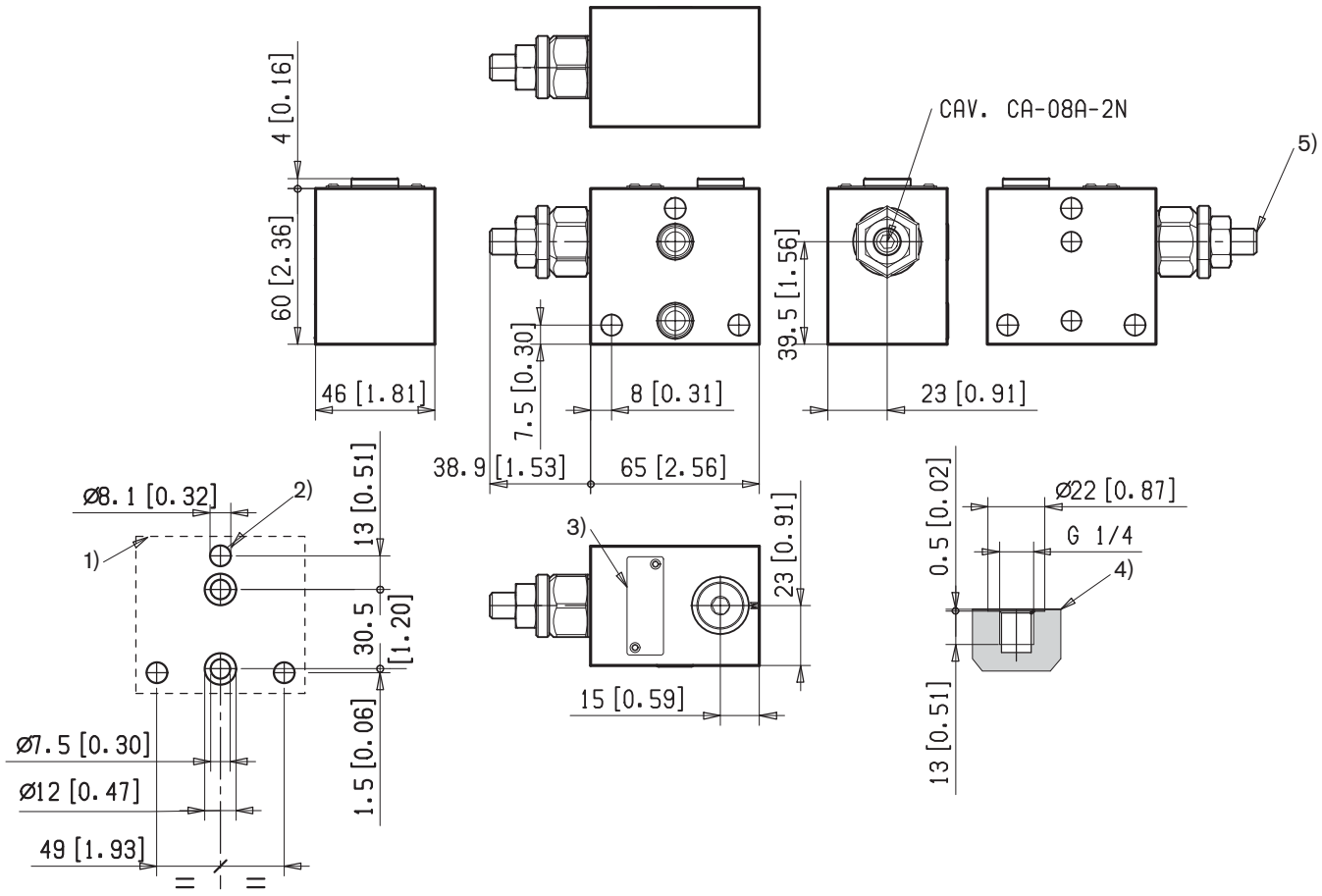
General

Weight with cartridge	kg *[lbs]*	0.42 *[0.93]*
Weight without cartridge	kg *[lbs]*	0.62 *[1.37]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum inlet flow	l/min *[gpm]*	50 *[13.2]*
Maximum pressure	bar *[psi]*	250 *[3625]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings



1 Flange specifications for coupling to ED intermediate elements.

2 Three through holes (8.1 mm dia.) for coupling of the ED directional valve elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm [14.7-16.2 ft-lb].

3 Identification label.

4 Test point M(G 1/4) for pressure gauge connection.

5 Flow regulator cartridge ST-C-06.

Ordering Details

TI	-	04	-	01	-	AL

Family
Intermediate element

Configuration
with flow regulator on P line

Material
Aluminium

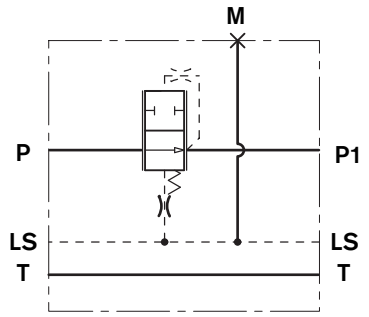
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-28/10.09 1/2

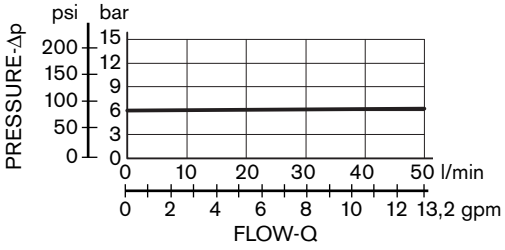
Intermediate elements with 2 way compensator, and with LS connections

TI-C2-__-__

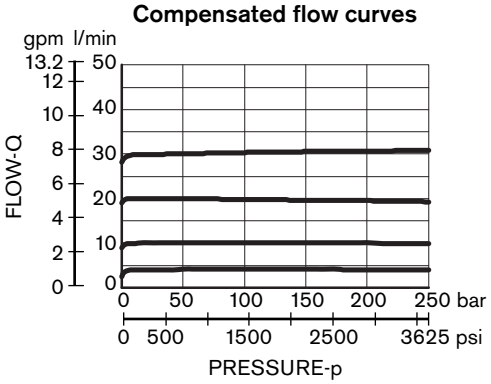
HYDRAULIC - SYMBOL



Pressure function



Compensated flow curves



Description

The sandwich plate design directional valve elements TI-C2-__-… basically consist of a stackable housing with a 2 way compensator controlled by the LS pressure signal. The normally open compensator maintains a constant pressure difference between the P1 (outlet) line and the LS pressure; the result is a constant oil flow to the P1 port for the downstream operators, independently from the working pressure.

The excess oil must be unloaded to tank through a relief valve.

The stackable housing is made of Yellow Zinc plated (Cr+3) Cast Iron.

Technical Data (for applications outside these parameters, please consult us)

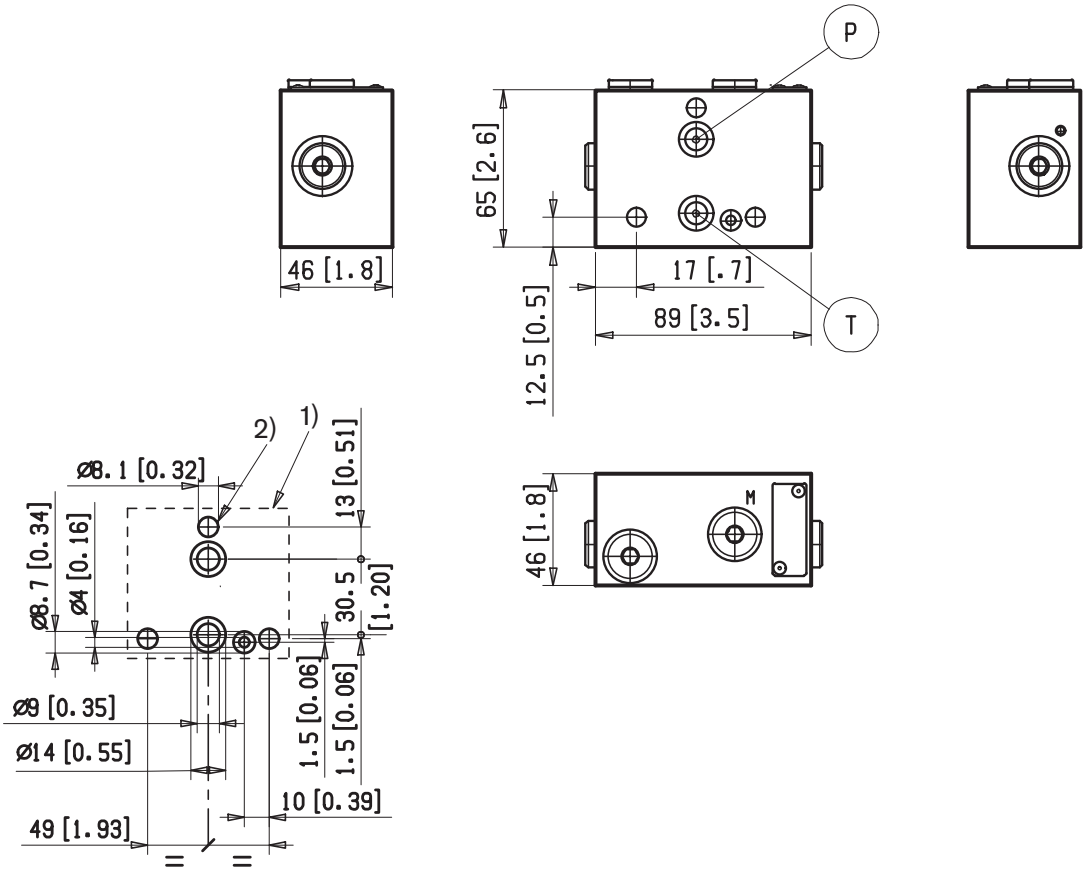
General

Valve element TI-C2-__-	kg *[lbs]*	1.7 *[3.75]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum inlet flow	l/min *[gpm]*	30 *[7.9]*
Maximum pressure	bar *[psi]*	310 *[4500]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings



1 Flange specifications for coupling to ED intermediate elements.

2 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb]*.

Ordering Details

TI	-	C 2	-	M 0	-	0 0

Family
Intermediate elements

Configuration
with 2 way compensator, and with LS connections

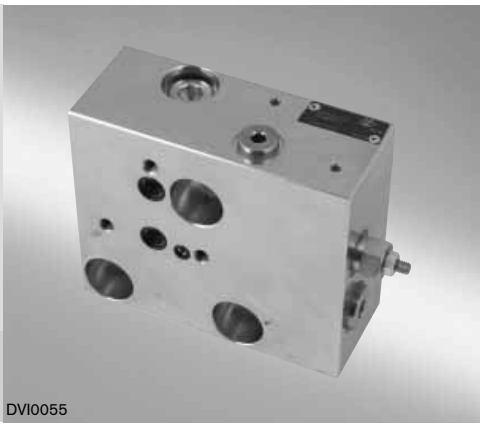
Compensator spring
Setting 6 bar *[87 psi]*

Version
Standard

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

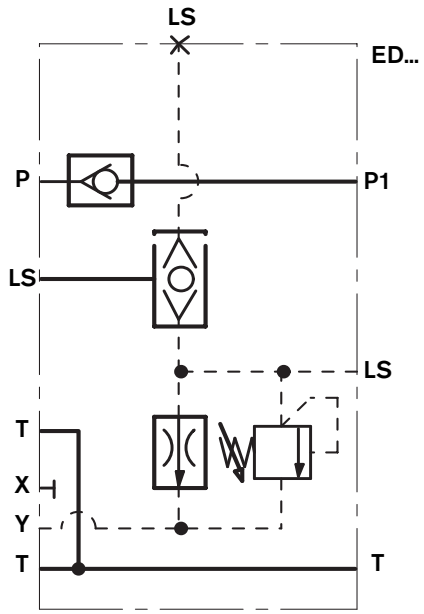
RE 18301-29/10.09 1/4

Intermediate elements for interfacing ED with M4-12


DVI0055

TI-M412-__-__

HYDRAULIC - SYMBOL



Description

The adaptor elements TI-M412 -__ are employed to connect an ED directional valve assembly to a main control valve Rexroth M4-12.

These elements basically consist of body made of Yellow Zinc plated (Cr+3) steel which incorporates the following items:

- a check valve on the P – P1 line.
- a shuttle valve on the LS lines.
- a relief valve on the un the LS line which controls the maximum pressure output from the pump.
- a pressure compensated orifice which drains to tank the LS pressure by unloading a small regulated flow.

Technical Data (for applications outside these parameters, please consult us)

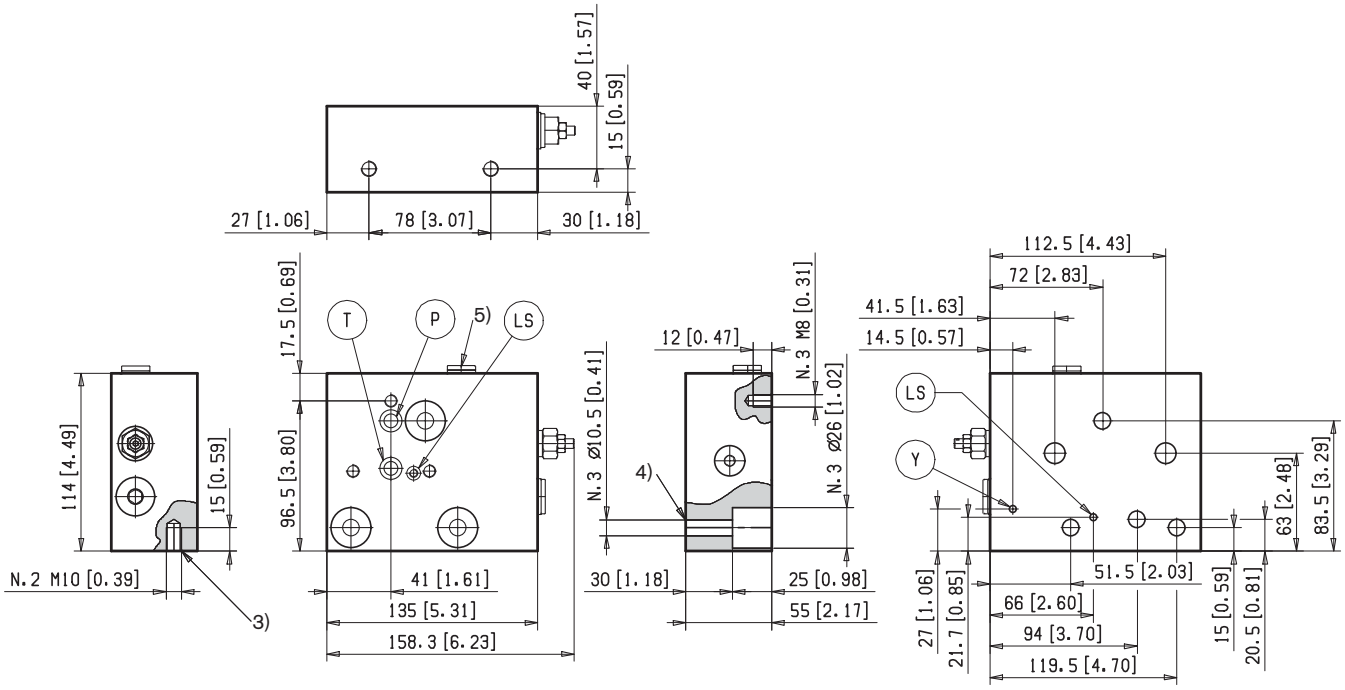
General

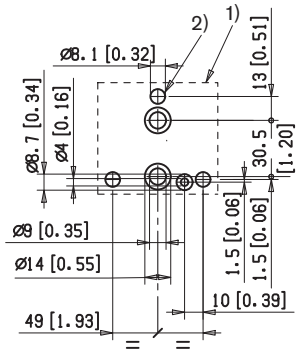
Weight	kg *[lbs]*	6 *[13.2]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	310 *[4500]*
Max. flow at P1		The max. rated flow depends from the directional control element.
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings





1 Flange specifications for coupling to ED directional valve elements.

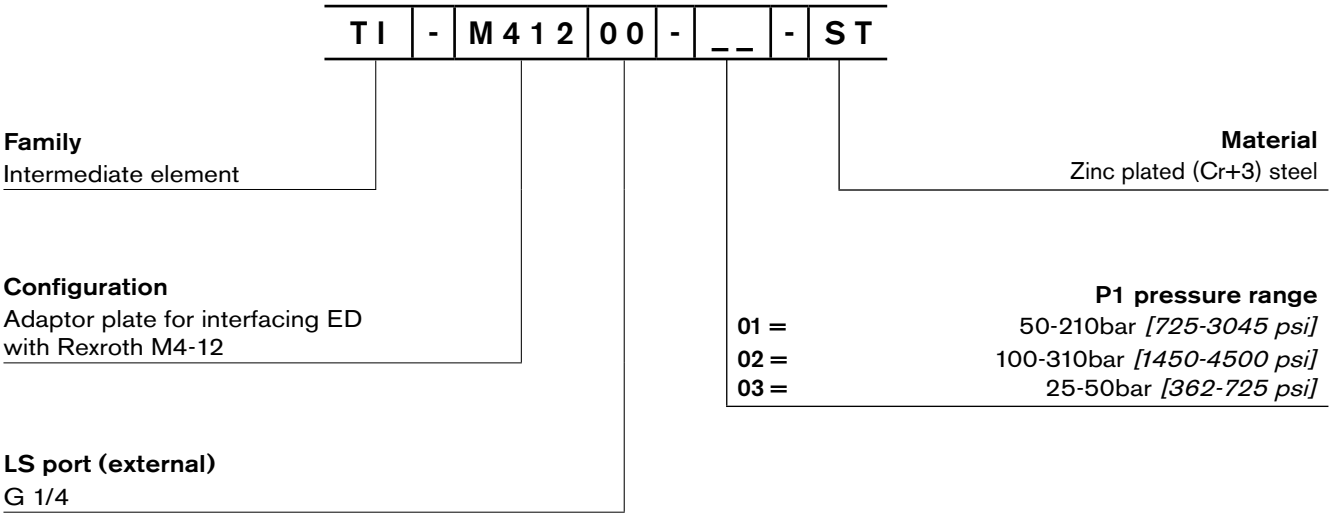
2 Three threaded holes M8 for screwing the M8 tie rods of the ED Directional Valve Elements. Recommended strength class DIN 8.8; torque 20-22 Nm *[14.7-16.2 ft-lb]*.

3 No. 2 threaded holes M10 for assembling to the Main Directional Control Valve M4-12.

4 No. 3 holes 10.5 mm dia. for assembling M4-12 directional valve elements.

5 LS port (locked by a G 1/4 plug).

Ordering Details



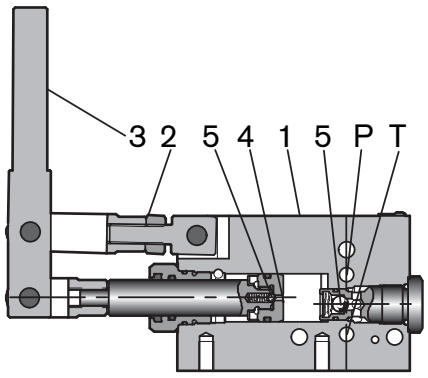
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-30/10.09 1/2

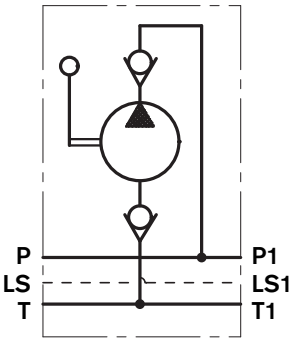
Intermediate elements with double acting hand pump


DVI0009

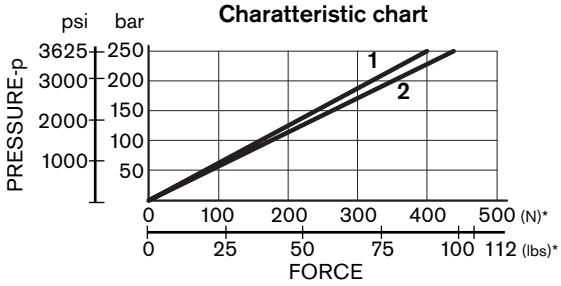
EPM-DE-18



HYDRAULIC - SYMBOL



Charatteristic chart



1: Opening stroke.

2: Closing stroke.

* Force applied by operator using our extension lever, length 457.5 mm *[18 in]*.

Description

The intermediate plate with an auxiliary hand pump has to be insert between the inlet plate and the ED modular directional valves. It necessary to use an intermediate plate with a hand pump (EPM) when for directive or technical motivations it needs to generate a pressure without the use of any other energy source. Handling the lever the spool is moved and by two relieves, it transfers a flow rate of oil from T line to P line. This hand pump is declared: double effect hand pump, because the flow is transferred whether pulling whether pushing the lever. When the pump is not used, the lever is positioned in the opening phase end-run.

It is available, on request, a longer lever. In this way the operator force to move the lever is lower.

Technical Data (for applications outside these parameters, please consult us)

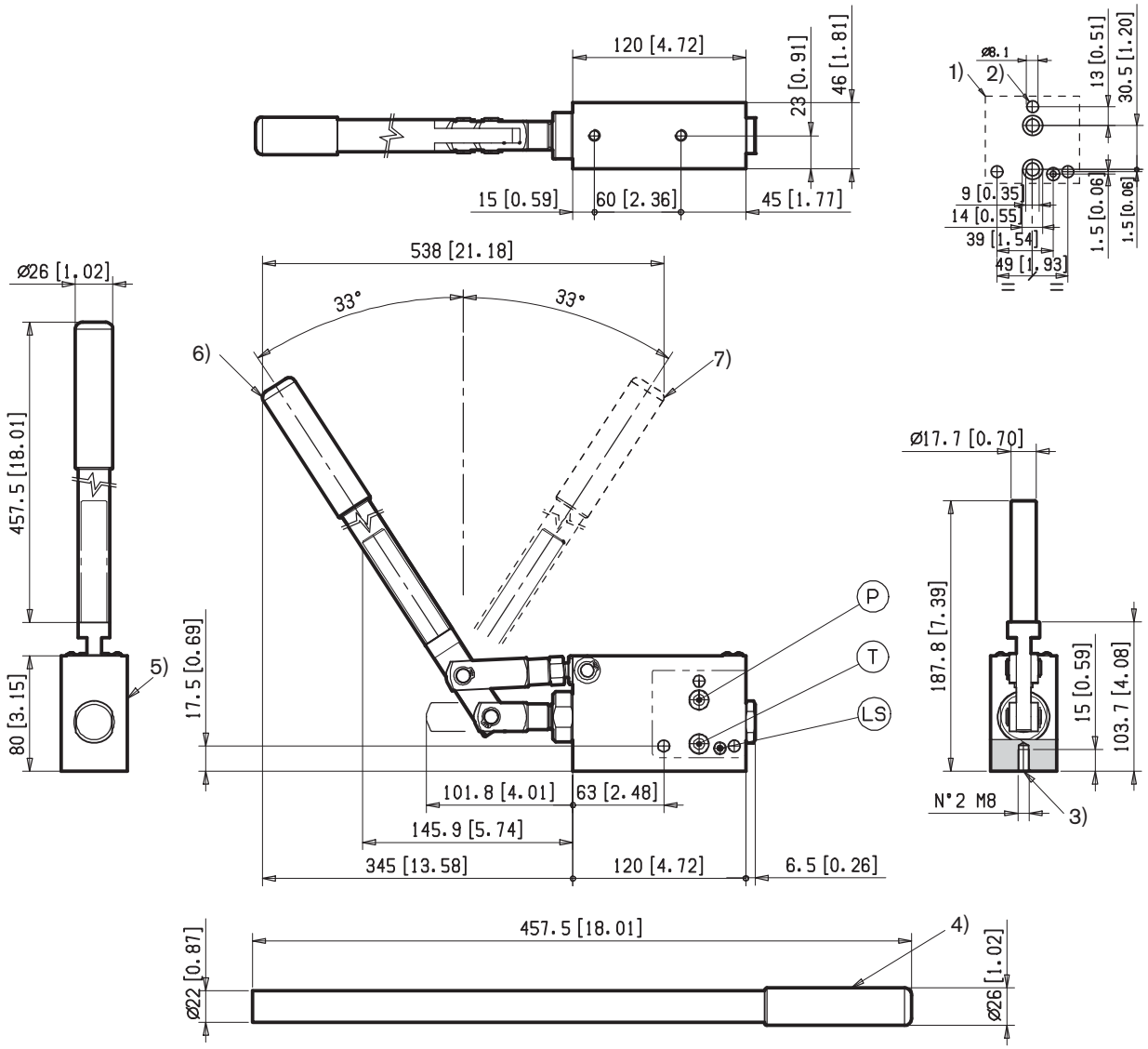
General

Weight of the EPM (hand pump slice)	kg *[lbs]*	3.8 *[8.4]*
Weight of the extension lever	kg *[lbs]*	0.7 *[1.5]*
Ambient temperature	°C *[°F]*	–20....+50 *[–4....+120]* (NBR seals)

Hydraulic

Maximum resistance pressure	bar *[psi]*	310 *[4500]*
Maximum generated pressure	bar *[psi]*	250 *[3625]*
Total displacement	cc *[in³]*	18 *[1.08]*
Opening displacement	cc *[in³]*	8.5 *[0.51]*
Closing displacement	cc *[in³]*	9.5 *[0.57]*
Maximum aspiration height	m *[ft]*	1.5 *[4.92]* (with pipe DN6)
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Oil temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Fluid cleanliness		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity class	mm²/s	5....420
Maximum internal leakage	cc/min *[in³/min]*	0.2 *[0.012]*

External dimension and fittings



1 Flange specifications for coupling to ED intermediate elements.
2 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm *[16.2-17.7 ft-lb].*
3 N° 2 Fixing Hole. M8. tightening torque 35-40 Nm. *[26-29.5ft-lbs].*
4 Optional extension lever. (See ordering code).
5 Side of position of inlet plate.
6 End-run lever (opening phase).
7 End-run lever (closing phase).

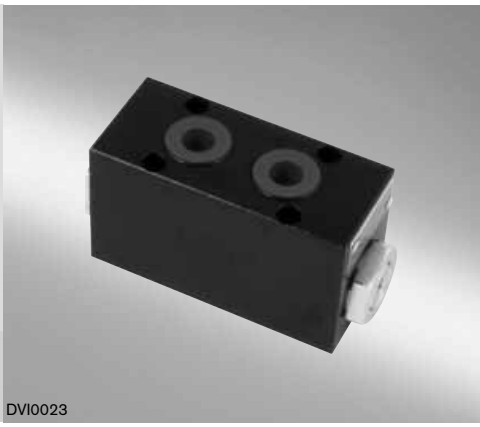
Ordering Details

Code	Description
L88700000000000	HAND PUMP ED
L88700000000001	EXTENTION LEVER FOR HAND PUMP ED

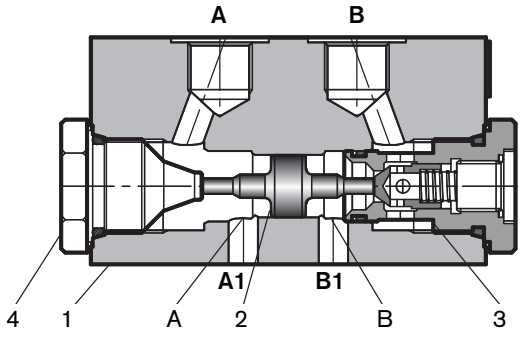
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-40/10.09 1/4
Replaces: RIE00159/01.06

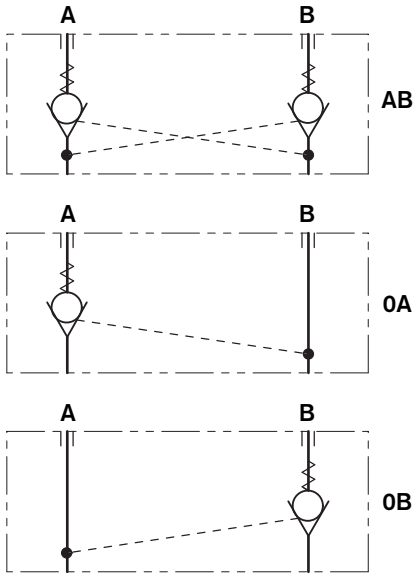
Flangeable elements with single or double acting Cross Piloted Check Valves


DVI0023

EDM-VR



HYDRAULIC - SYMBOL



Description

The secondary flangeable elements EDM-VR-__ can be interfaced and bolted on top of the A and B ports of the ED elements of the Directional Valve Assembly.
They incorporate two Cross Piloted Check Valves which allow free flow toward the A and B outlet ports, and lock in a leak free mode the flow returning from the actuator, until sufficient pilot pressure is built up in the opposite line and the check valve is opened.
Depending on the version selected (AB, or 0A, or 0B), the PO Check Valve is in both A and B ports, or in A port only, or in B port only (see hydraulic symbols).
The Pilot Ratio is 4:1, consequently, the pilot pressure needs to be at least 1/4, or 25% of the load induced pressure in the actuator before the Check Valve opens, and oil can return to tank.
The body of the EDM-VR- elements is made of Black Anodized Aluminium (AL). Hydraulic Ports A2 and B2 are size G 3/8.

Technical Data (for applications outside these parameters, please consult us)

General

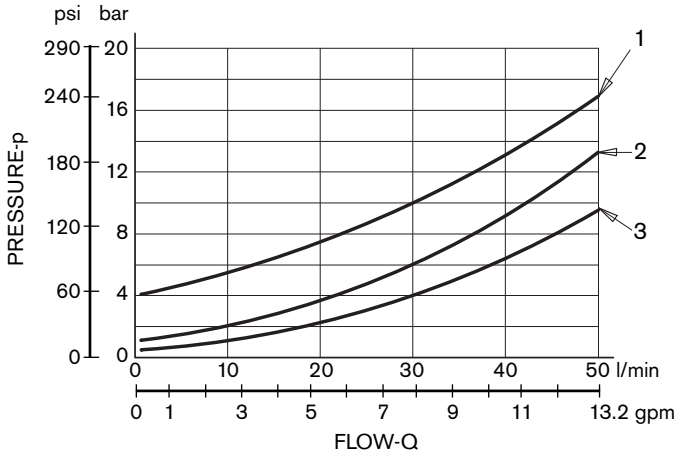
Weight EDM-VR AB and A/B	kg *[lbs]*	0.8 *[1.76]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

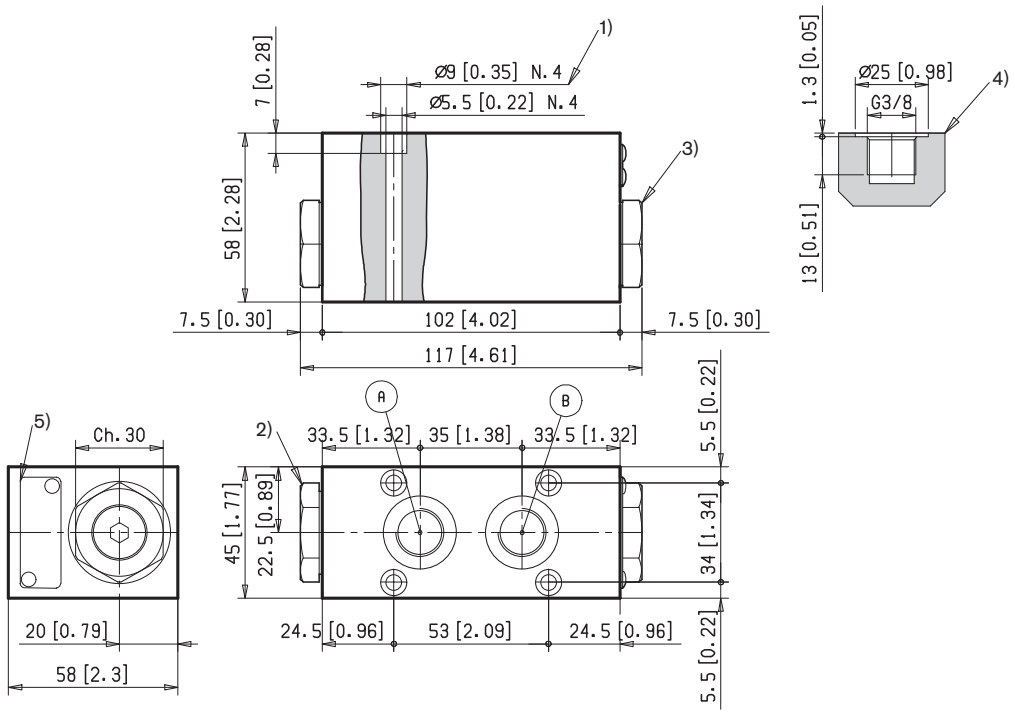
Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



Cracking pressure	Curve number
4 bar *[58 psi]* free flow either A1 > A2 or B1 > B2	**1**
0.5 bar *[7.3 psi]* free flow either A1 > A2 or B1 > B2	**2**
Returning flow, fully piloted, either A2 > A1 or B2 > B1	**3**

External Dimensions and Fittings



1 Four through holes 5.5 mm DIA *[0.217 inch]* for locking on top of the ED Directional Valve Elements.

2 Locking plug hex.: 30 mm *[0118 inch]*.

3 Check valve external hex.: 30 mm *[0118 inch]*.

4 A and B ports for the actuator.

5 Identification label.

Ordering Details

L	8 8	4 0	_ _ _ _	_ _	0 0	0	0

Family
Directional Valve element ED

Model
Flangeable element secondary valves

Type
Cross Piloted Check Valves

Configuration

Check Valves for both A and B ports	**= 00AB**
Check Valve for port A only	**= 000A**
Check Valve for port B only	**= 000B**

Cracking Pressure

01 =	0.5 bar *[7.3 psi]*
04 =	4 bar *[58 psi]*

Ports
G 3/8 DIN 3852

Additional fixtures
Standard

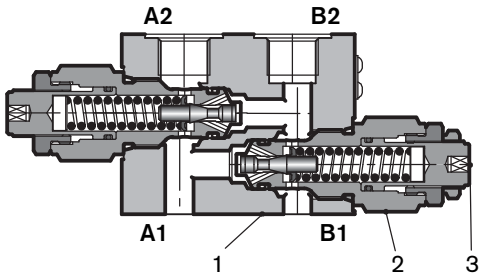
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-41/10.09 1/4
Replaces: RIE00159/01.06

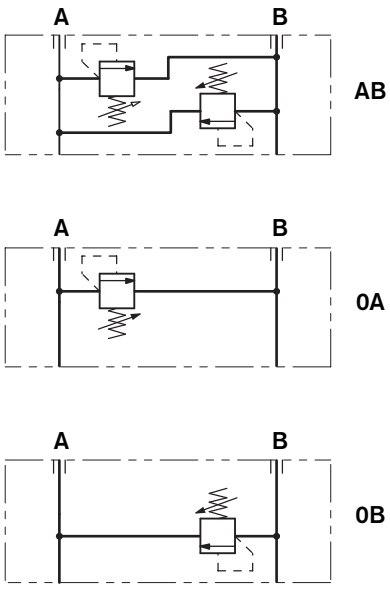
Flangeable elements with secondary pressure relief valves single or double


DVI0022

EDM-VM



HYDRAULIC - SYMBOL



Description

The secondary flangeable elements EDM-VM-__ can be interfaced and bolted on top of the A and B ports of the ED elements of the Directional Valve Assembly.

The body (1) is made of black anodized aluminium, and it incorporates one or two direct acting pressure relief valves (2), fitted with cross-over configuration: the relief valve for line A releases the oil into line B and viceversa

The maximum secondary pressure in line A, or B, can be adjusted through the adjuster screw (3).

Technical Data (for applications outside these parameters, please consult us)

General

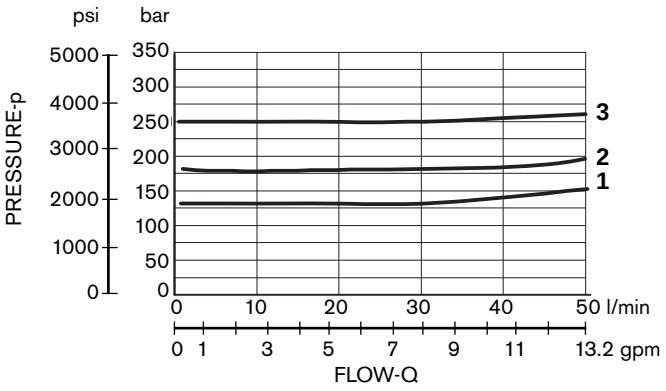
Weight EDM-VM-AB	kg *[lbs]*	0.79 *[1.75]*
Weight EDM-VM-0A (EDM-VM-0B)	kg *[lbs]*	0.61 *[1.36]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

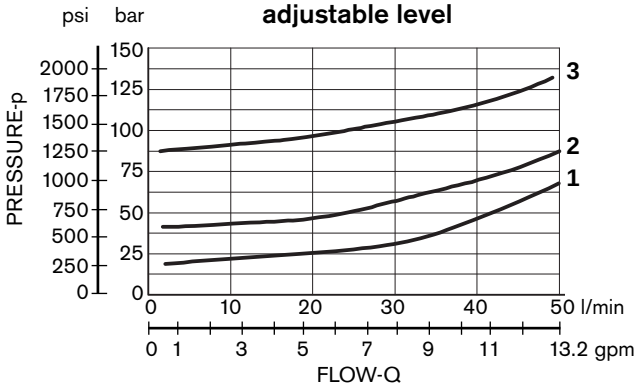
Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



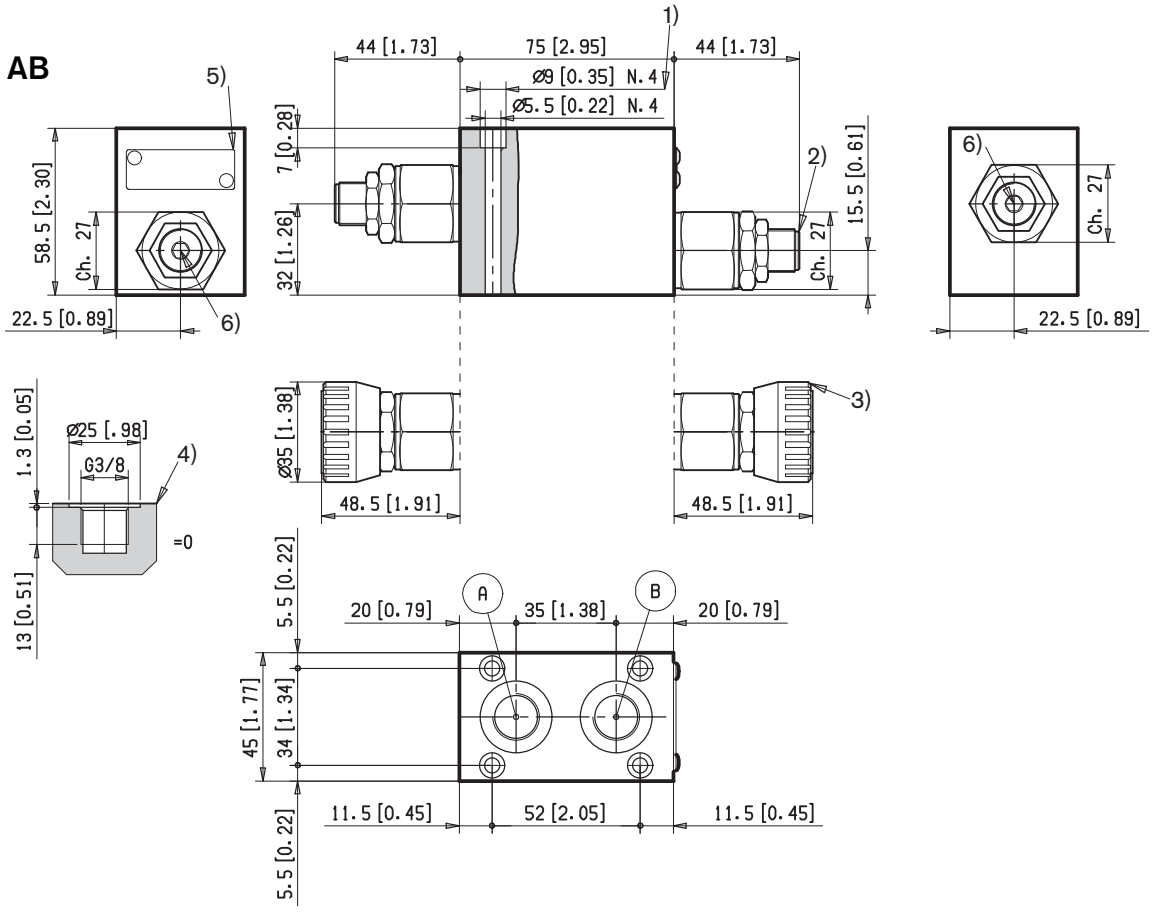
Pressure range and lowest adjustable level



Pressure range	Curve No.
N (25-120 bar) *[360-1740psi]*	1
B (40-200bar) *[580-2900psi]*	2
V (150-350 bar) *[2175-5075psi]*	3

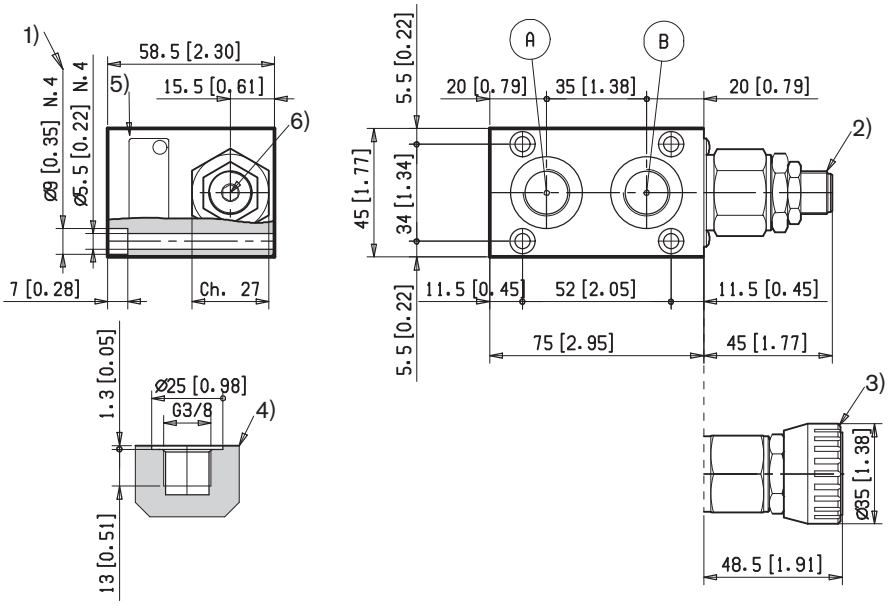
External Dimensions and Fittings

L88 _ _ AB

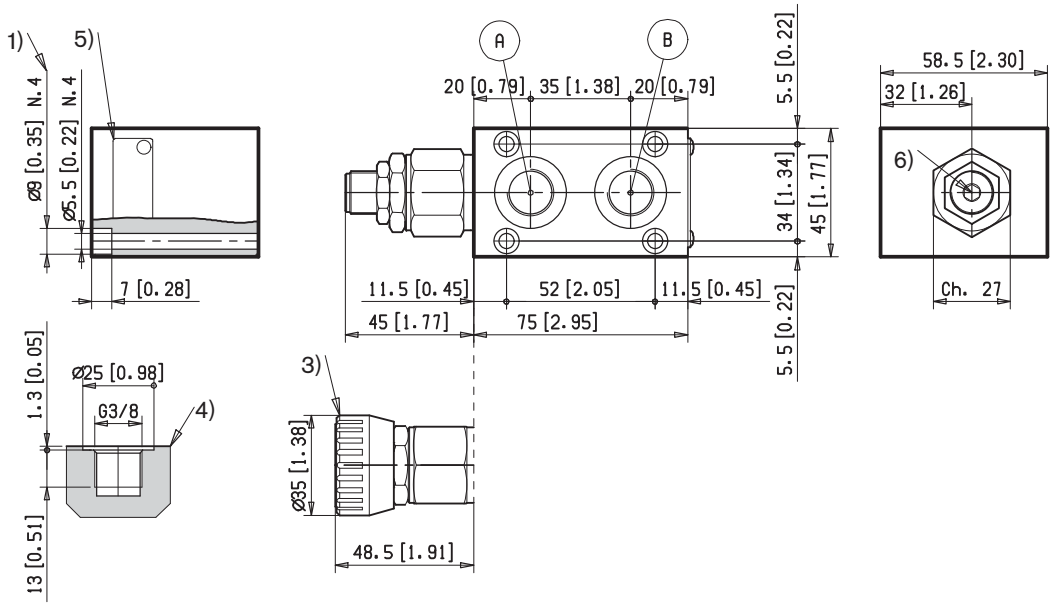


External Dimensions and Fittings

L88 _ _ 0A



L88 _ _ 0B



1 Four through holes 5.5 mm DIA *[0.217 inch]* for locking on top of the ED Directional Valve Elements.

2 Pressure relief cartridge with adjuster screw.

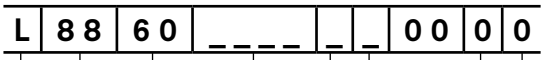
3 Pressure relief cartridge with hand-knob type VMD1040 refer to RE 18301-91

4 A and B ports.

5 Identification label.

6 Hex 5 mm *[0.2 inch]* for setting pressure relief valves.

Ordering Details



Family
Directional Valve element ED

Model
Flangeable element secondary valves

Type
Secondary pressure relief

Configuration

Pressure relief for both A and B ports	**= 02AB**
Pressure relief for port A only	**= 020A**
Pressure relief for port B only	**= 020B**

Pressare adjustment

S =	Relief cartridge with adjuster screw
K =	Relief cartridge with hand-knob

Pressure range

N =	25-120 bar *[360-1740 psi]*
B =	40-200 bar *[580-2900 psi]*
V =	150-350 bar *[2175-5075 psi]*

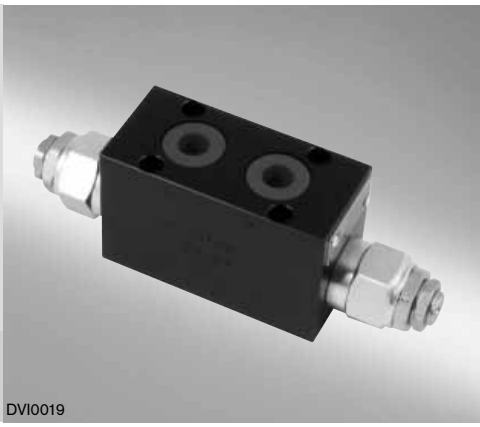
Ports
G 3/8 DIN 3852

Additional fixtures
Standard

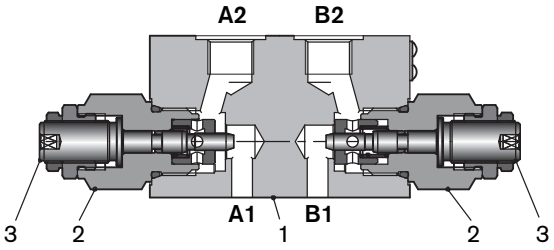
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-42/10.09 1/4
Replaces: RIE00159/01.06

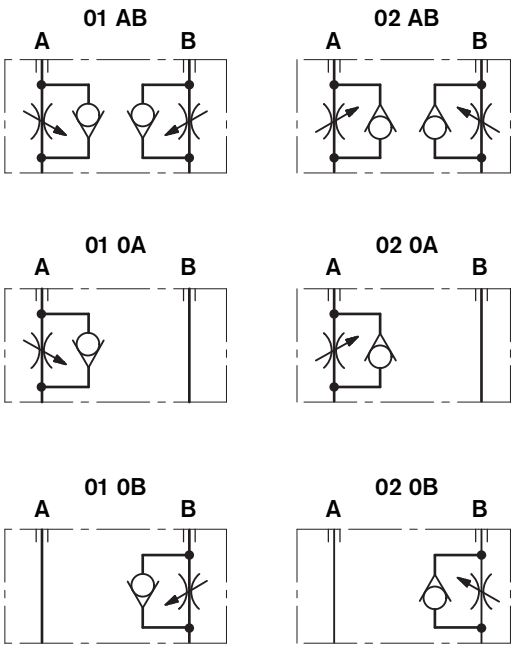
Flangeable elements with unidirectional flow controls for meter-in or meter-out


DVI0019

EDM-VF



HYDRAULIC - SYMBOL



Description

The secondary flangeable elements EDM-VF-__ can be interfaced and bolted on top of the A and B ports of the ED elements of the Directional Valve Assembly.
They incorporate two unidirectional flow restrictors, and, depending on the version selected (01 AB, or 02 AB), they allow free flow A1>A2 and B1>B2, with and controlled/restricted flow in the reverse directions A2>A1 and B2>B1, or vice-versa.
Also the single acting versions are available, with only one flow restrictor fitted either in side A or in side B.
The restrictors are adjustable through the adjuster screw 3.
The body of the EDM-VF- elements is made of Black Anodized Aluminium (AL). Hydraulic Ports A2 and B2 are size G 3/8.

Technical Data (for applications outside these parameters, please consult us)

General

Weight EDM-VF version -AB-	kg *[lbs]*	0.89 *[2.18]*
Weight EDM-VF version -0B- (-0A-)	kg *[lbs]*	0.80 *[1.76]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

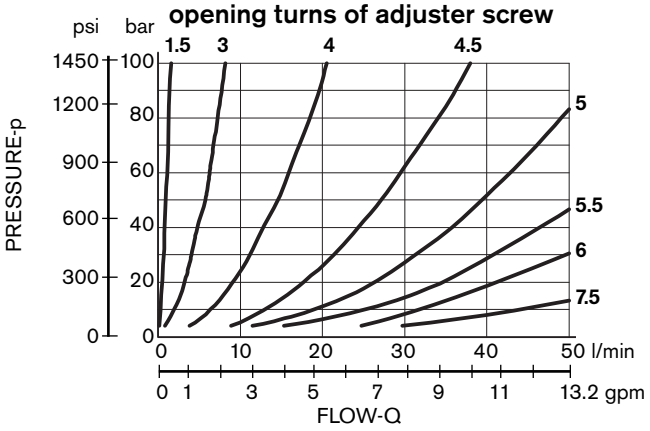
Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum flow	l/min *[gpm]*	50 *[13.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

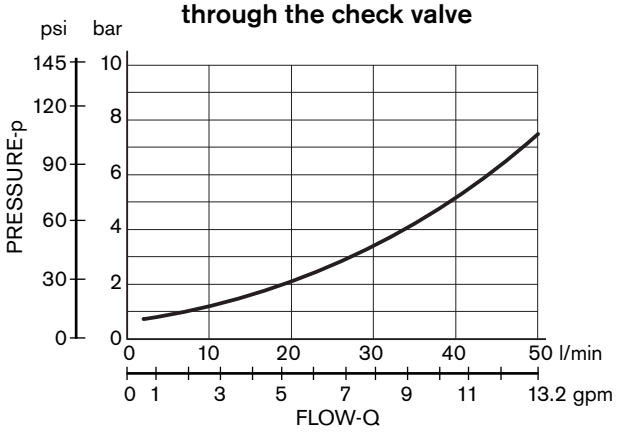
Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.

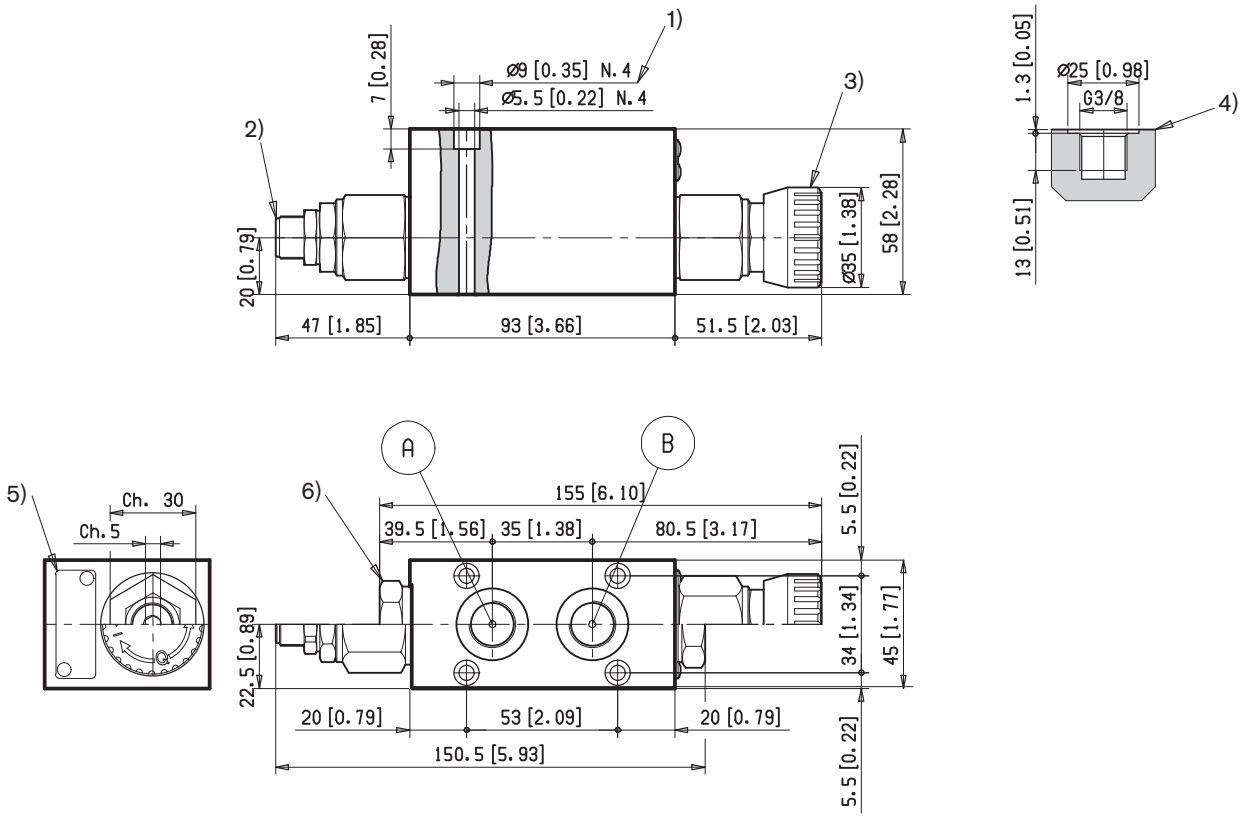
Controlled flow vs. available pressure drop, at different opening turns of adjuster screw



Δp curve vs. free flow, through the check valve



External Dimensions and Fittings



1 Four through holes 5.5 mm DIA *[0.217 inch]* for locking on top of the ED Directional Valve Elements.

2 Unidirectional flow restrictor with adjuster screw

3 Unidirectional flow restrictor with hand-knob.

4 Ports for the actuator

5 Identification label

6 Locking nut hex. 30 mm *[1,18 inch]*

Ordering Details

L	88	50	_ _ _ _	_ _	00	0	0

Family
Directional Valve element ED

Model
Flangeable element secondary valves

Type
One-way flow control

Configuration

Flow control “meter out” for both A and B ports	**= 01AB**
Flow control “meter out” for port A only	**= 010A**
Flow control “meter out” for port B only	**= 010B**
Flow control “meter in” for both A and B ports	**= 02AB**
Flow control “meter in” for port A only	**= 020A**
Flow control “meter in” for port B only	**= 020B**

Flow Adjustment

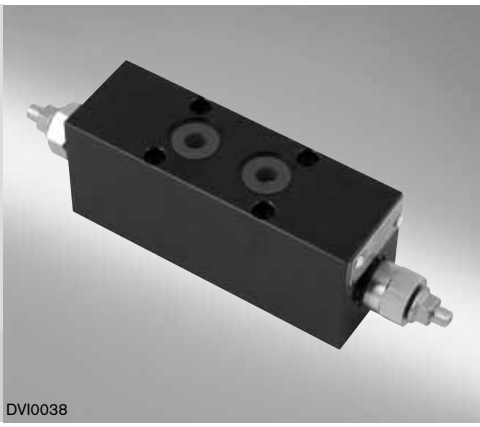
2S =	Flow control cartridge with adjuster screw
2K =	Flow control cartridge with hand-knob

Ports
G 3/8 DIN 3852

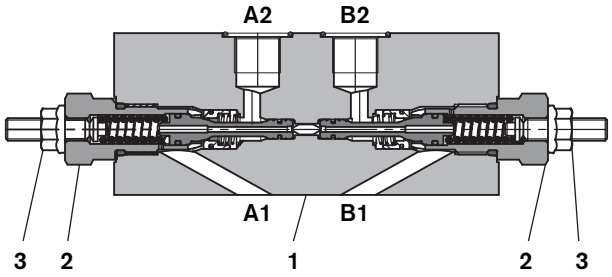
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-43/10.09 1/4
Replaces: RIE00159/01.06

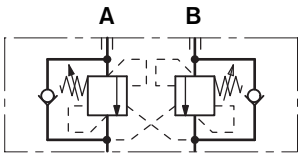
Flangeable elements with Cross Piloted Counterbalance Valves


DVI0038

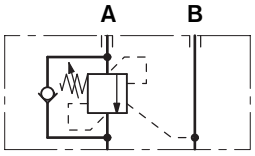
EDM-VB



HYDRAULIC - SYMBOL



02 AB



02 0A

Description

The secondary flangeable elements EDM-VB-__ can be interfaced and bolted on top of the A and B ports of the ED elements of the Directional Valve Assembly.
They incorporate one or two Cross Piloted Counterbalance Valves which allow free flow toward the A and B outlet ports, and lock in a leak free mode the flow returning from the actuator. Pilot pressure in the opposite line reduces the pressure setting of the counterbalance valve in proportion to the pilot ratio (4:1) until opening and allowing the flow return from the actuator. The pressure setting should be at least 1,3 times the highest expected load. Depending on the version selected (01AB, 02AB, 010A, 020A, 010B, or 020B), the counterbalance function can be double-acting or single-acting, upstream or downstream, in both A and B ports, or in A port only, or in B port only (see hydraulic symbols).

The body of the EDM-VB elements is made of Black Anodized Aluminium. Hydraulic Ports A and B are size G 3/8.

Technical Data (for applications outside these parameters, please consult us)

General

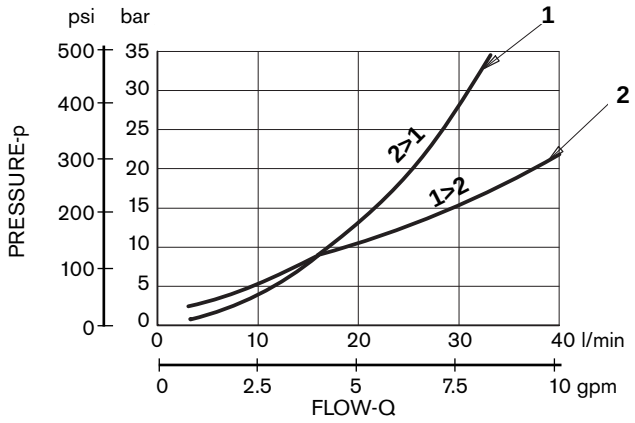
Weight of manifold, with two counterbalance valves EDM-VB-AB	kg *[lbs]*	1.2 *[2.65]*
Weight of manifold, with one counterbalance valve EDM-VB-0A	kg *[lbs]*	1.02 *[2.24]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum flow	l/min *[gpm]*	40 *[10.5]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm^2/s	5....420

Characteristic curves

Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.

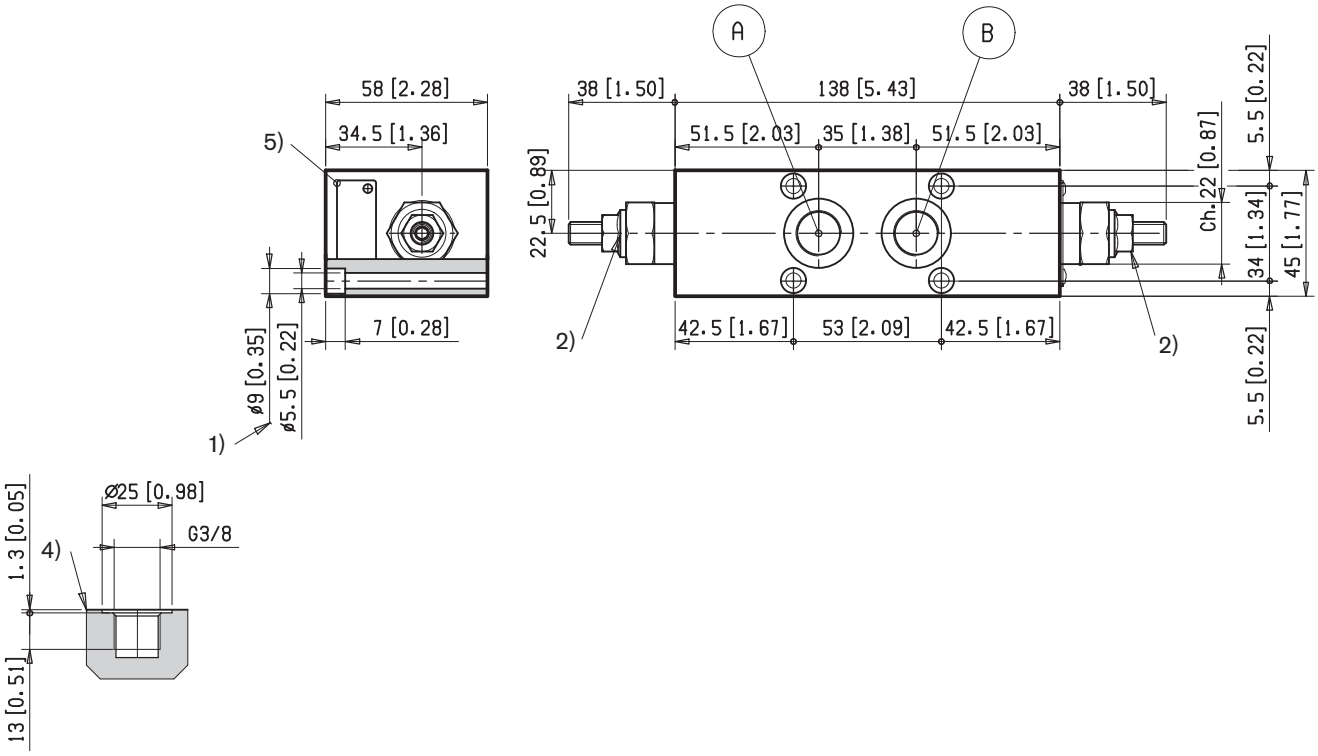


1 Pressure drop fully piloted.

2 Pressure drop through check valve.

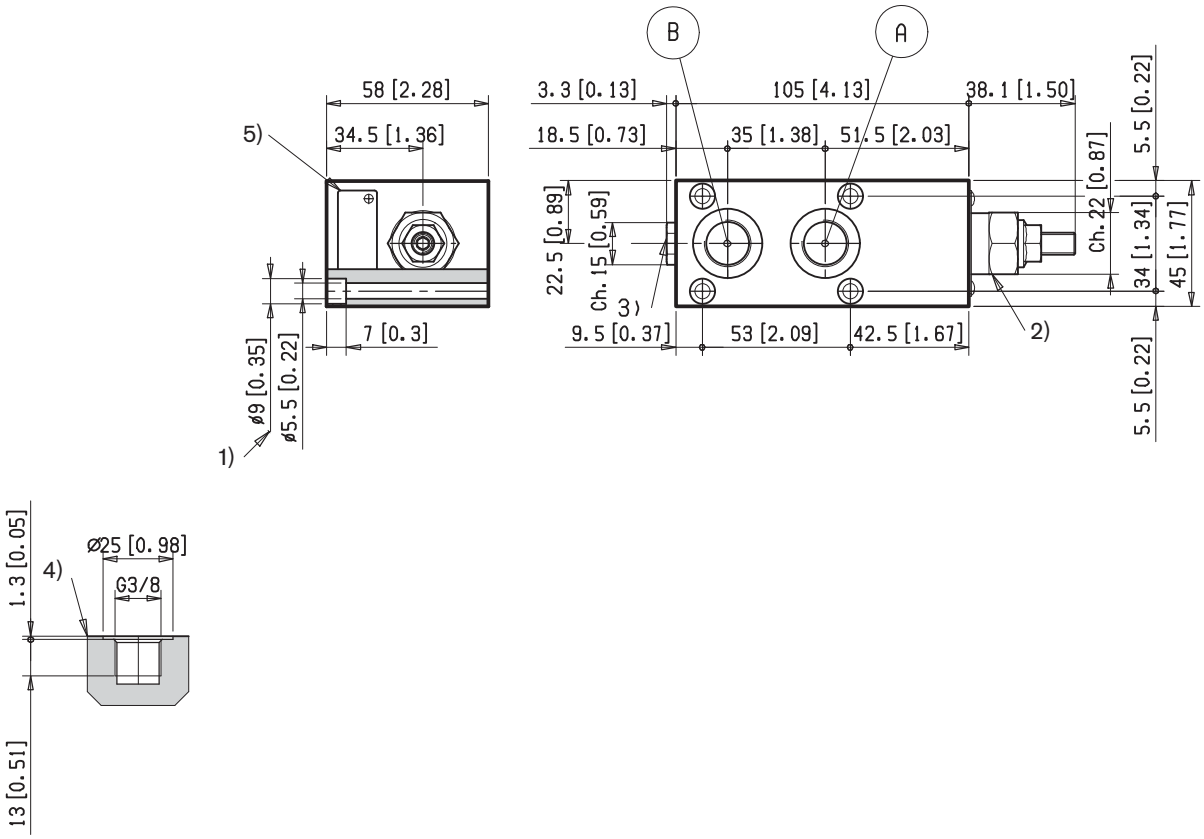
External Dimensions and Fittings

L8835020AB _ _



External Dimensions and Fittings

L8835020A _ _



1 Four through holes 5.5 mm DIA *[0.217 inch]* for locking on top of the ED Directional Valve Elements.

2 Counterbalance valve with screw type adjustment.

3 Pilot restriction / dampening screw.

4 A1 and B1 ports for the actuator.

5 Identification label

Ordering Details

L	88	35	_ _ _ _	35	00	0	0

Family
Directional Valve element ED

Model
Flangeable element secondary valve

Type
Cross Piloted Counterbalance Valves

Configuration
Counterbalance Valves for both A and B ports **= 02AB**
Counterbalance Valve for port A only **= 020A**

Counterbalance pressure range
100-250bar *[1440-3626 psi]*

Ports
G 3/8 DIN 3852

Additional fixtures
Standard

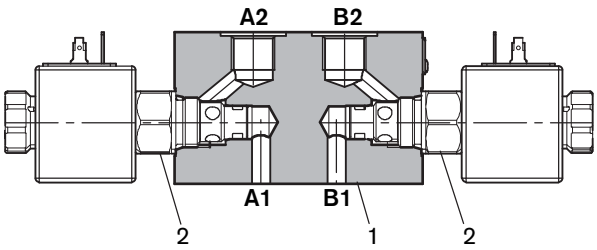
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-44/10.09 1/4

Flangeable elements with in-line 2/2 solenoid cartridges valves


DVI0049

EDM-VEI



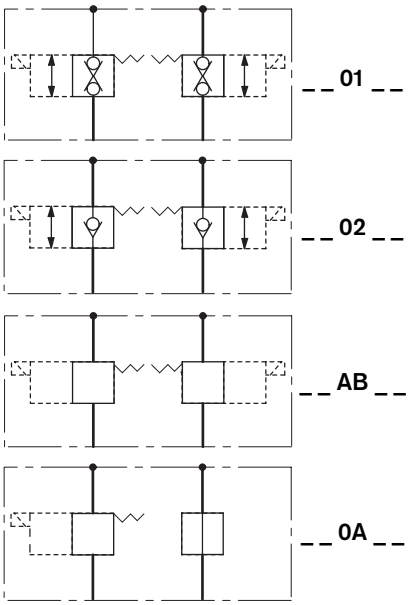
Description

The secondary flangeable elements EDM-VEI-__ can be interfaced and bolted on top of the A and B ports of the ED elements of the Directional Valve Assembly.

They incorporate one or two solenoid operated cartridges (VEI), and they can create a variety of hydraulic circuits, depending on the cartridges fitted.

The body of the EDM-VEI elements is made of Black Anodized Aluminium. Hydraulic Ports A2 and B2 are size G 3/8.

HYDRAULIC - SYMBOL



Technical Data (for applications outside these parameters, please consult us)

General

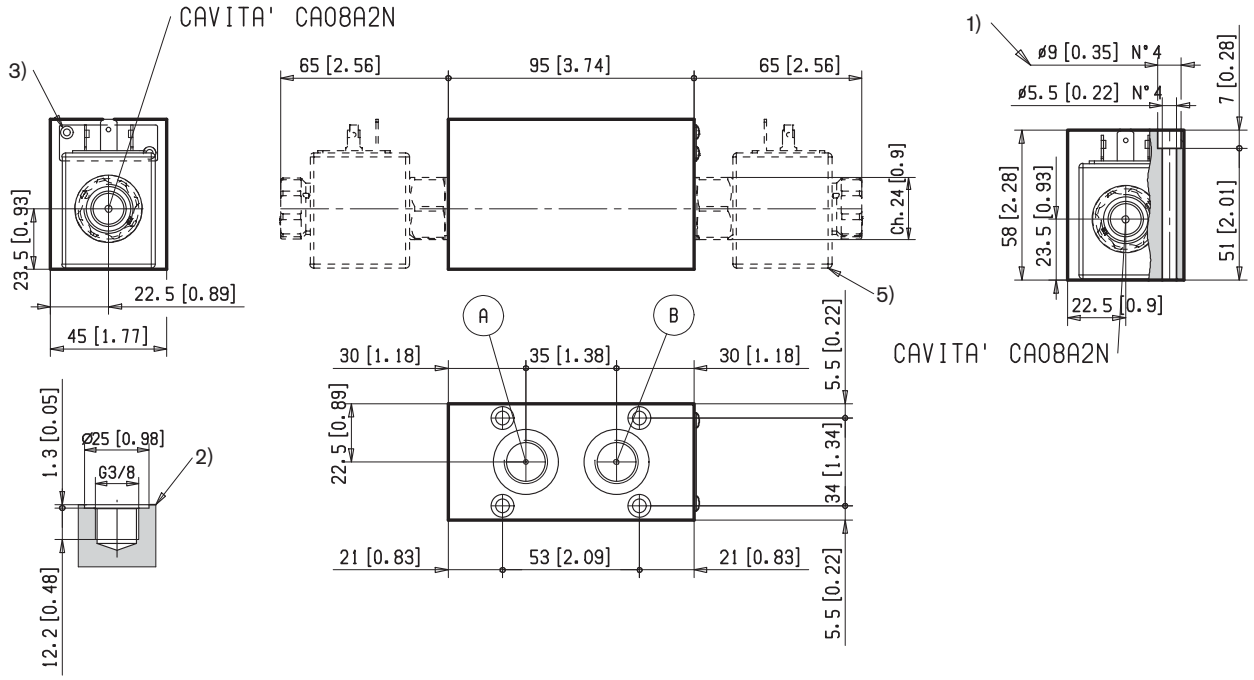
Weight of manifold only, without solenoid cartridge	kg *[lbs]*	0.60 *[1.32]*
Weight with one solenoid cartridge	kg *[lbs]*	0.95 *[2.10]*
Weight with two solenoid cartridges	kg *[lbs]*	1.22 *[2.68]*
Ambient temperature	°C *[°F]*	-20....+50 *[-4....+120]*

Hydraulic

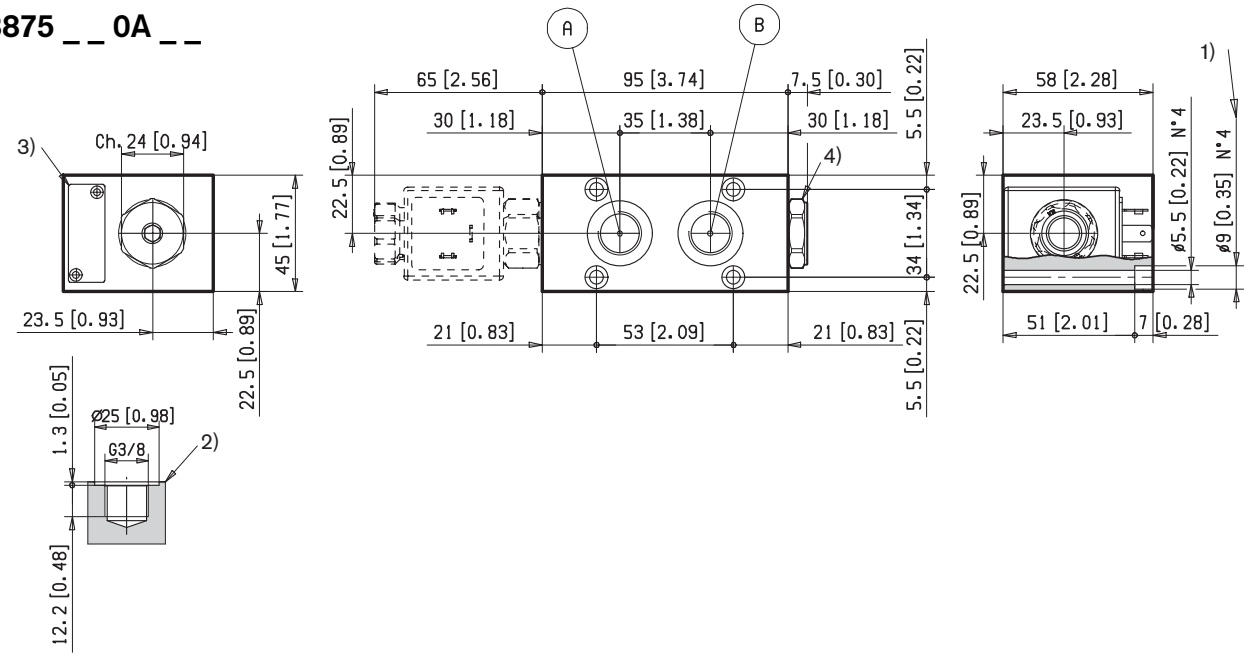
Maximum pressure	bar *[psi]*	250 *[3600]*
Maximum flow	l/min *[gpm]*	40 *[10.5]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR seals)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

L8875 _ _ AB _ _



L8875 _ _ 0A _ _



1 Four through holes 5.5 mm DIA *[0.217 inch]* for locking on top of the ED Directional Valve Elements.

2 A and B ports G 3/8.

3 Identification label.

4 Threaded plug hex. 24 mm *[0.866 inch].*

5 Cavity for solenoid cartridge VEI (refer to RE 18301-91).

Ordering Details

L	8 8	7 5	_ _	_ _	_ _	_ _	0	0

Family
Directional Valve element ED

Model
Flangeable element secondary valves

Type
In-line 2/2 solenoid cartridges valves

Cartridge model *
VEI-8I-2T-06-NC **= 01**
VEI-8I-2A-06-NC **= 02**

Configuration
Solenoid cartridges for both A and B ports **= AB**
Solenoid cartridge for port A only **= 0A**

Supply Voltage
OB = 12V DC
OG = 14V DC
OC = 24V DC
AC = 26V DC

Electric Connector
01 = DIN46350-ISO 4404
03 = AMP JUNIOR
07 = DT04-2P

Ports
G 3/8 DIN 3852

Additional fixtures
Standard

* Other versions on request.

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

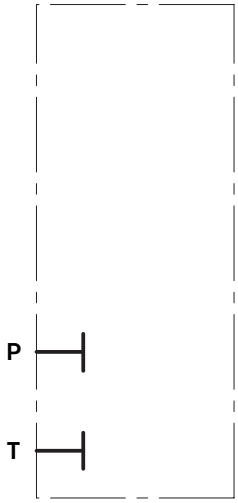
RE 18301-60/10.09 1/2
Replaces: RIE00159/01.06

End elements basic

TC-00-__-


DVI0042

HYDRAULIC - SYMBOL



Description

The outlet elements TC-00-__ are available in two versions:

- Body made of Black Anodized Aluminium (Al), or
- Body made of Yellow Zinc plated (Cr+3) Cast Iron (CI).

They are employed as end plates to plug the P and T channels of the ED elements of the Directional Valve Assembly, when there are no downstream operators.

Technical Data (for applications outside these parameters, please consult us)

General

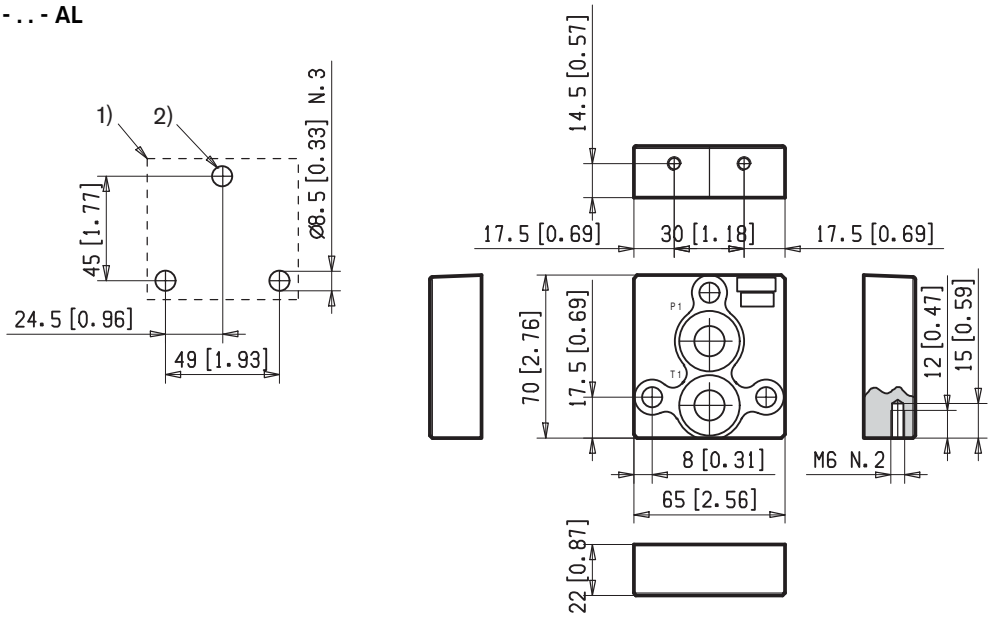
Weight TC-00-..-AL element	kg *[lbs]*	0.16 *[0.35]*
Weight TC-00-..-CI element	kg *[lbs]*	0.44 *[0.96]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

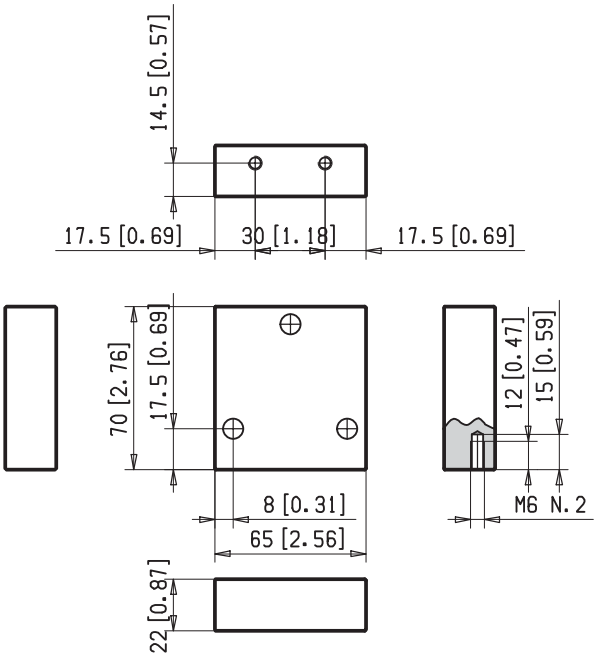
Maximum pressure for aluminium version (AL)	bar *[psi]*	250 *[3625]*
Maximum pressure for Cast Iron version (CI)	bar *[psi]*	310 *[4500]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

TC - 00 - 00 - . . - AL



TC - 00 - 00 - . . - CI



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three through holes 8.5 mm DIA *[0.335inch]* for coupling to the ED Directional Valve Elements.

Ordering Details

TC	-	00	-	00	-	00	-	__

Family
Outlet Elements

Configuration
Basic

Material
AL = Aluminium
CI = Cast Iron

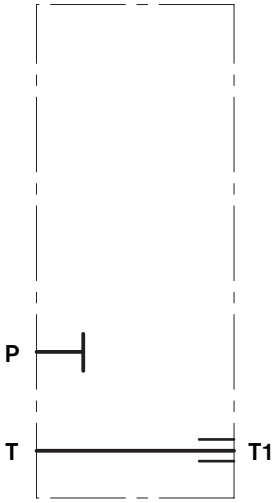
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-61/10.09 1/2
Replaces: RIE00159/01.06

Outlet elements with additional tank port T1

TC-01-__-

HYDRAULIC - SYMBOL



Description

The outlet elements TC-01-__ are employed to connect the P and T channels of the ED elements of the Directional Valve Assembly, and to provide an extra tank port T1, either size G 3/8 or G 1/2.

The TC-01-__ elements are available with body made of Black Anodized Aluminium (Al).

Technical Data (for applications outside these parameters, please consult us)

General

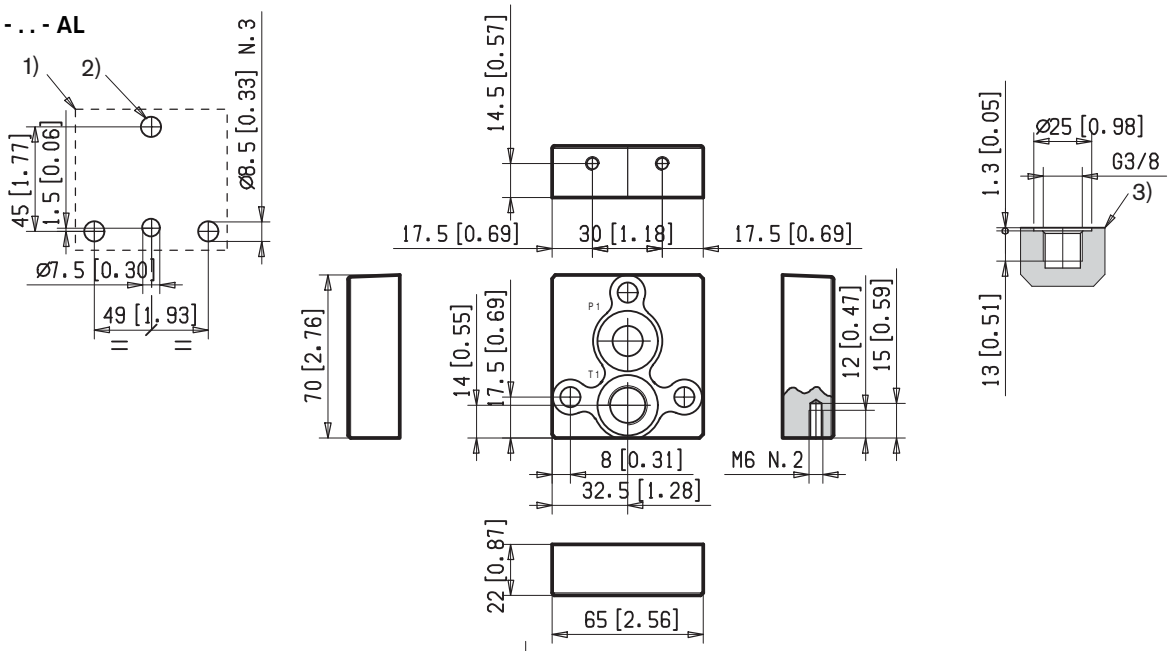
Weight TC-01-02.. element	kg *[lbs]*	0.16 *[0.35]*
Weight TC-01-03.. element	kg *[lbs]*	0.26 *[0.56]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

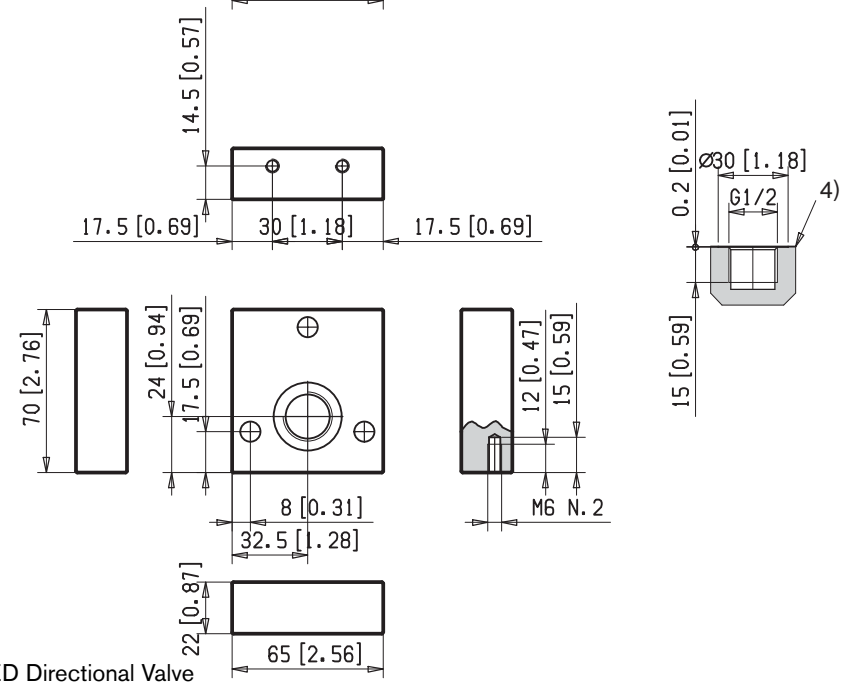
Maximum flow in T	l/min *[gpm]*	50 *[13.2]*
Maximum pressure	bar *[psi]*	250 *[3625]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

TC - 01 - 02 - . . - AL



TC - 01 - 03 - . . - AL



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three through holes 8.5 mm DIA *[0.335inch]* for coupling of the ED Directional Valve Elements.

3 Hydraulic Port T1 size G 3/8, for TC-01-02-…

4 Hydraulic Port T1 size G 1/2, for TC-01-03-…

Ordering Details

TC	-	01	-	__	-	00	-	AL

Family
Outlet Elements

Material
Aluminium

Configuration
with additional tank port T1

Ports
02 = G 3/8 DIN 3852
03 = G 1/2 DIN 3852

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

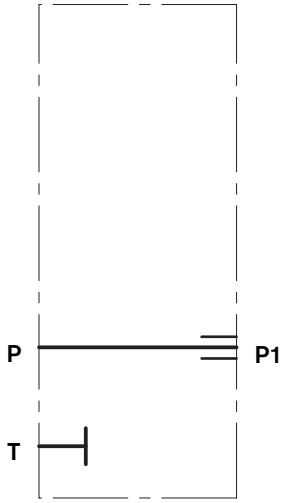
RE 18301-62/10.09 1/2
Replaces: RIE00159/01.06

Outlet elements with additional inlet port P1


DVI0044

TC-02-__-

HYDRAULIC - SYMBOL



Description

The outlet elements TC-01-__ are employed to connect the P and T channels of the ED elements of the Directional Valve Assembly, and to provide an extra inlet port P1, either size G 3/8 or G 1/2.

The outlet elements TC-01-__ are available in two versions:

- Body made of Black Anodized Aluminium (Al), or
- Body made of Yellow Zinc plated (Cr+3) Cast Iron (CI).

Technical Data (for applications outside these parameters, please consult us)

General

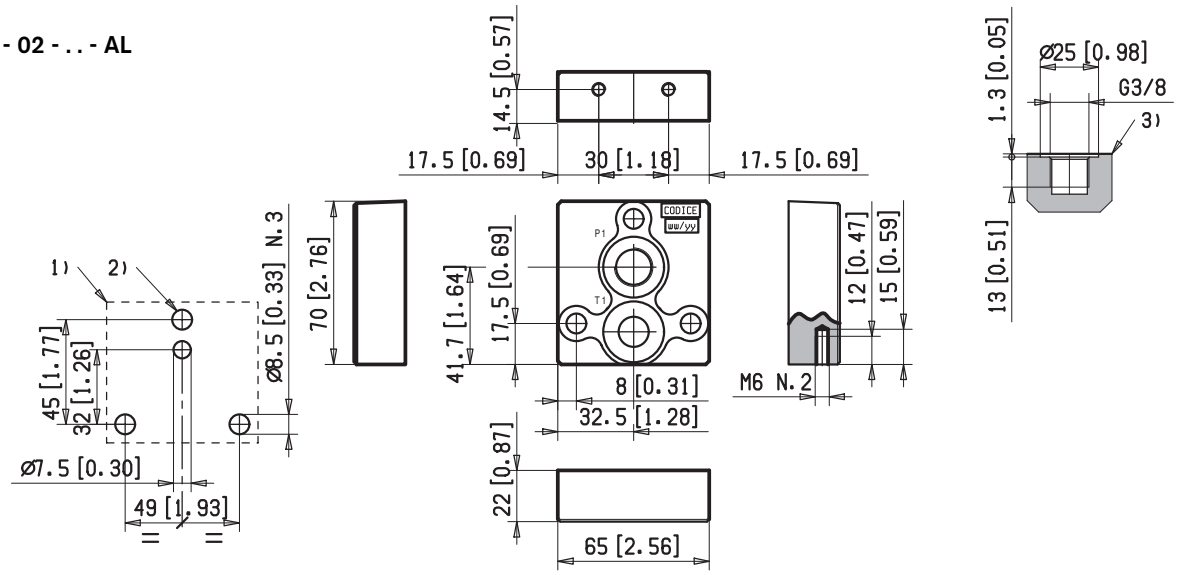
Weight TC-02-02-..-AL element	kg *[lbs]*	0.16 *[0.35]*
Weight TC-02-03-..-AL element	kg *[lbs]*	0.26 *[0.56]*
Weight TC-02-03-..-CI element	kg *[lbs]*	0.64 *[1.41]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

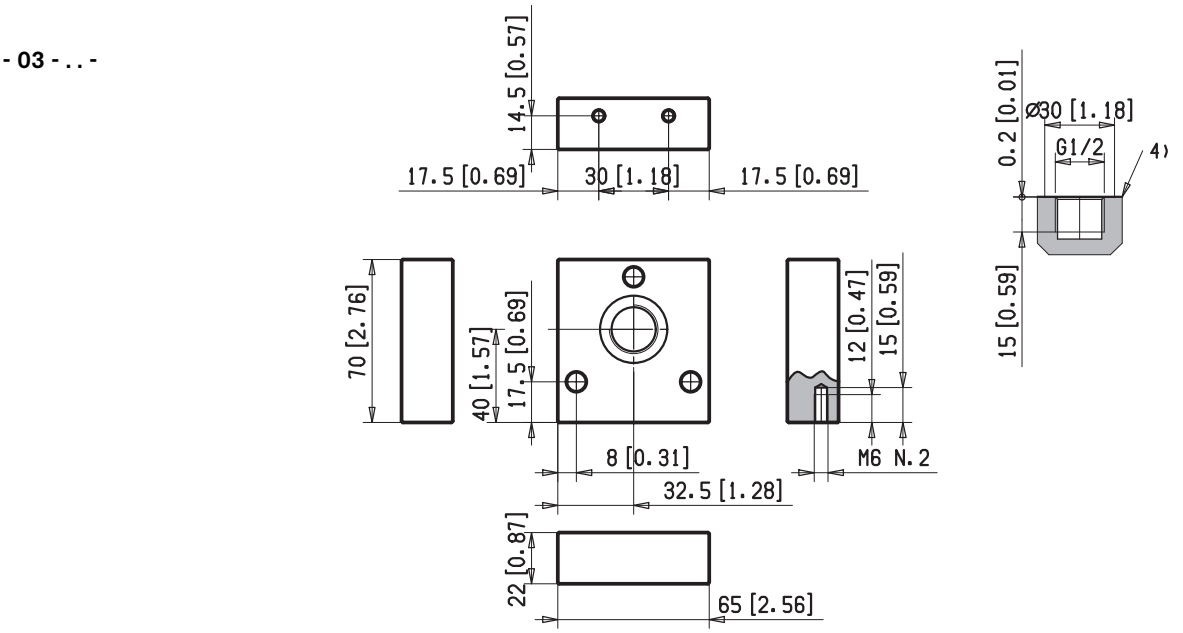
Maximum flow in P	l/min *[gpm]*	50 *[13.2]*
Maximum pressure for aluminium version (AL)	bar *[psi]*	250 *[3625]*
Maximum pressure for Cast Iron version (CI)	bar *[psi]*	310 *[4500]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

TC - 02 - 02 - . . - AL



TC - 02 - 03 - . . -



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three through holes 8.5 mm DIA *[0.335inch]* for coupling of the ED Directional Valve Elements.

3 Hydraulic Port P1 size G 3/8, for TC-02-02-…

4 Hydraulic Port P1 size G 1/2, for TC-02-03-…

Ordering Details

TC	-	02	-	__	-	00	-	__

Family
Outlet Elements

Configuration
with additional inlet port P1

02 = G 3/8 DIN 3852
03 = G 1/2 DIN 3852

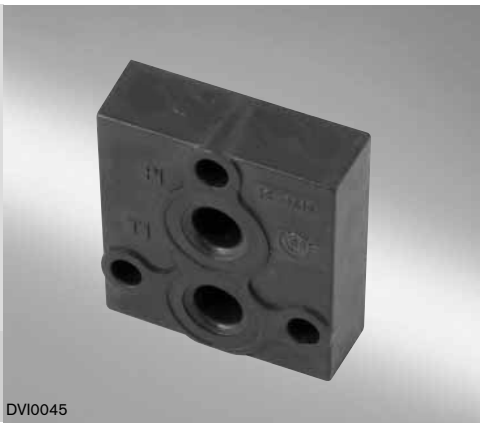
Ports

Material
AL = Aluminium
CI = Cast Iron

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

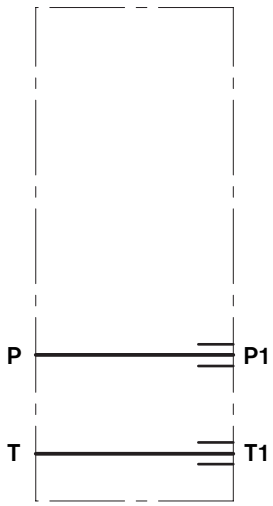
RE 18301-63/10.09 1/2
Replaces: RIE00159/01.06

Outlet elements with additional inlet port P1 and tank port T1



TC-03-__-

HYDRAULIC - SYMBOL



Description

The outlet elements TC-03-__ are employed to connect the P and T channels of the ED elements of the Directional Valve Assembly, and to provide additional inlet port P1 and tank port T1, both with size either G 3/8 or G 1/2.

The outlet elements TC-03-__ are available in two versions:

- Body made of Black Anodized Aluminium (Al), or
- Body made of Yellow Zinc plated (Cr+3) Cast Iron (CI).

Technical Data (for applications outside these parameters, please consult us)

General

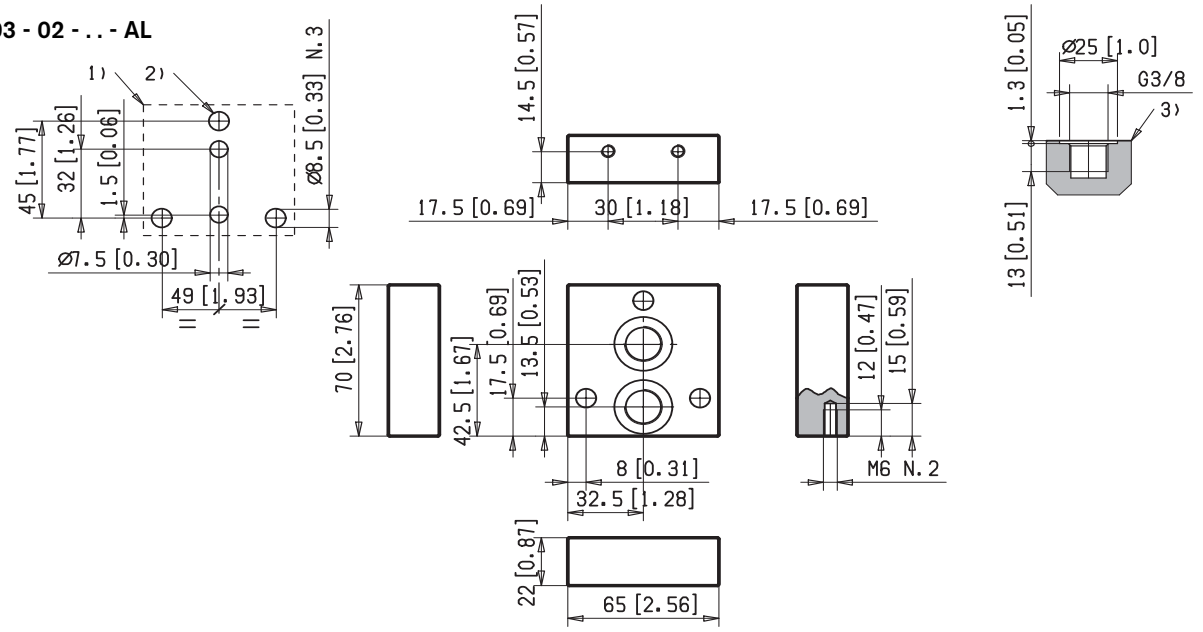
Weight TC-03-02-..-AL element	kg *[lbs]*	0.25 *[0.56]*
Weight TC-03-03-..-AL element	kg *[lbs]*	0.25 *[0.56]*
Weight TC-03-03-..-CI element	kg *[lbs]*	0.65 *[1.43]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

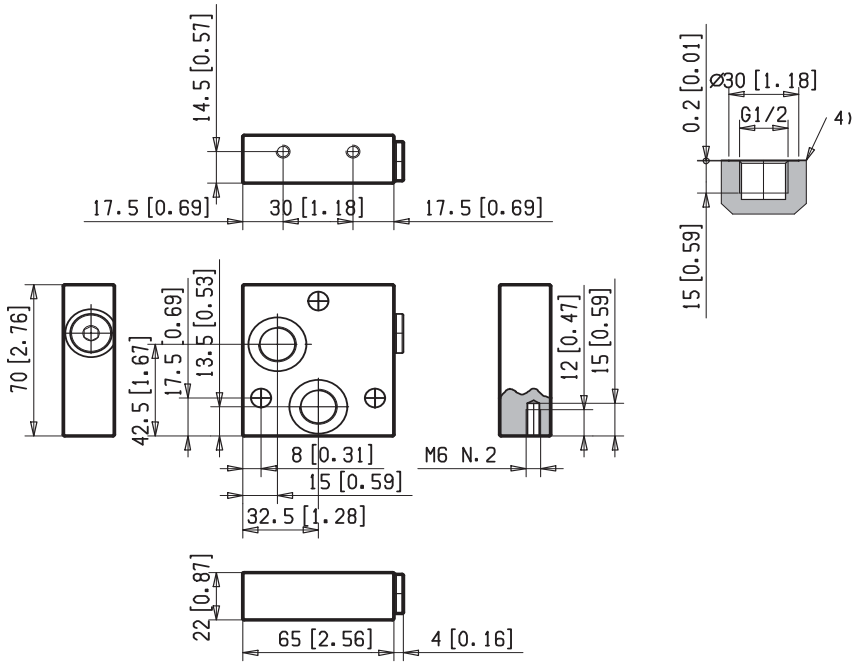
Maximum flow in P and T	l/min *[gpm]*	50 *[13.2]*
Maximum pressure for aluminium version (AL)	bar *[psi]*	250 *[3625]*
Maximum pressure for Cast Iron version (CI)	bar *[psi]*	310 *[4500]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

TC - 03 - 02 - . . - AL



TC - 03 - 03 - . . -



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three through holes 8.5 mm DIA *[0.335inch]* for coupling of the ED Directional Valve Elements.

3 Hydraulic Ports P1 and T1 size G 3/8, for TC-03-02-…

4 Hydraulic Ports P1 and T1 size G 1/2, for TC-03-03-…

Ordering Details

TC	-	03	-	__	-	00	-	__

Family
Outlet Elements

Configuration
with additional inlet port P1
and tank port T1

Material
AL = Aluminium
CI = Cast Iron

Ports
02 = G 3/8 DIN 3852
03 = G 1/2 DIN 3852

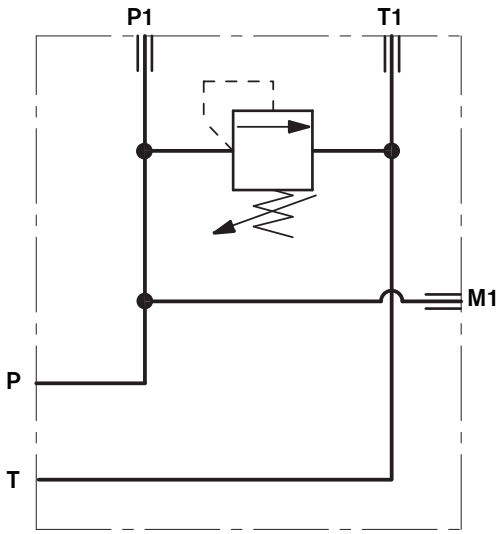
Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-64/10.09 1/2

Outlet elements with Pressure Relief Valve and with P, T and M ports for downstream operators

TC-04-__-

HYDRAULIC - SYMBOL



Description

The outlet elements TC-04-__ are employed to connect the P and T channels of the ED elements of the Directional Valve Assembly to the P1 and T1 ports for downstream operators. They incorporate a pressure relief cartridge which controls the maximum pressure in the P1 line. The relief setting can be checked through the Test Point port M.

The TC-04-__ elements are available with body made of Black Anodized Aluminium (Al).

Hydraulic Ports P1 and T1 are size G 3/8, and Test Point port (M) is G 1/4.

Technical Data (for applications outside these parameters, please consult us)

General

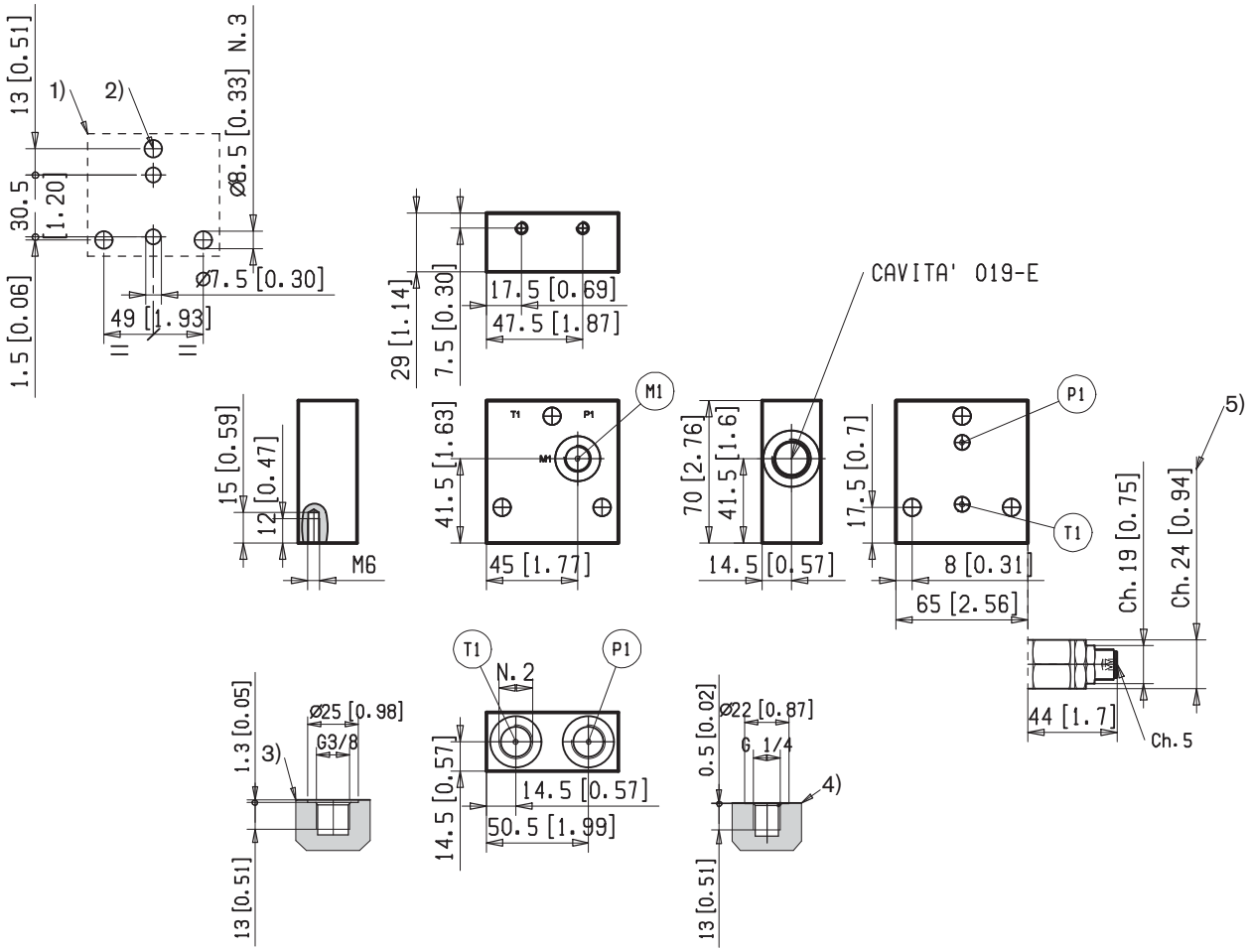
Weight TC 04-02-00-AL element	kg *[lbs]*	0.31 *[0.67]*
Weight TC 04-02-S_-AL element	kg *[lbs]*	0.44 *[0.96]*
Ambient Temperature	°C *[°F]*	–20....+50 *[–4....+120]*

Hydraulic

Maximum pressure	bar *[psi]*	250 *[3625]*
Maximum flow in P and T	l/min *[gpm]*	35 *[9.2]*
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.
Fluid Temperature	°C *[°F]*	-20....+80 *[-4....+176]* (NBR)
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: classe 20/18/15 NAS 1638: classe 9
Viscosity range	mm^2/s	5....420

External Dimensions and Fittings

TC - 04 - 02 - . .



1 Flange specifications for coupling to the ED Directional Valve Elements.

2 Three through holes 8.5 mm DIA *[0.335inch]* for coupling of the ED Directional Valve Elements.

3 Hydraulic Ports P1 and T1 size G 3/8 for downstream operators.

4 Test Point port (M) G 1/4…

5 Pressure Relief Cartridge VMD1025, with screw type adjuster (refer to RE 18301-91).

Ordering Details

TC	-	04	-	__	-	__	-	AL

Family
Outlet Elements

Configuration
With Pressure Relief Valve and through ports P and T

Ports
G 3/8 DIN 3852 **=02**

Material
Aluminium

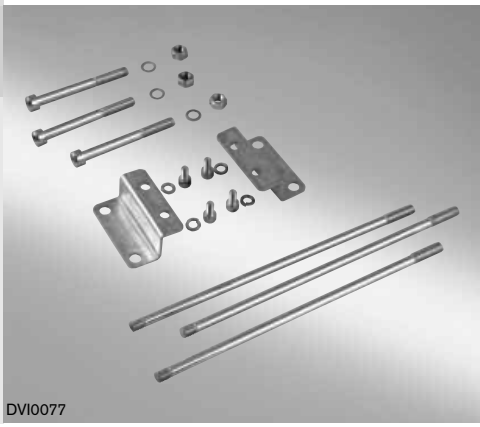
Pressure Relief range

00 =	Without pressure relief valve
SN =	25-125bar *[362-1813 psi]*
SB =	40-200bar *[580-2900 psi]*
SV =	200-350bar *[2900-5076 psi]*

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-90/10.09

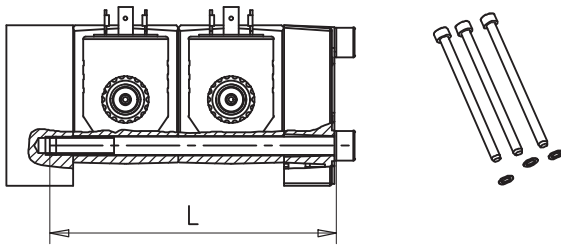
Accessories and fixation elements



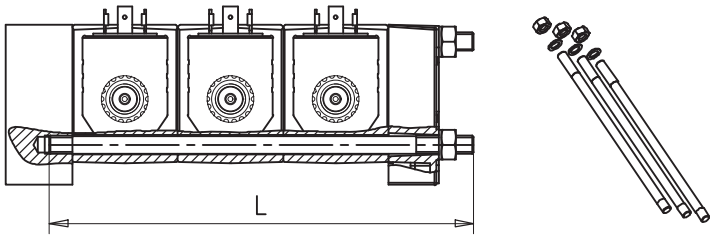
Summary

Assembly of directional elements

For 1 or 2 elements, the assembly kit is composed by 3 screws and 3 washers

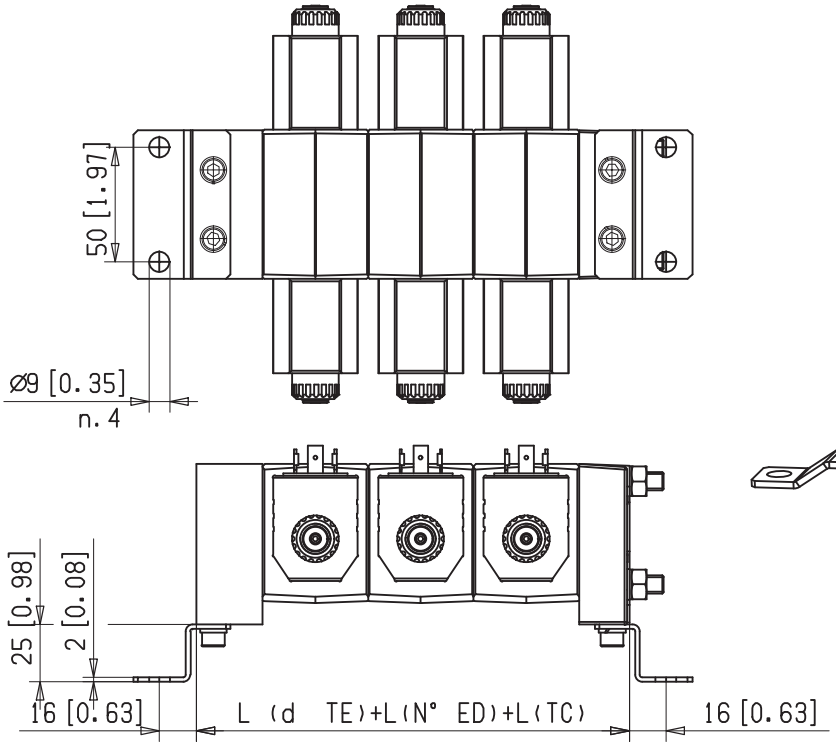


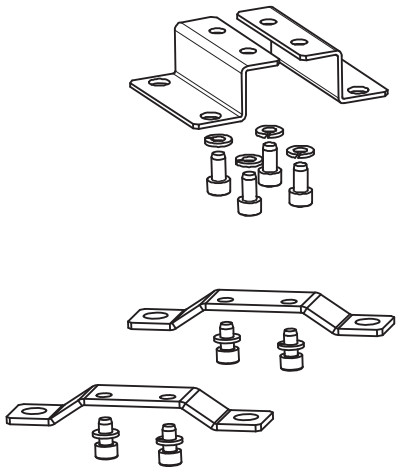
For 3 or more elements, the assembly kit is composed by 3 tie-rods, 3 washers and 3 nuts



Total flangeable elements	Screw or tie-rod length L mm *[inch]*	Tightening torque Nm *[ft-lb]*	Reference code	Type	Material Number
1	80 *[3.150]*	20-22 *[14.75-16.2]*	K-2201	Screw	R933003721
2	125 *[4.921]*	20-22 *[14.75-16.2]*	K-2202	Screw	R933003722
3	185 *[7.283]*	20-22 *[14.75-16.2]*	K-2203	Tie-rod	R933003723
4	230 *[9.055]*	20-22 *[14.75-16.2]*	K-2204	Tie-rod	R933003724
5	275 *[10.827]*	20-22 *[14.75-16.2]*	K-2205	Tie-rod	R933003725
6	320 *[12.598]*	20-22 *[14.75-16.2]*	K-2206	Tie-rod	R933003726
7	365 *[14.370]*	20-22 *[14.75-16.2]*	K-2207	Tie-rod	R933003727
8	410 *[16.142]*	20-22 *[14.75-16.2]*	K-2208	Tie-rod	R933003728
9	460 *[18.110]*	20-22 *[14.75-16.2]*	K-2209	Tie-rod	R933003729
10	510 *[20.079]*	20-22 *[14.75-16.2]*	K-2210	Tie-rod	R933000000

Fitting of mounting brackets



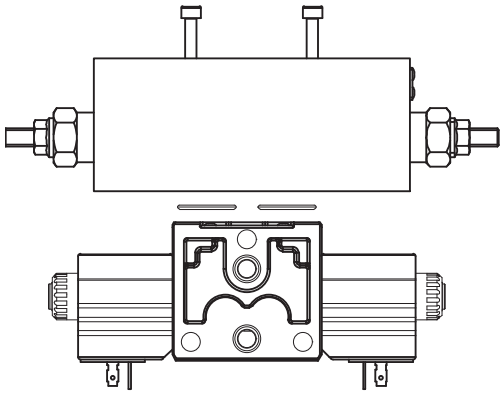


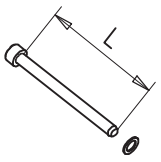
Note:

The kit is composed by 2 brackets, 4 screws and 4 washers

Type	Tightening torque Nm *[ft-lb]*	Material Number
K-2215	9-10 *[6.64-7.37]*	R933003730
K-2216	9-10 *[6.64-7.37]*	R933007089

Assemblying of flangeable element



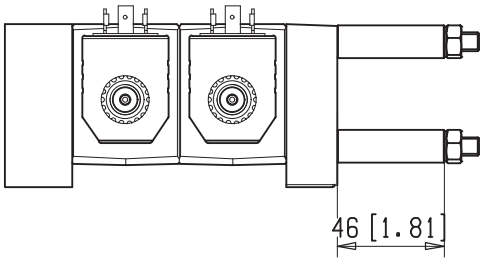


Note:

The assembly kit is composed by 4 screws and 4 washers.

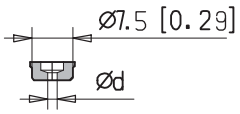
Total flangeable elements	Screw or tie-rod length L mm *[inch]*	Tightening torque Nm *[ft-lb]*	Reference code	Material Number
1	60 *[2.326]*	5-6 *[3.69-4.42]*	K-2221	R933003731
2	120 *[4.724]*	5-6 *[3.69-4.42]*	K-2222	R933003732
3	175 *[6.890]*	5-6 *[3.69-4.42]*	K-2223	R933003733

Kit for spacers between elements

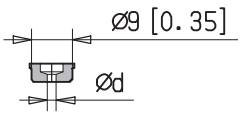


The spacers (code 44-00257012) are fitted in order to install longer tie-rods for future insertion of an extra directional element.

Flow restrictor

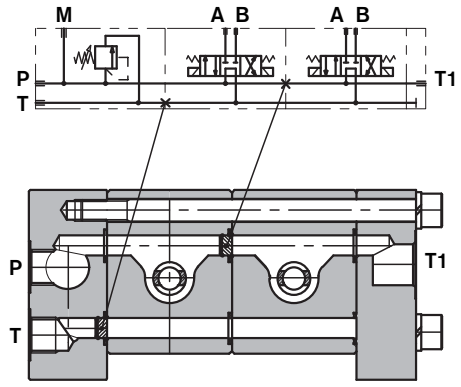


Material description	Orifice I.D. mm *[inch]*		Material Number
50-04999	Closed		R933002917
50-05003	0,3	*[0.012]*	R933002922
50-05004	0,4	*[0.016]*	R933003398
50-05001	0,5	*[0.020]*	R933002920
50-05000	0,6	*[0.024]*	R933002919
50-05002	0,7	*[0.028]*	R933002921
50-0500	0,8	*[0.031]*	R933002918
50-05008	0,9	*[0.035]*	R933002923
50-0501	1,0	*[0.039]*	R933002924
50-05015	1,1	*[0.043]*	R933002925
50-0502	1,2	*[0.047]*	R933002926
50-05022	1,35	*[0.053]*	R933002927
50-0503	1,5	*[0.059]*	R933002928
50-05032	1,6	*[0.063]*	R933002930
50-05031	1,7	*[0.067]*	R933002929
50-0504	2,0	*[0.079]*	R933002931
50-0505	2,2	*[0.087]*	R933002933
50-05045	2,5	*[0.098]*	R933002932
50-0506	3,0	*[0.118]*	R933002934
50-0508	3,2	*[0.126]*	R933002935

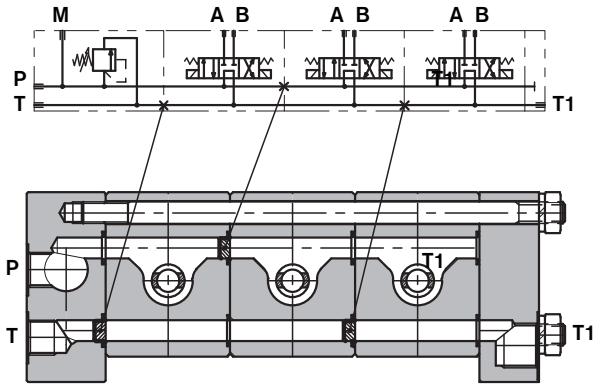


Material description	Orifice I.D. mm *[inch]*		Material Number
50-07000	Closed		R933002936
50-07020	0,8	*[0.031]*	R933002937
50-07021	1,0	*[0.039]*	R933007090
50-07030	1,6	*[0.063]*	R933002938
50-07031	1,7	*[0.067]*	R933007091
50-07040	2,0	*[0.079]*	R933002939
50-07047	2,75	*[0.108]*	R933002940
50-07050	3,0	*[0.118]*	R933002941

Series circuits



Flangeable elements in even number

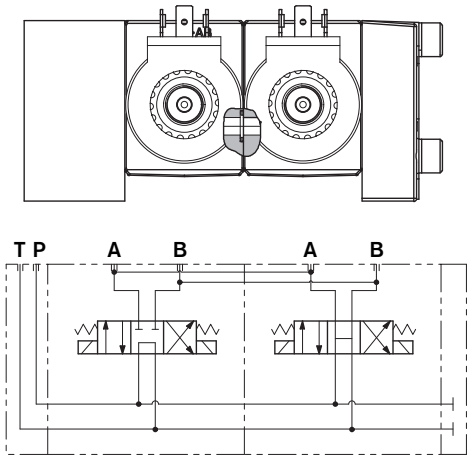


Flangeable elements in odd number

To have information about the pressure drops on elements, see the (DELTA P-Q) curves of P>T of A201 circuit of ED1 (RE 18301-01) or ED2 (RE 18301-02) modular elements.

Hydraulic Symbol with intermediate element between A and B lines

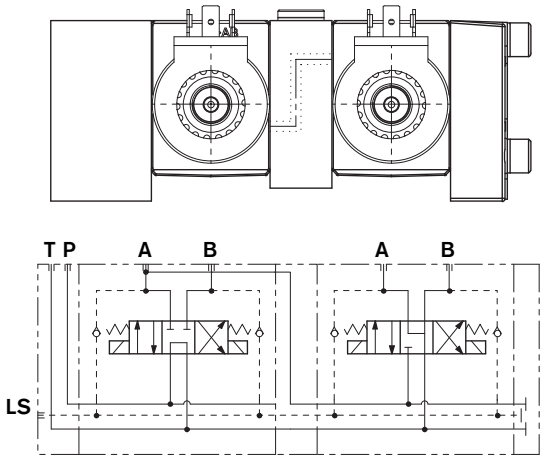
Flangeable elements with A and B ports in one side



scheme 1

Also available flangeable elements with A and B ports in one side, oriented either toward the inlet (TE) side, or toward the outlet (TC) side (see Hydraulic symobol 1).

Flangeable elements with A and B ports in one side, and with an intermediate body for connection of A and P



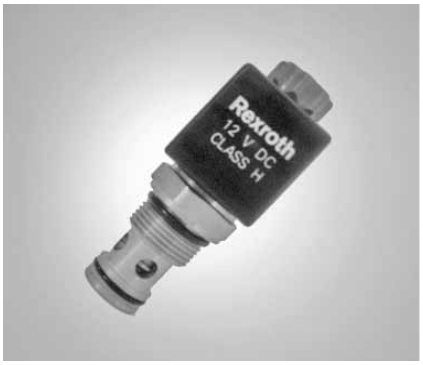
scheme 2

For flangeable elements with A and B ports in one side there is also a flangeable body to connect the A port of one element to the P port of the following element (see Hydraulic symobol 2).

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

RE 18301-91/10.09
Replaces: 01.06

Nominal sizes 08 to 10, special cavities.

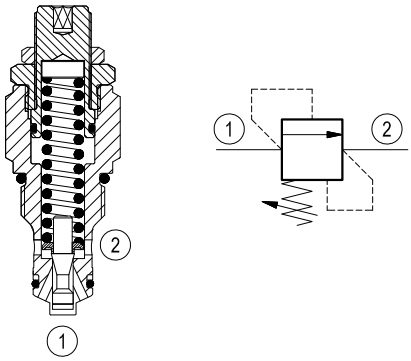


Overview of contents

Relief, direct acting guided poppet type

Common cavity, Size 10

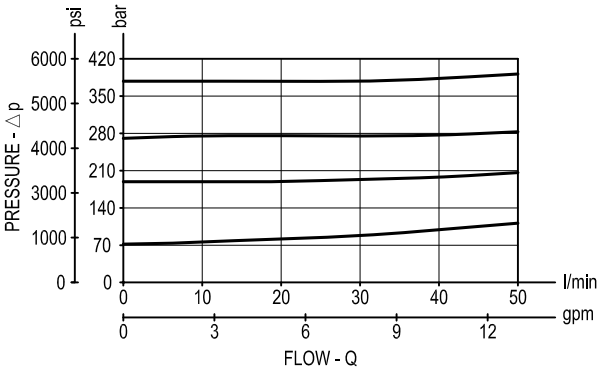
VMD1.040 **0T.M1.03 - X - 99 - Z**



Description

Flow is blocked from 1 to 2 until pressure increases to meet the selected valve setting, lifting the poppet from its seat and allowing relief flow through port 2 to tank. Pressure at port 2 is additive to the relief setting of the valve. The unique Bosch Rexroth Oil Control poppet design provides enhanced stability at all flows and pressures.

Performance

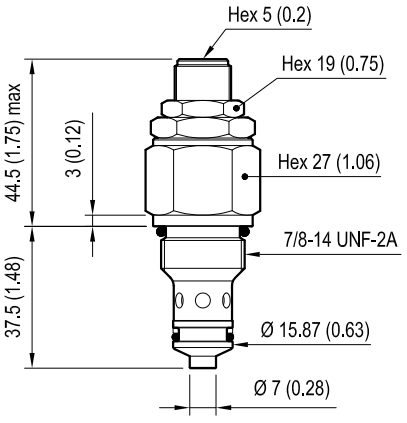


Technical data

Max pressure	bar (psi)	350 (5000)
Max flow	l/min (gpm)	50 (13)
Installation torque	Nm (ft-lb)	55-65 (41-48)
Cavity		CA-10A-2N
Weight	kg (lbs)	0.17 (0.38)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)

Dimensions

Leakproof hex socket screw



mm(Inches)

Ordering code

0T.M1.03	X	99	Z

Relief, direct acting guided poppet type

Adjustments
= **03** Leakproof hex. socket screw

Common cavity Size 10

	SPRINGS		
	Adj. press. range bar (psi)	Press. increase bar/turn (psi/turn)	Std. setting press. bar (psi) (Q=5 l/min)
= 10	25-120 (350-1750)	16.5 (239)	100 (1450)
= 20	40-200 (580-2900)	26.5 (384)	180 (2600)
= 35	200-350 (2900-5000)	51 (740)	350 (5000)

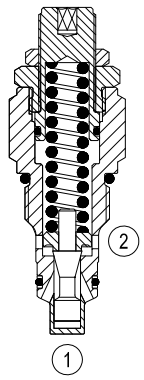
Type	Material number
0TM103039910000	R901099401
0TM103039920000	R901099402
0TM103039935000	R901114696

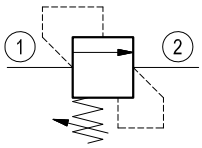
Type	Material number

Relief, direct acting guided poppet type

Common cavity, Size 10

VMD1.070 **0T.M1.04 - X - 99 - Z**

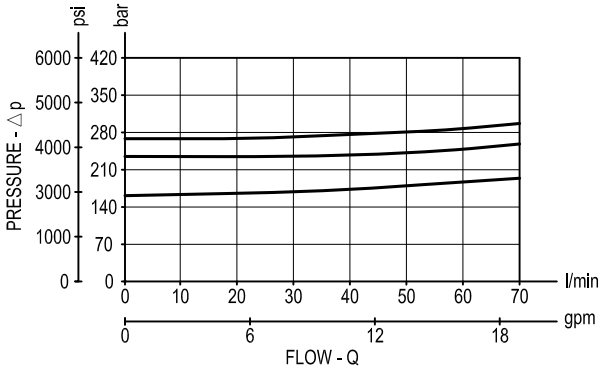




Description

Flow is blocked from 1 to 2 until pressure increases to meet the selected valve setting, lifting the poppet from its seat and allowing relief flow through port 2 to tank. Pressure at port 2 is additive to the relief setting of the valve. The unique Bosch Rexroth Oil Control poppet design provides enhanced stability at all flows and pressures.

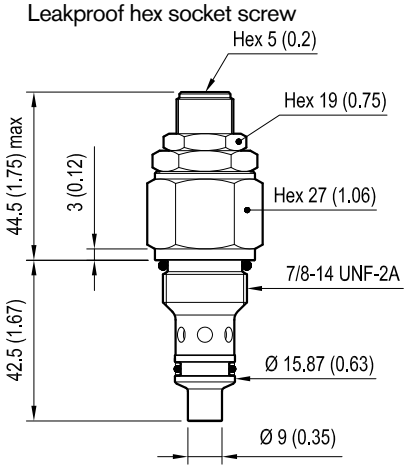
Performance



Technical data

Max pressure	bar (psi)	260 (3800)
Max flow	l/min (gpm)	70 (19)
Installation torque	Nm (ft-lb)	55-65 (41-48)
Cavity		CA-10A-2N
Weight	kg (lbs)	0.18 (0.4)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (212)

Dimensions



mm (Inches)

Ordering code

0T.M1.04	X	99	Z

0T.M1.04 — Relief, direct acting guided poppet type

X — Adjustments
= **03** Leakproof hex. socket screw

99 — Common cavity Size 10

Z — SPRINGS

	Adj. press. range bar (psi)	Press. increase bar/turn (psi/turn)	Std. setting press. bar (psi) (Q=5 l/min)
= **05**	10-60 (145-870)	10 (145)	50 (725)
= **10**	40-110 (580-1600)	17 (247)	100 (1450)
= **20**	110-220 (1600-3200)	31.5 (457)	200 (2900)
= **35**	220-260 (3200-3800)	37 (537)	250 (3600)

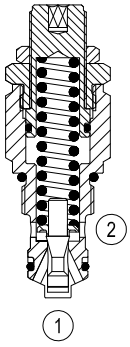
Type	Material number
0TM104039905000	R901099575
0TM104039910000	R901099604
0TM104039920000	R901116269

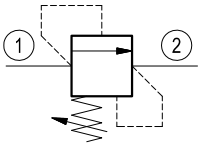
Type	Material number
0TM104039935000	R901099642

Relief, direct acting guided poppet type

Special cavity, Size 019-E

VMD1.025 **0T.M1.02 - X - 99 - Z**

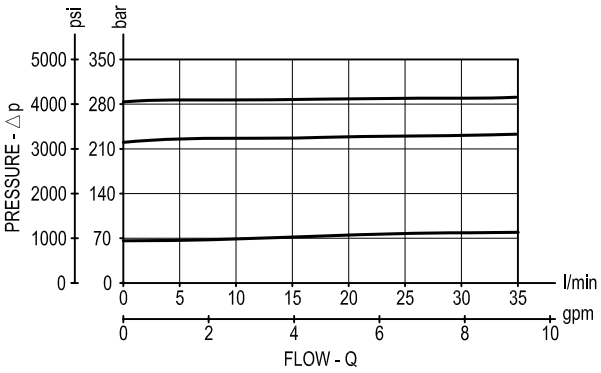




Description

Flow is blocked from 1 to 2 until pressure increases to meet the selected valve setting, lifting the poppet from its seat and allowing relief flow through port 2 to tank. Pressure at port 2 is additive to the relief setting of the valve. The unique Bosch Rexroth Oil Control poppet design provides enhanced stability at all flows and pressures.

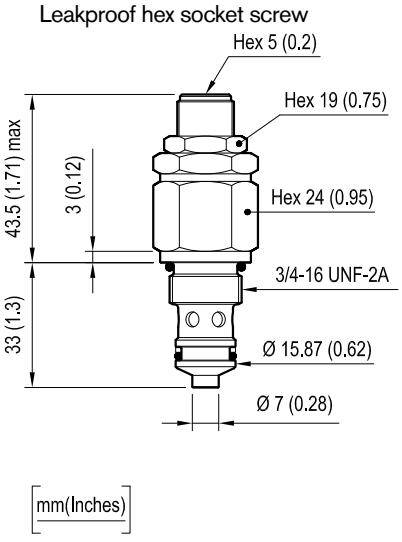
Performance



Technical data

Max pressure	bar (psi)	350 (5000)
Max flow	l/min (gpm)	35 (9)
Installation torque	Nm (ft-lb)	40-45 (30-33)
Special Cavity		019-E
Weight	kg (lbs)	0.13 (0.29)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)

Dimensions



Ordering code

0T.M1.02	X	99	Z

Relief, direct acting guided poppet type

Adjustments

= **03** Leakproof hex. socket screw

Special cavity Size 019-E

	SPRINGS		
	Adj. press. range bar (psi)	Press. increase bar/turn (psi/turn)	Std. setting press. bar (psi) (Q=5 l/min)
= **10**	25-120 (350-1750)	16.5 (239)	100 (1450)
= **20**	40-200 (580-2900)	26.5 (384)	180 (2600)
= **35**	200-350 (2900-5000)	51 (740)	350 (5000)

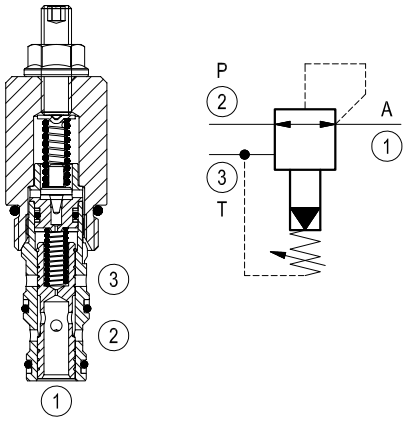
Type	Material number
0TM102039910000	
0TM102039920000	R901091925
0TM102039935000	R901091920

Type	Material number

Pressure reducing and relieving, pilot operated spool type

Common cavity, Size 10

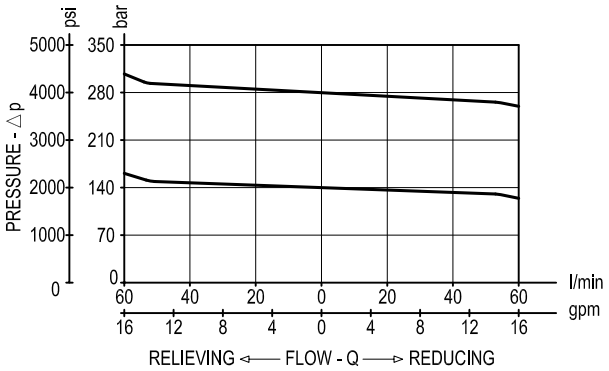
VRPX-10A **04.93.07 - X - 85 - Z**



Description

Initially, flow passes freely from 2 to 1. When the pressure at 1 exceeds the pressure setting, the conical poppet in the upper, pilot stage is lifted from its seat. This allows the main-stage piston to shift, restricting input flow at 2. This increases the pressure drop through the valve and maintains consistent pressure at 1. The spring chamber is drained at 3 to prevent a build-up of back-pressure against the spool. Additionally, if pressure at 1 rises above the pressure setting, flow is relieved to 3 until the setting is re-attained.

Performance



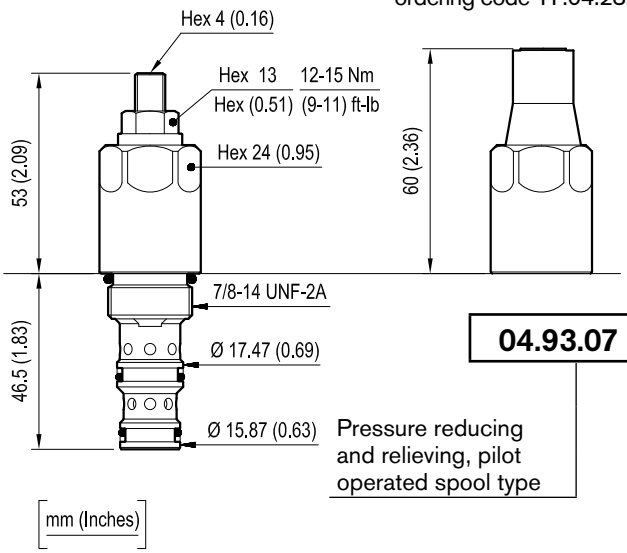
Technical data

Max pressure	bar (psi)	350 (5000)
Max flow	l/min (gpm)	60 (16)
Installation torque	Nm (ft-lb)	41-47 (30-35)
Cavity		CA-10A-3N
Seal kit	code Mat. Nr.	RG10A3010520100 R901111369
Weight	kg (lbs)	0.2 (0.44)
Std. internal orifice	mm	0.6
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (212)

Dimensions

Leakproof hex socket screw

OPTION
Tamper resistant cap
ordering code 11.04.23.002



Type	Material number
049307038510000	R901104118
049307038520000	R901106468

Ordering code

04.93.07	X	85	Z

Pressure reducing and relieving, pilot operated spool type

Adjustments

= **03** Leakproof hex. socket screw

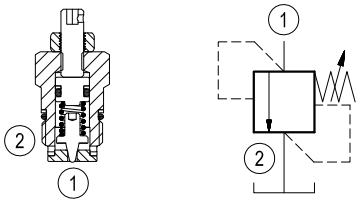
Common cavity Size 10

	SPRINGS		
	Adj. press. range bar (psi)	Press. increase bar/turn (psi/turn)	Std. setting press. bar (psi) (reduc. mode)
= **10**	35-140 (500-2000)	48 (696)	100 (1450)
= **20**	70-280 (1000-4000)	88 (1276)	200 (2900)

Relief, direct acting poppet type

Special cavity, Size 348

VS-5-C **04.11.44 - X - Y - Z**



Description

Flow is blocked from 1 to 2 until pressure increases to meet the selected valve setting, lifting the poppet from its seat and allowing relief flow through 2 to tank. Pressure at 2 is additive to the relief setting of the valve. The cartridge is suitable only for pilot or thermal relief applications.

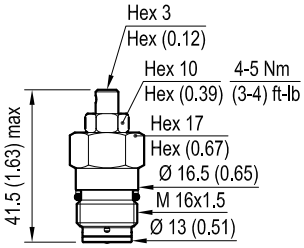
Technical data

Max pressure	bar (psi)	400 (5800)
Max flow	l/min (gpm)	1.5 (0.4)
Installation torque	Nm (ft-lb)	27-33 (20-24)
Special Cavity		348
Weight	kg (lbs)	0.05 (0.11)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)

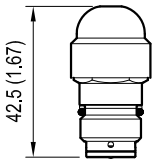
The pressure setting must be done after installation, because the spring cannot be compressed while the threaded adjuster must be fully released prior to unscrewing the cartridge from cavity.

Dimensions

Leakproof hex socket screw



OPTION
Sealing cap
ordering code 030501012
R930000473



mm (Inches)

Ordering code

04.11.44	X	Y	Z

Relief, direct acting poppet type

Adjustments

= 03 Leakproof hex. socket screw

Special cavity Size 348

	SPRINGS		
	Adj. press. range bar (psi)	Press. increase bar/turn (psi/turn)	Std. setting cracking pressure bar (psi)
= 05	25-50 (363-725)	24 (348)	50 (725)
= 10	50-100 (725-1450)	47 (682)	100 (1450)
= 20	100-210 (1450-3045)	97 (1407)	200 (2900)
= 40	200-400 (2900-5800)	215 (3118)	350 (3500)

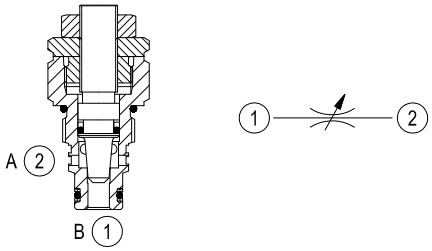
Type	Material number
041144039905000	R930000196
041144039910000	R930000199
041144039920000	R930000200

Type	Material number
041144039940000	R930000201

Flow control valves, cartridge restrictors

Common cavity, Size 08

ST-C-06 **OD.21.01 - X - 56**



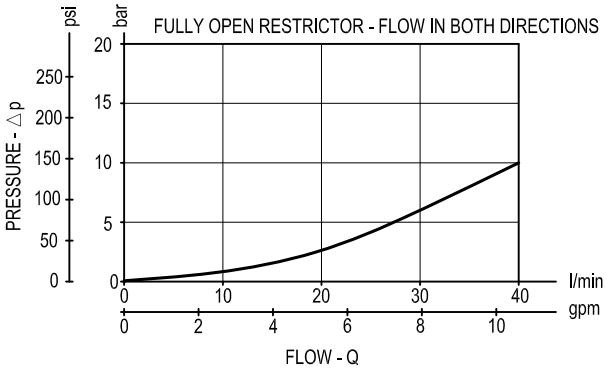
Description

The valves provides a fully adjustable orifice restriction. Flow is permitted from 1 to 2 and from 2 to 1.

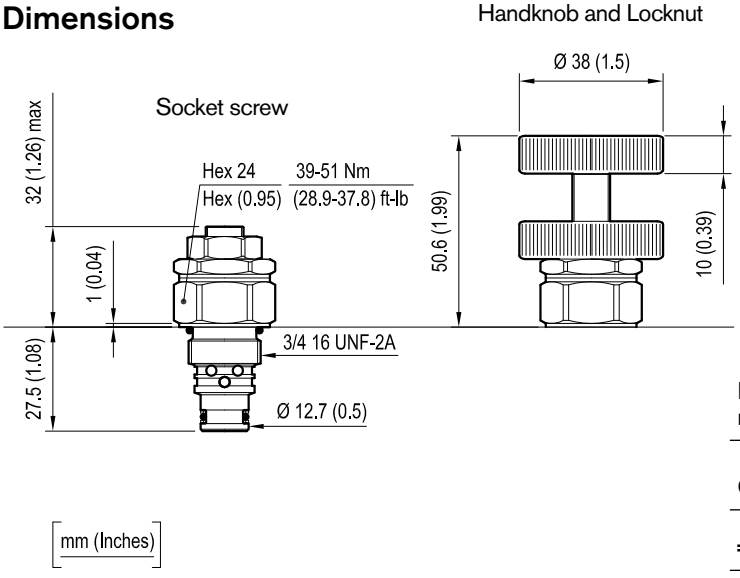
Technical data

Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	40 (11)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Cavity		CA-08A-2N
Weight	kg (lbs)	0.1 (0.22)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Adjustment torque at 10 bar (145 psi)	Nm (ft-lb)	1 (0.7)
Adjustment torque at 350 bar (5000 psi)	Nm (ft-lb)	5 (3.7)

Performance



Dimensions



Ordering code

OD.21.01	X	56

Flow control valves, cartridge restrictors

Ordering options

= **03** Socket screw

= **04** Handknob and Locknut

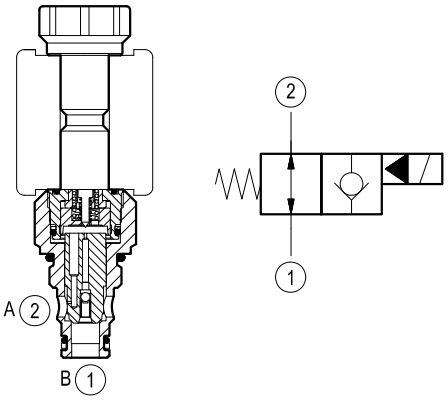
Common cavity Size 08

Type	Material number
OD21010356	R901109366
OD21010456	R901109367

Solenoid operated valves poppet 2-way normally open

Common cavity, Size 08

VEI-8A-2A-06-NA-S-NSS **OD.15.06.18 - Y - S0**



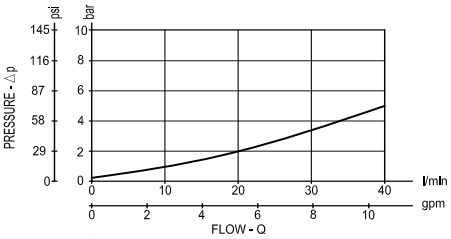
Description

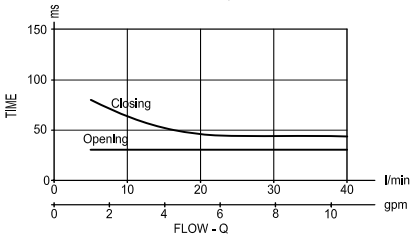
When the valve is de-energized. Flow is allowed bi-directionally between 1 and 2. When energized, the valve acts as a check valve, blocking flow from 2 to 1 and allowing from 1 to 2.

Technical data

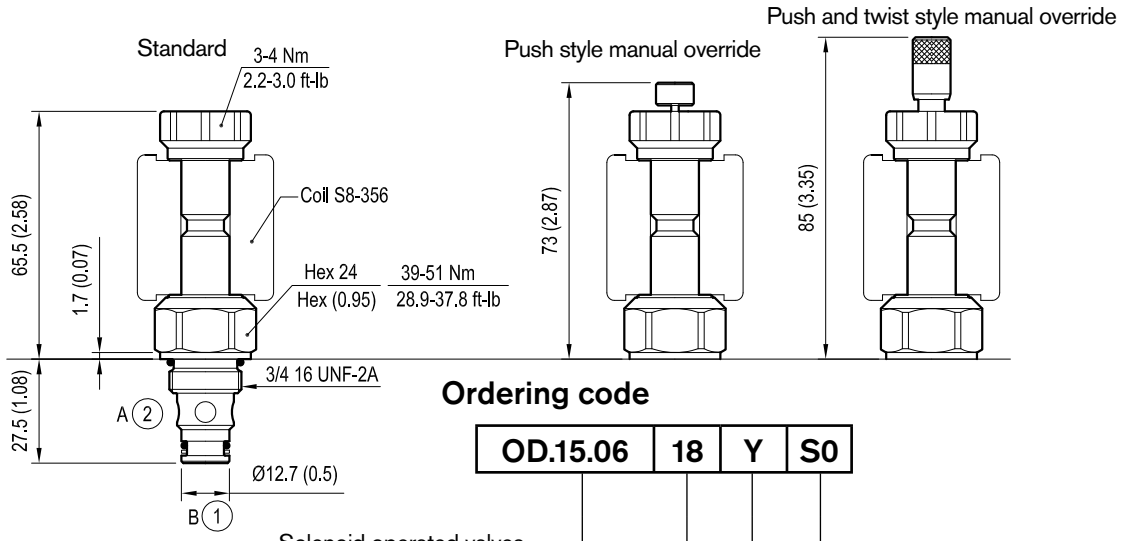
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	40 (11)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Cavity		CA-08A-2N
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.13 (0.29)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



mm (Inches)

Ordering code

OD.15.06	18	Y	S0

Solenoid operated valves poppet 2-way normally open

Common cavity, Size 08

Ordering options
- = **1A** Standard
- = **1B** Push style manual override
- = **1C** Push and twist style manual override

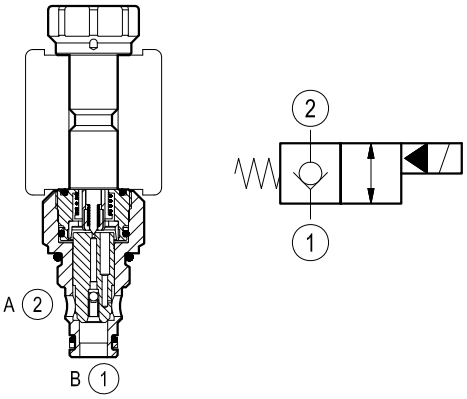
Standard operating pressure 350 bar (5000 psi)

Type	Material number
OD1506181AS000	R901091130
OD1506181BS000	R901091131
OD1506181CS000	R901091132

Solenoid operated valves poppet 2-way normally closed

Common cavity, Size 08

VEI-8A-2A-06-NC-S-NSS **OD.15.05.18 - Y - S0**



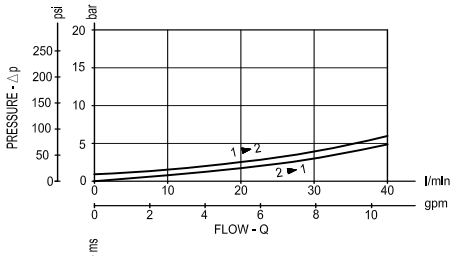
Description

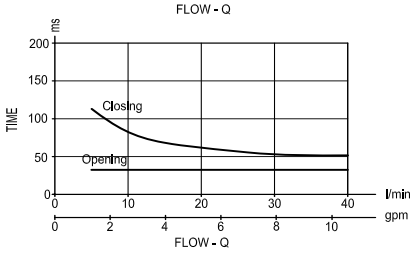
When the valve is de-energized, the valve acts as a check valve blocking flow from 2 to 1 and allowing from 1 to 2. When energized, the poppet lifts to open flow path bi-directionally.

Technical data

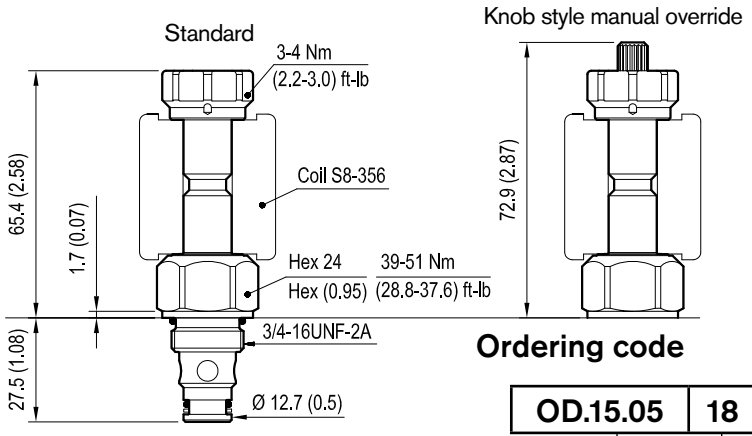
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	40 (11)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Cavity		CA-08A-2N
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.13 (0.29)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



Ordering code

OD.15.05	18	Y	S0

Solenoid operated valves poppet 2-way normally closed

Common cavity, Size 08

Ordering options
= **3A** Standard
= **3D** Knob style manual override

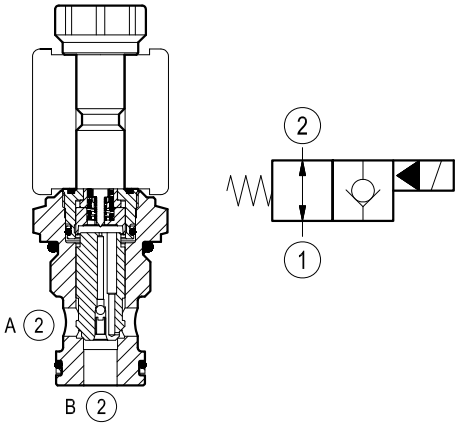
Standard operating pressure 350 bar (5000 psi)

Type	Material number
OD1505183AS000	R901083058
OD1505183DS000	R901087979

Solenoid operated valves poppet 2-way normally open

Special cavity, Size 017-E

VEI-8A-2A-09-NA-S-NSS **OD.15.06.17 - Y - S0**



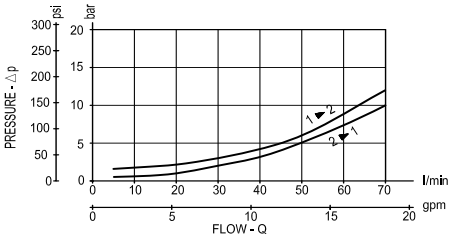
Description

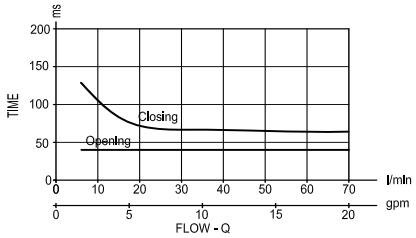
When the valve is de-energized. Flow is allowed bi-directionally between 1 and 2. When energized, the valve acts as a check valve, blocking flow from 2 to 1 and allowing from 1 to 2.

Technical data

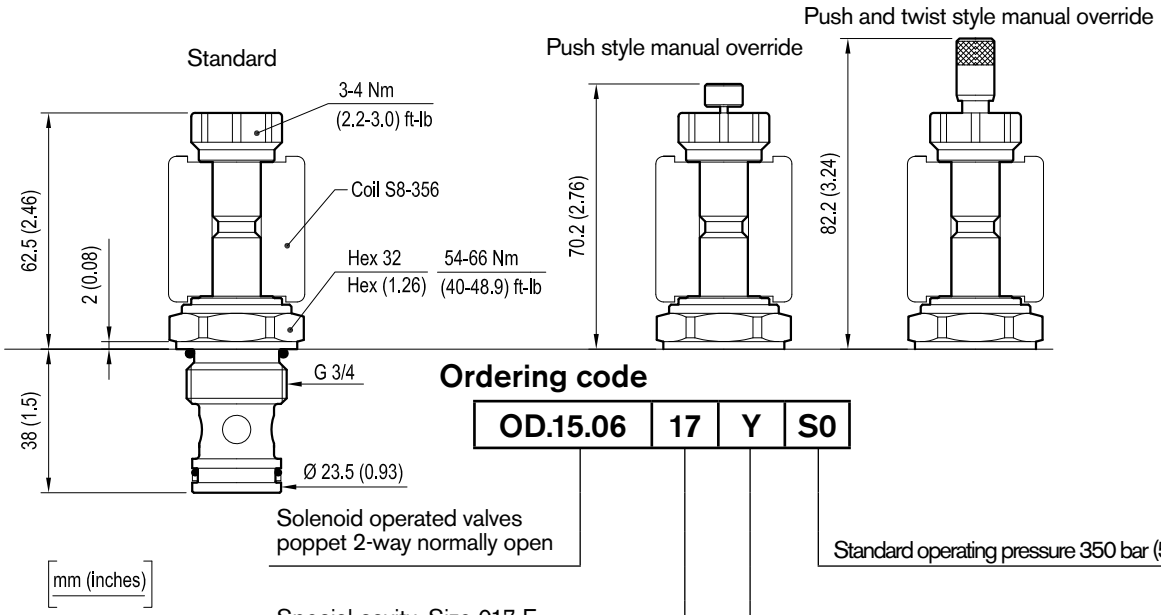
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	70 (19)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Special cavity		017-E
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.22 (0.49)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



mm (inches)

Ordering code

OD.15.06	17	Y	S0

Solenoid operated valves poppet 2-way normally open

Special cavity, Size 017-E

Ordering options
- = **1A** Standard
- = **1B** Push style manual override
- = **1C** Push and twist style manual override

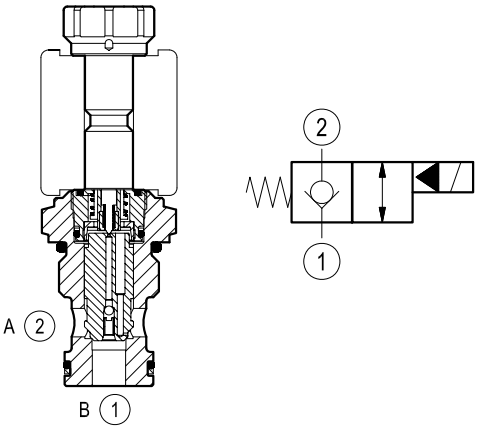
Standard operating pressure 350 bar (5000 psi)

Type	Material number
OD1506171AS000	R901113677
OD1506171BS000	R901113680
OD1506171CS000	R934000956

Solenoid operated valves poppet 2-way normally closed

Special cavity, Size 017-E

VEI-8A-2A-09-NC-S-NSS **OD.15.05.17 - Y - S0**



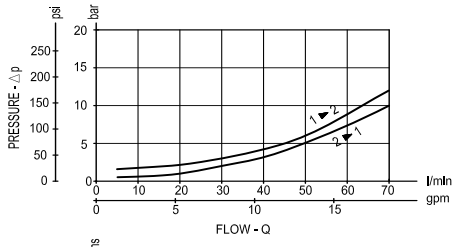
Description

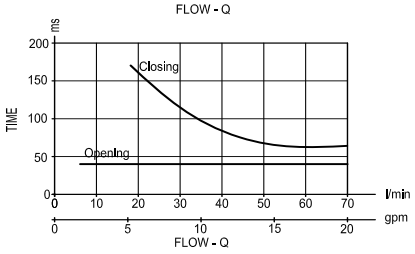
When the valve is de-energized, the valve acts as a check valve blocking flow from 2 to 1 and allowing from 1 to 2. When energized, the poppet lifts to open flow path bi-directionally.

Technical data

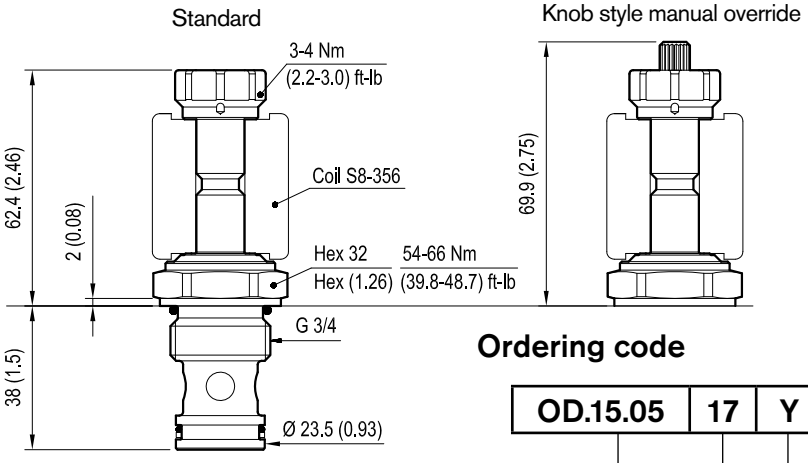
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	70 (19)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Special cavity		017-E
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.22 (0.49)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



Ordering code

OD.15.05	17	Y	S0

Solenoid operated valves poppet 2-way normally closed

Special cavity, Size 017-E

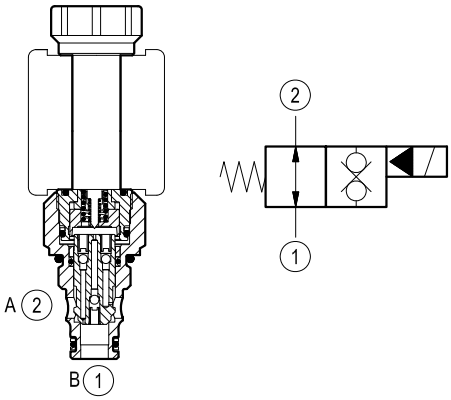
Ordering options
= **3A** Standard
= **3D** Knob style manual override

Standard operating pressure 350 bar (5000 psi)

Type	Material number
OD1505173AS000	R901113673
OD1505173DS000	R901125249

Solenoid operated valves poppet 2-way double lock normally open Common cavity, Size 08

VEI-8A-2T-06-NA-S-NSS **OD.15.32.18 - Y - S0**



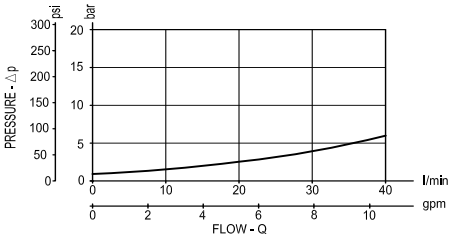
Description

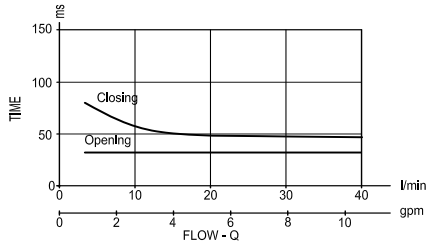
When the valve is de-energized, flow is allowed bi-directionally between 1 and 2. When energized, flow is blocked in both directions.

Technical data

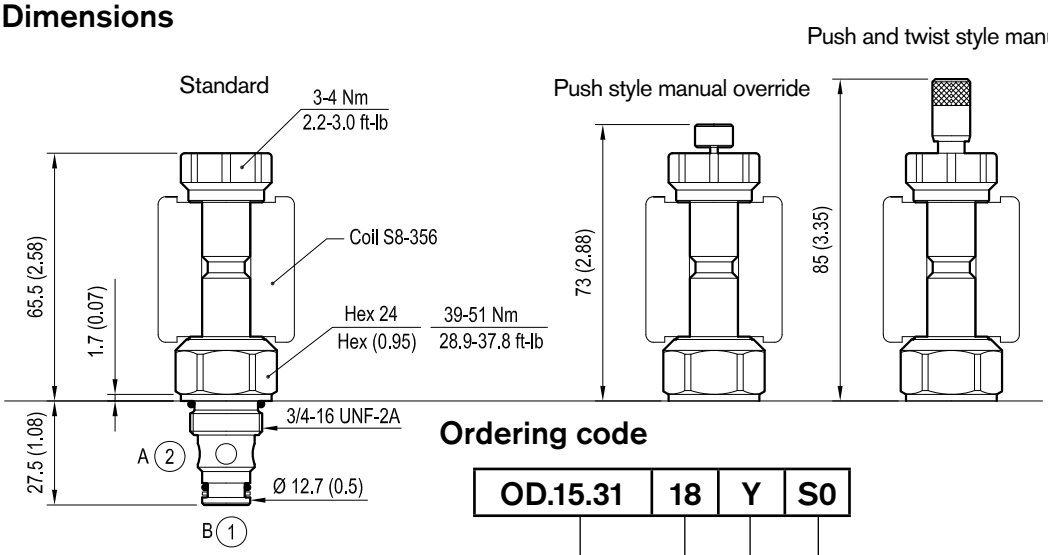
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	40 (11)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Cavity		CA-08A-2N
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.13 (0.29)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



Ordering code

OD.15.31	18	Y	S0

Solenoid operated valves poppet 2-way double lock normally open

Common cavity, Size 08

Ordering options

= **1A** Standard

= **1B** Push style manual override

= **1C** Push and twist style manual override

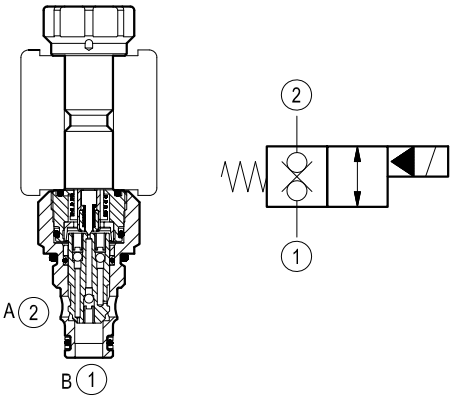
Standard operating pressure 350 bar (5000 psi)

(mm) Inches

Type	Material number
OD1532181AS000	R901091171
OD1532181BS000	R901091173
OD1532181CS000	R901091174

Solenoid operated valves poppet 2-way double lock normally closed Common cavity, Size 08

VEI-8A-2T-06-NC-S-NSS **OD.15.31.18 - Y - S0**



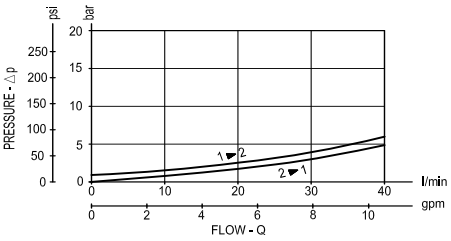
Description

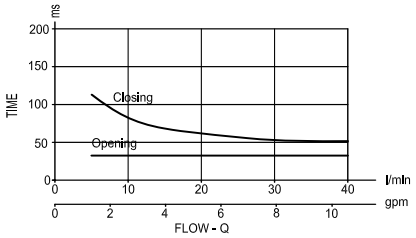
When the valve is de-energized flow is blocked bi-directionally between 1 and 2. When energized, flow is allowed in both directions.

Technical data

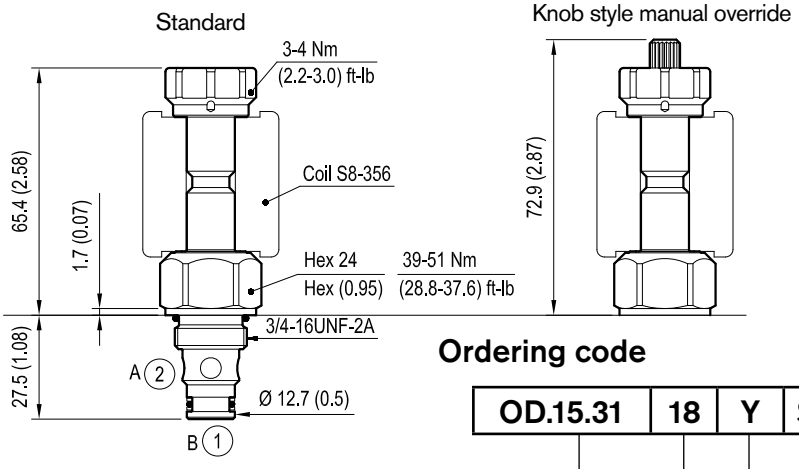
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	40 (11)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Cavity		CA-08A-2N
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.13 (0.29)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



mm (Inches)

Ordering code

OD.15.31	18	Y	S0

Solenoid operated valves poppet 2-way double lock normally closed

Common cavity, Size 08

Ordering options

= **3A** Standard

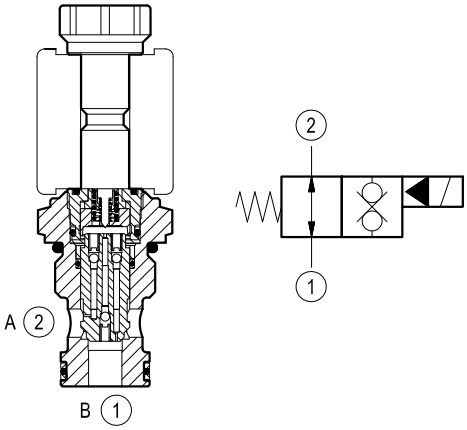
= **3D** Knob style manual override

Standard operating pressure 350 bar (5000 psi)

Type	Material number
OD1531183AS000	R901082015
OD1531183DS000	R901091164

Solenoid operated valves poppet 2-way double lock normally open Special cavity, Size 017-E

VEI-8A-2T-09-NA-S-NSS **OD.15.32.17 - Y - S0**



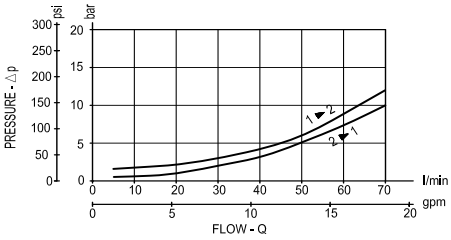
Description

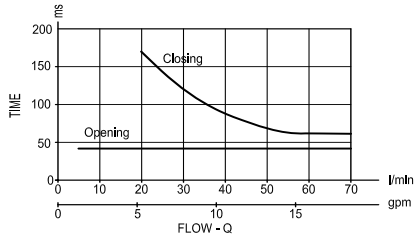
When the valve is de-energized, flow is allowed bi-directionally between 1 and 2. When energized, flow is blocked in both directions.

Technical data

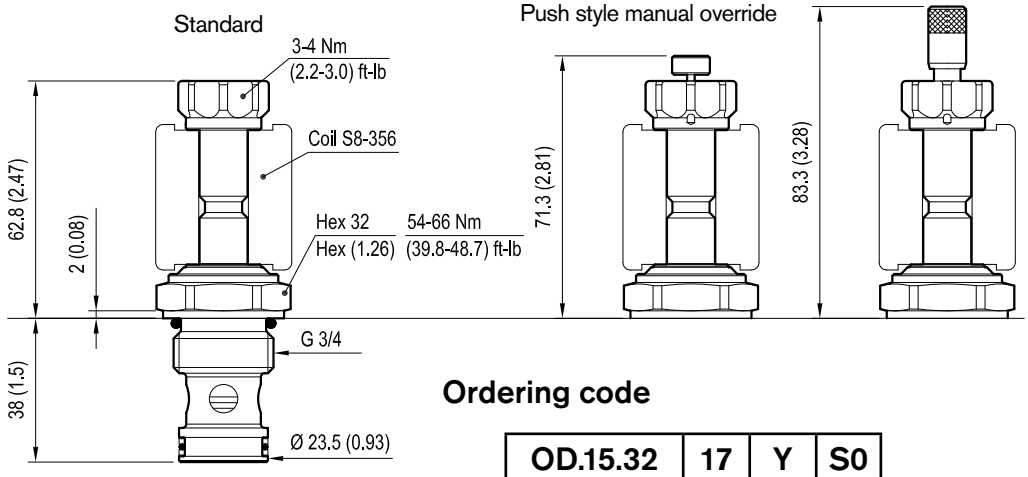
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	70 (19)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Special cavity		017-E
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.22 (0.49)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



mm (Inches)

Ordering code

OD.15.32	17	Y	S0

Solenoid operated valves poppet 2-way double lock normally open

Special cavity, Size 017-E

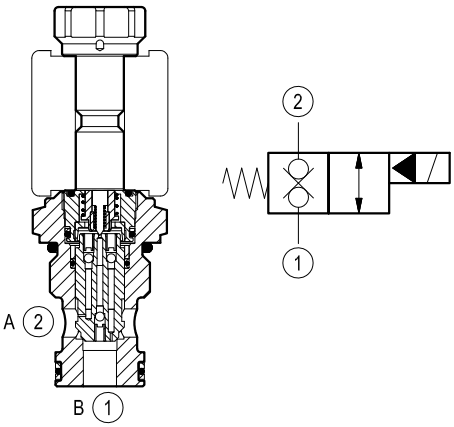
Ordering options
= **1A** Standard
= **1B** Push style manual override
= **1C** Push and twist style manual override

Standard operating pressure 350 bar (5000 psi)

Type	Material number
OD1532171AS000	R901113683
OD1532171BS000	R901113684
OD1532171CS000	R934001189

Solenoid operated valves poppet 2-way double lock normally closed Special cavity, Size 017-E

VEI-8A-2T-09-NC-S-NSS **OD.15.31.17 - Y - S0**



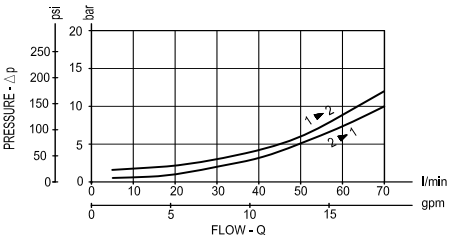
Description

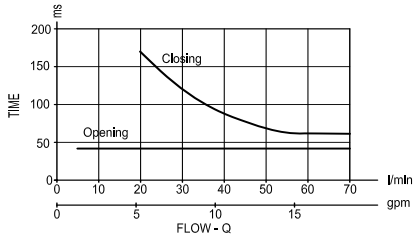
When the valve is de-energized flow is blocked bi-directionally between 1 and 2. When energized, flow is allowed in both directions.

Technical data

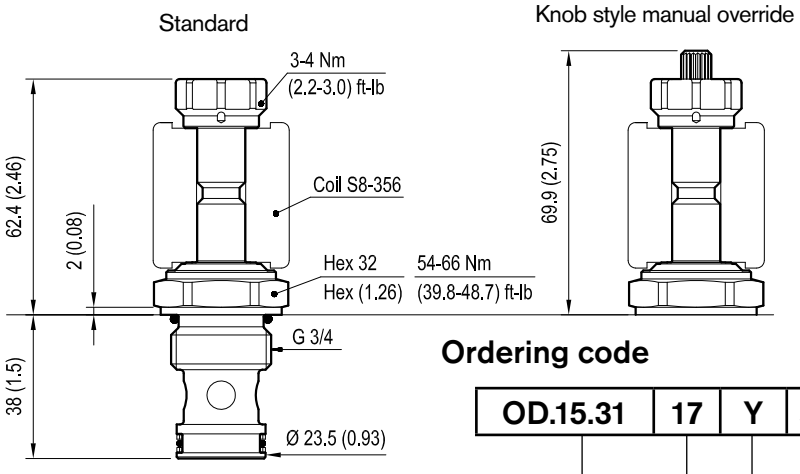
Operating pressure	bar (psi)	350 (5000)
Rated flow	l/min (gpm)	70 (19)
Max. internal leakage	cm^3/min (in^3/min)	1 (0.06)
Special cavity		017-E
Coil		S8-356 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.22 (0.49)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (-86) and +60 (+140)
Mounting position		unrestricted

Performance





Dimensions



Ordering code

OD.15.31	17	Y	S0

OD.15.31 — Solenoid operated valves poppet 2-way double lock normally closed

17 — Special cavity, Size 017-E

Y — Ordering options
= **3A** Standard
= **3D** Knob style manual override

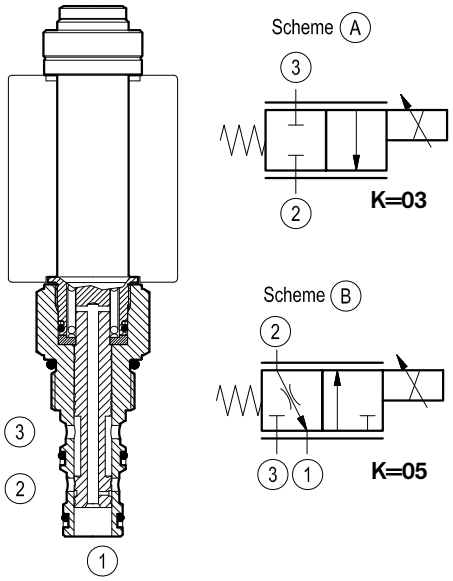
S0 — Standard operating pressure 350 bar (5000 psi)

Type	Material number
OD1531173AS000	R901113682
OD1531173DS000	R934001120

Proportional valves non compensated flow regulators

Common cavity, Size 10

VEP-5A-2Q-09-NC-2F **OD.92 - K - 77 - Y - 01**

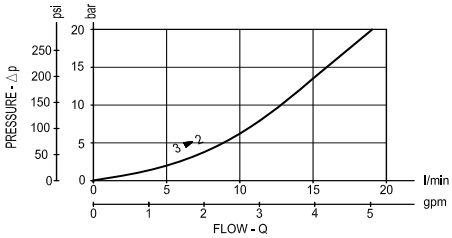


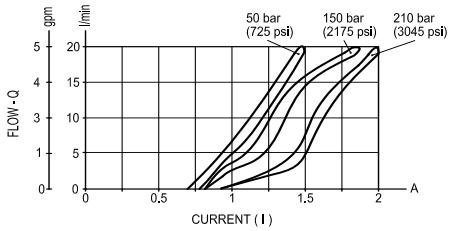
Technical data

Operating pressure	bar (psi)	210 (3000)
Rated flow	l/min (gpm)	20 (6)
I max(±15%) for 12 V DC coil	A	2
I min(±15%) for 12 V DC coil	A	0.9
Recommended PWM frequency	Hz	150-180
Internal leakage at 210 bar (3000 psi) with 46 cSt oil	cm^3/min (in^3/min)	max 180 (11)
Cavity		CA-10A-3N
Coil		S5 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.31 (0.68)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (86) and +60 (+140)
Mounting position		unrestricted

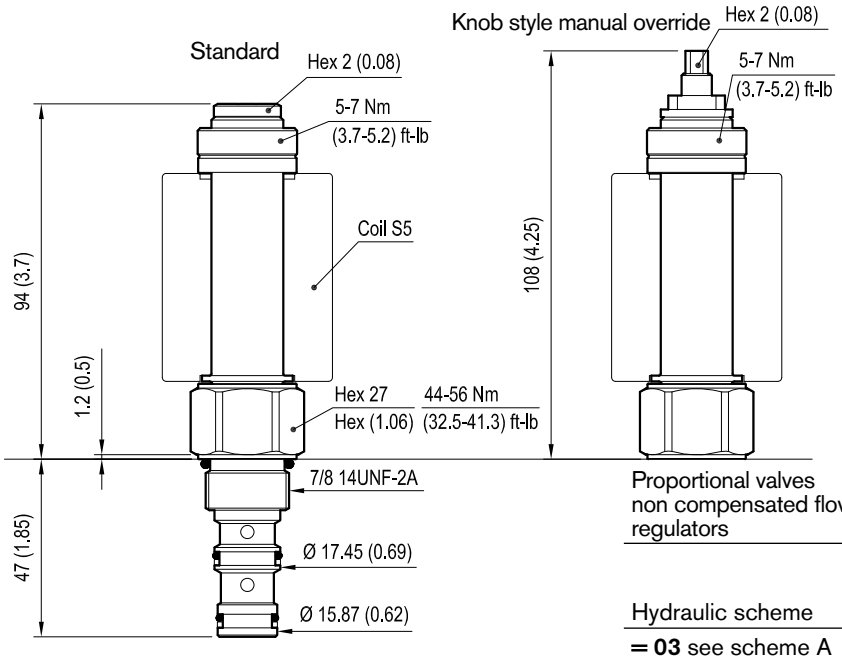
N.B. It is recommended to bleed air carefully before operation.

Performance





Dimensions



Type	Material number
OD920377030100	R934001518
OD920377040100	R934001521
OD920577030100	R934001524
OD920577040100	R934001526

Ordering code

OD.92	K	77	Y	01

Proportional valves non compensated flow regulators

Hydraulic scheme
= **03** see scheme A
= **05** see scheme B

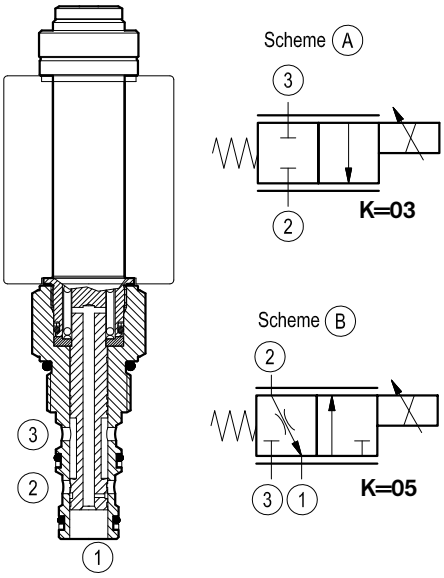
Common cavity Size 10

Ordering options
= **03** Standard
= **04** knob style manual override

Proportional valves non compensated flow regulators

Common cavity, Size 10

VEP-5A-2Q-09-NC-6F **OD.92 - K - 77 - Y - 03**

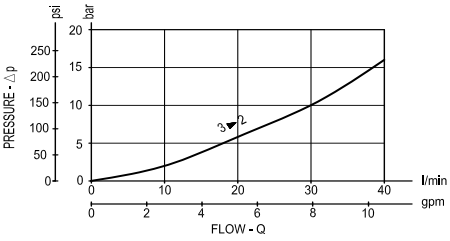


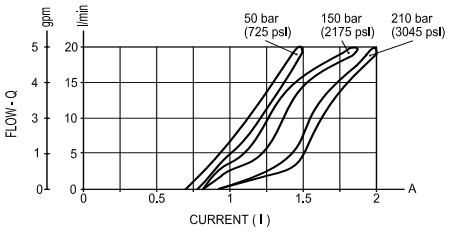
Technical data

Operating pressure	bar (psi)	210 (3000)
Rated flow	l/min (gpm)	40 (11)
I max(±15%) for 12 V DC coil	A	2
I min(±15%) for 12 V DC coil	A	0.8
Recommended PWM frequency	Hz	150-180
Internal leakage at 210 bar (3000 psi) with 46 cSt oil	cm^3/min (in^3/min)	max 180 (11)
Cavity		CA-10A-3N
Coil		S5 **(must be ordered separately)**
Minimum voltage required		90% of nominal value
Testing conditions - Seals		Internal and external seals are designed for applications that operate within the fluid temperature range
Weight	kg (lbs)	0.31 (0.68)
Fluid temperature range	°C (°F)	between -30 (-22) and +100 (+212)
Ambient temperature	°C (°F)	-30 (86) and +60 (+140)
Mounting position		unrestricted

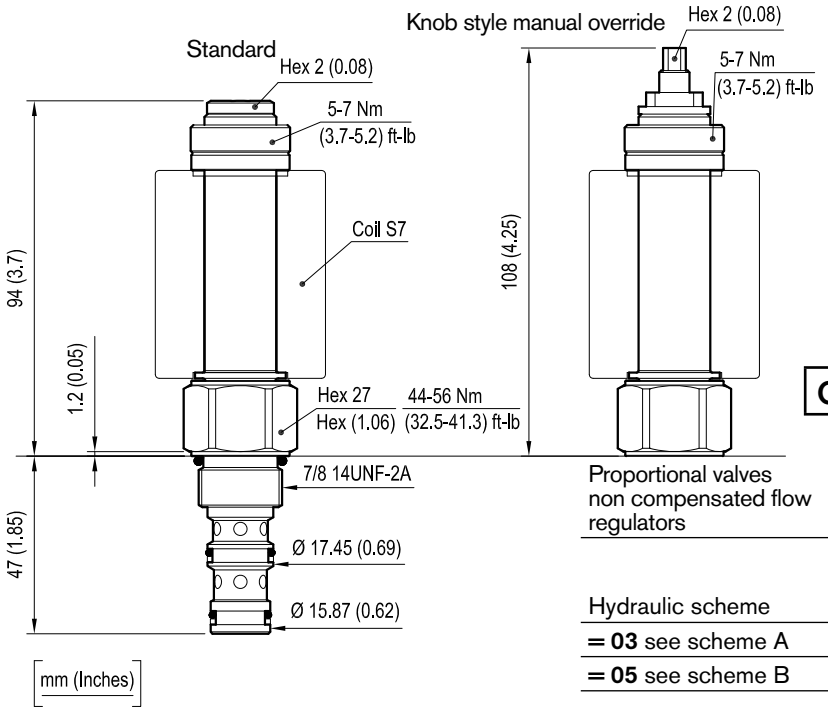
N.B. It is recommended to bleed air carefully before operation.

Performance





Dimensions



Type	Material number
OD920377030300	R934001520
OD920377040300	R934001522
OD920577030300	R934001525
OD920577040300	R934001528

Ordering code

OD.92	K	77	Y	03

Proportional valves non compensated flow regulators

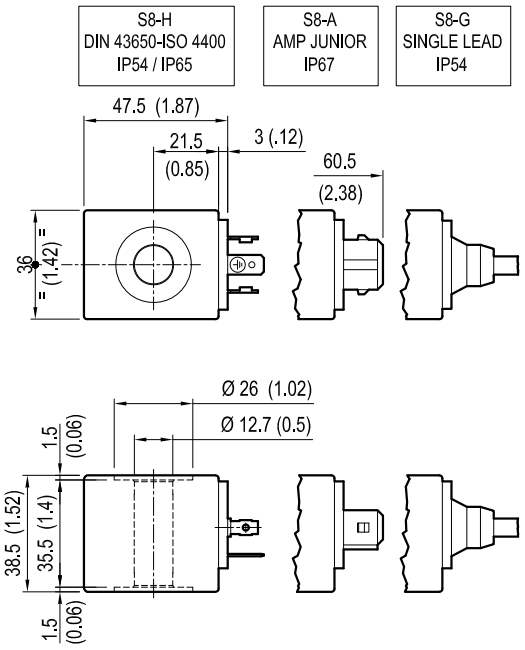
Hydraulic scheme
= **03** see scheme A
= **05** see scheme B

Common cavity Size 10

Ordering options
= **03** Standard
= **04** knob style manual override

Coils - Connectors

COIL S8-356 - CLASS H OD.02.17 - X - Y - Z

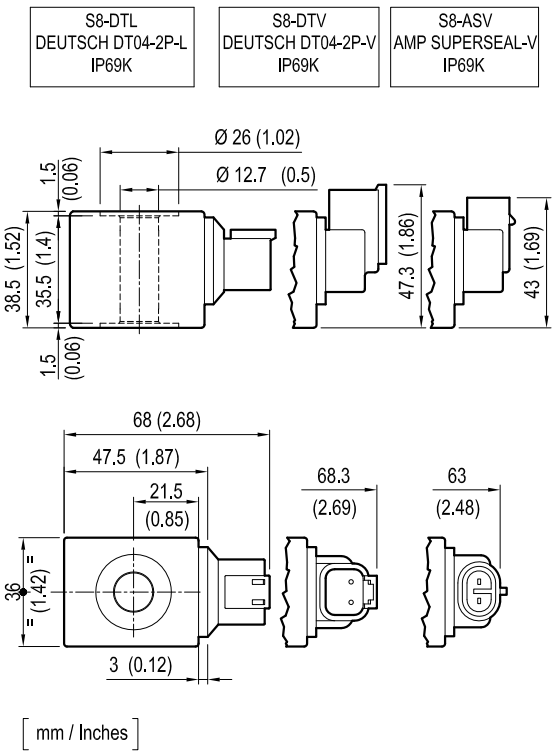


TECHNICAL DATA
Weight: 0.18 kg (0.40 lbs)
Encapsulating material: IXEF
Heat insulation Class H: 180°C (356°F)
Ambient temperature range: -30/+60°C (-86/+140°F)
Inlet voltage fluctuations must not exceed ±10% of nominal voltage to obtain correct operation and long life coils.

X	Y	Connections	Circuit	Voltage
01	30	DIN 43650 - ISO 4400	Standard	DC-RAC
07	30	AMP JUNIOR	Standard	DC only
0G	03	SINGLE LEAD	Standard	DC only *
14	30	DIN 43650 - ISO 4400	Bidirectionl Diode	DC only
15	30	AMP JUNIOR	Bidirectional Diode	DC only
0H	03	SINGLE LEAD	Bidirectional Diode	DC only *

* Length 300mm (11.8 inches). Ext. diameter 6.3mm (0.25 inches). External and internal Shealth Silicone rubber.

Z	Voltage V	Resistance Ohm (±7%)	Power W	Current A		ΔT °C (°F)
	Nominal	Ta = 20-25°C (68-77°F)	Cold coil	Cold coil	Hot coil	1 hour energized at Ta=20-25°C (68-77°F) Nominal voltage
OB	12 DC	7.4	20	1.62	1.19	105-110 (221-230)
OC	24 DC	28.5	20	0.85	0.61	
OG	14 DC		20			
AC	26 DC	34.3	20	0.76	0.54	



X	Y	Connections	Circuit	Voltage
20	30	DEUTSCH DT04-2P-L	Standard	DC only
20	3P	DEUTSCH DT04-2P-V	Standard	DC only
30	3P	AMP SUPERSEAL-V	Standard	DC only
22	30	DEUTSCH DT04-2P-L	Bidirectionl Diode	DC only
22	3P	DEUTSCH DT04-2P-V	Bidirectional Diode	DC only
32	3P	AMP SUPERSEAL-V	Bidirectional Diode	DC only

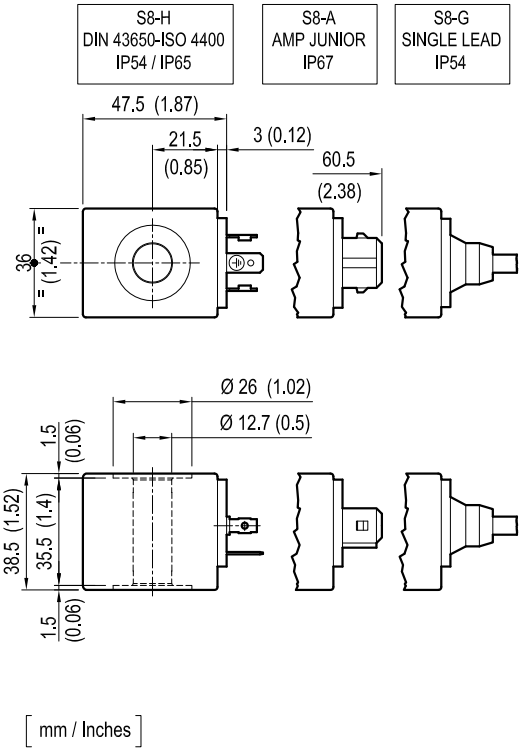
Z	Voltage V	Resistance Ohm (±7%)	Power W	Current A		ΔT °C (°F)
	Nominal	Ta = 20-25°C (68-77°F)	Cold coil	Cold coil	Hot coil	1 hour energized at Ta=20-25°C (68-77°F) Nominal voltage
OB	12 DC	7.4	20	1.62	1.19	105-110 (221-230)
OC	24 DC	28.5	20	0.85	0.61	
AC	26 DC	34.3	20	0.76	0.54	

Coils IP69K have passed the THERMAL SHOCK DUNK TEST

Coils - Connectors

COIL S8-356 - CLASS F

OD.02.17 - X - Y - Z



TECHNICAL DATA

Weight: 0.18 kg (0.40 lbs)

Encapsulating material: NYLON 6

Heat insulation Class F: 155°C (311°F)

Ambient temperature range: -20/+50°C (-68/+122°F)

Inlet voltage fluctuations must not exceed ±10% of nominal voltage to obtain correct operation and long life coils.

X	Y	Connections	Circuit	Voltage
01	30	DIN 43650 - ISO 4400	Standard	DC only
02	03	DOUBLE LEAD	Standard	DC only **
07	30	AMP JUNIOR	Standard	DC only
0G	03	SINGLE LEAD	Standard	DC only *
14	30	DIN 43650 - ISO 4400	Bidirectional Diode	DC only
15	30	AMP JUNIOR	Bidirectional Diode	DC only

* Length 300mm (11.8 inches). Ext. diameter 6.3mm (0.25 inches). External and internal Shealth Silicone rubber.

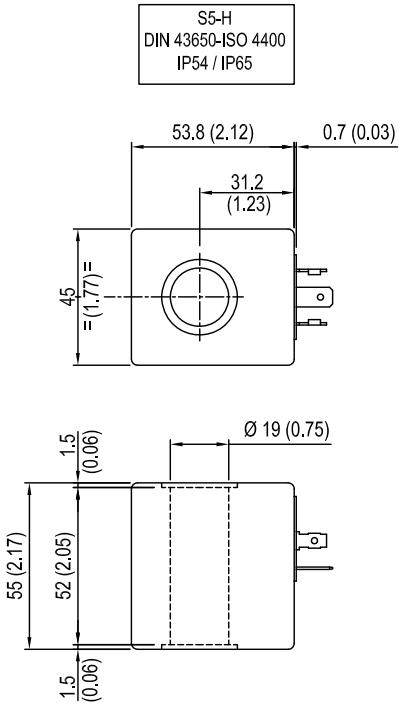
** Length 300mm (11.8 inches). Ext. diameter 2.4mm (0.10 inches). External and internal Shealth PVC HT105

Z	Voltage V	Resistance Ohm (±7%)	Power W	Current A		ΔT °C (°F)
	Nominal	Ta = 20-25°C (68-77°F)	Cold coil	Cold coil	Hot coil	1 hour energized at Ta=20-25°C (68-77°F) Nominal voltage
OB	12 DC	7.4	20	1.62	1.19	105-110 (221-230)
OC	24 DC	28.5	20	0.85	0.61	

Coils - Connectors

COIL S5 - CLASS H

OD.02.09.01.30 - Z - 01



TECHNICAL DATA

Weight: 0.47 kg (1.04 lbs)
Encapsulating material: RYNITE
Heat insulation Class F: 180°C (356°F)
Ambient temperature range: -30/+60°C (-86/+140°F)
Inlet voltage fluctuations must not exceed ±10% of nominal voltage to obtain correct operation and long life coils.

Z	Voltage V	Resistance Ohm (±7%)	Power W	Current A		ΔT °C (°F)
	Nominal	Ta = 20-25°C (68-77°F)	Cold coil	Cold coil	Hot coil	1 hour energized at Ta=20-25°C (68-77°F) Nominal voltage
OB	12 DC	6.2	23	1.92	1.41	92-96 (198-205)
OC	24 DC	24.9	23	0.96	0.71	

Bosch Rexroth Oil Control S.p.A.
Via Leonardo da Vinci 5
P.O. Box no. 5
41015 Nonantola – Modena, Italy
Tel. +39 059 887 611
Fax +39 059 547 848
cartridges@oilcontrol.com
www.boschrexroth.com

Rexroth
Bosch Group

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-directional-valves@oilcontrol.com
www.boschrexroth.com

Ihr Vertagshändler
Your concessionary
Votre concessionaire

RE 000159/10.09