

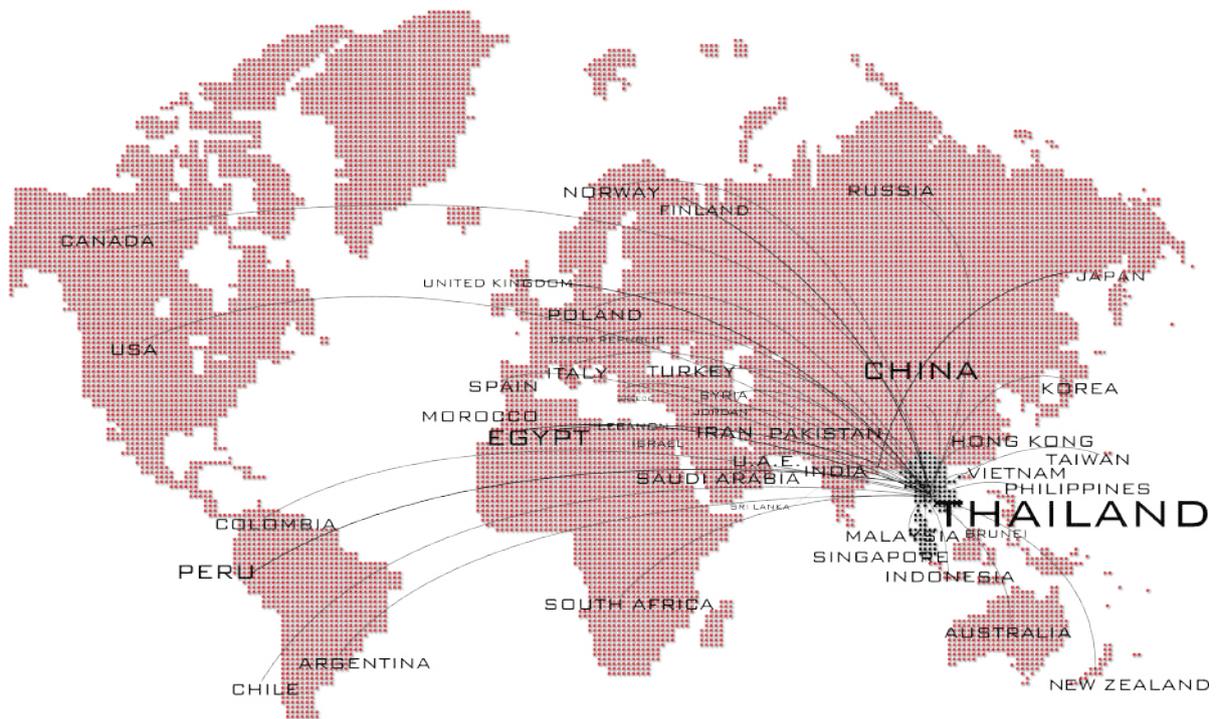


Directional Control Valves

catalogue 2025



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FLO-TECH ENGINEERING CO., LTD.

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Bureau Veritas Certification Holding SAS - UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001:2015

Scope of certification

**DESIGN & DEVELOP, PRODUCTION AND TRADING OF HYDRAULIC PUMP,
HYDRAULIC MOTOR, HYDRAULIC VALVE, PNEUMATIC VALVE,
POWER UNIT AND HYDRAULIC ACCESSORIES**

Original cycle start date:	17 March 2009
Expiry date of previous cycle:	NA
Certification / Recertification Audit date:	NA
Certification / Recertification cycle start date:	16 March 2024
Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on:	16 March 2027

Certificate No.: TH022197

Version: 1

Issue date: 16 March 2024



0008

Signed on behalf of BVCH SAS UK Branch

Certification Body Address: 5th Floor, 66 Prescott Street, London, E1 8HG, United Kingdom

Local Office: Bureau Veritas Certification (Thailand) Ltd. 16th Floor, Bangkok Tower, 2170 New Petchburi Road, Bangkapi, Huaykwang, Bangkok 10310, Thailand

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: 66 2 670 4800





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บูโร เวิร์ทส เซอทิฟิเคชัน (ประเทศไทย) รับรองว่าระบบบริหารงานขององค์กรนี้ได้รับการตรวจประเมิน และพบว่าสอดคล้องกับข้อกำหนดของมาตรฐานระบบบริหารตามรายละเอียดต่อไปนี้

ISO 9001:2015

ขอบข่ายการรับรอง

การออกแบบพัฒนา, การผลิต, จัดหาและจัดจำหน่าย บีมไฮดรอลิก, มอเตอร์ไฮดรอลิก, วาล์วไฮดรอลิก, วาล์วนิวเมติกส์, ชุดต้นกำลังไฮดรอลิกและอุปกรณ์เสริมในระบบไฮดรอลิก

ได้รับการอนุมัติครั้งแรกเมื่อ	17 มีนาคม 2552
วันที่ใบรับรองหมดอายุของรอบการรับรองที่ผ่านมา	NA
วันที่ตรวจเพื่อให้การรับรอง	NA
รอบการให้การรับรองมีผลจากวันที่ / รอบการให้การรับรองเพื่อต่ออายุมีผลจากวันที่	16 มีนาคม 2567
ภายใต้เงื่อนไขการดำเนินการของระบบบริหารงานที่เป็นที่น่าพอใจอย่างต่อเนื่องขององค์กรดังกล่าวใบรับรองนี้หมดอายุวันที่	16 มีนาคม 2570

เลขที่ใบรับรอง TH022196

แก้ไขครั้งที่ 1

วันที่มีผลบังคับใช้ 16 มีนาคม 2567



ผู้อนุมัติการรับรอง

สำนักงาน: บริษัท บูโร เวิร์ทส เซอทิฟิเคชัน (ประเทศไทย) จำกัด ชั้น 16 อาคารกรุงเทพทาวเวอร์ 2170 ถ.เพชรบุรีตัดใหม่ บางกะปิ ห้วยขวาง กรุงเทพฯ 10310 ประเทศไทย

หากต้องการตรวจสอบถึงผลบังคับใช้ของใบรับรองนี้โปรดติดต่อ (+662 670 4800)

คำอธิบายเพิ่มเติมเกี่ยวกับขอบข่ายของใบรับรองนี้และการประยุกต์ใช้ข้อกำหนดของ ระบบบริหารงาน สามารถติดต่อขอรับได้จากองค์กรดังกล่าวตามที่ระบุไว้ด้านบน



HOF Hydraulic Solutions Warranty Policy

Warranty

Flowlution Co.,Ltd, sole distributor of "HOF Hydraulic Solutions", Warrants all of its products to be free from defects in material and workmanship under normal operating conditions and proper application in accordance with the specifications for operation as described by the manufacturer for the period of twelve (12) months in service.

Limitations on Warranty

This Warranty is expressly in lieu of any other warranties expressed or implied. Buyer's sole and exclusive remedy under this Warranty shall be limited to the repair, replacement or exchange of warranted products at our option, F.O.B. our factory, or designated service center.

No special, incidental, consequential or other damage shall be recoverable. Flowlution Co.,Ltd shall not be liable for consequential damages or contingent liabilities including, but not limited to, loss of life, personal injury, loss of crops, loss due to fire or water damage, loss of business or business income, down time costs and trade or other commercial loss arising out of the failure of the product. Flowlution Co.,Ltd will in no event be liable for any sum in excess of the price received by it for the product for which liability is claimed or asserted.

No product shall be returned without prior authorization from Flowlution Co.,Ltd. Buyers and their agents shall prepay all transportation charges for the return of such products to Flowlution Co.,Ltd's factory or designated service center. There will be no acceptance of any charges for labor and/or parts incidental to the removal or remounting of product repaired or replaced under this Warranty.

The above Warranty does not cover conditions over which Flowlution Co.,Ltd has no control, including, without limitation, contamination, pressures in excess of recommended maximum, products damaged or subject to accident abuse or misuse after shipment from our factory, products altered or repaired by anyone other than Flowlution Co.,Ltd personnel, authorized Flowlution Co.,Ltd factory personnel or persons so designated in writing by Flowlution Co.,Ltd prior to commencement of said work.

A return goods authorization number must be obtained from Flowlution Co.,Ltd or Flowlution Co.,Ltd's authorized Service center, or Flowlution Co.,Ltd's authorized agent prior to any products being returned for Warranty.

For more details please contact info@flowlution.com or contact@hofhydraulic.com



นอกจากบริษัทจะมีผลิตภัณฑ์ที่มีคุณภาพแล้ว ด้านงานบริการหลังการขายก็เป็นอีกปัจจัยหนึ่งที่บริษัทให้ความสำคัญเป็นอย่างยิ่ง ทุกผลิตภัณฑ์ของบริษัทมีการรับประกันคุณภาพตามระยะเวลา และอายุการใช้งาน

1. เงื่อนไขการรับประกัน

การเริ่มต้นการรับประกัน

บริษัท โอฟ คออินดัส จำกัด จะรับประกันสินค้าใหม่ที่ขายให้ผู้แทนจำหน่าย หรือ ลูกค้าทั่วไปโดยตรงจากบริษัท โอฟ คออินดัส จำกัด โดยเริ่มนับตั้งแต่วันที่ลูกค้า (รายแรก) ซื้อสินค้า

ระยะเวลาประกัน

สินค้าทุกตัวที่จัดจำหน่ายโดย บริษัท โอฟ คออินดัส จำกัด จะมีอายุการรับประกัน เป็นระยะเวลา 1 ปี โดยเริ่มนับจาก เดือน/ปี ที่ลูกค้าซื้อสินค้า **ยกเว้น** ไส้กรอง, Suction filter (HF series) ทางบริษัท จะรับประกัน ในระยะเวลา 6 เดือน หรือ 500 ชั่วโมง โดยเริ่มนับจาก เดือน/ปี ที่ลูกค้าซื้อไปใช้งาน

หมายเหตุ ในกรณีที่ไม่มีหลักฐานการซื้อขาย ระยะเวลาการรับประกันจะเริ่มนับจาก เดือน/ปี ที่ผลิตเป็นหลัก

ขอบเขตการรับประกัน

การรับประกันเป็นไปตามระยะเวลาประกันดังกล่าวและภายใต้เงื่อนไขของการรับประกัน ถ้าหากมีความเสียหายอันเนื่องมาจากความบกพร่องของวัสดุชิ้นส่วนหรือกระบวนการผลิตจากโรงงานผู้ผลิตภายใต้การใช้งาน และการบำรุงรักษาตามปกติ บริษัทฯ ยินดีซ่อมหรือเปลี่ยนวัสดุชิ้นส่วนที่บกพร่องให้โดยไม่คิดมูลค่า

การซ่อม หรือเปลี่ยนชิ้นส่วน

ข้อตกลงในการรับประกันจำกัดเฉพาะการซ่อมหรือเปลี่ยนวัสดุชิ้นส่วน ซึ่งต้องดำเนินการโดย บริษัทโอฟ คออินดัส จำกัด หรือผู้แทนจำหน่ายที่ได้รับการแต่งตั้งเท่านั้น

2. ข้อยกเว้นในการรับประกัน

การรับประกันไม่ครอบคลุมถึงกรณีต่อไปนี้

- ความเสียหาย ซึ่งเกิดจากการใช้สินค้าที่ไม่ถูกต้อง และการละเลย ไม่เอาใจใส่บำรุงรักษา
- ความเสียหาย ซึ่งเกิดกับชิ้นส่วนภายนอกที่เสื่อมสภาพได้จากการสัมผัส การเสียดสี การฉีกขาด รวมทั้งการเกิดสนิม
- ความเสียหาย ซึ่งเกิดจากการดัดแปลงสภาพ แก๊ว ต่อเติม การแยกออกจากกัน การซ่อมที่ไม่ถูกต้อง

- ความเสียหาย ซึ่งเกิดจากการใช้-โหล่เทียม น้ำมันเชื้อเพลิง สารหล่อลื่นต่าง ๆ ที่ผิดประเภท มีคุณภาพต่ำ
- ความเสียหาย ที่เกิดจากภัยธรรมชาติ และอุบัติเหตุ
- ความเสียหาย ที่เกิดจากการซ่อม หรือปรับแต่งโดยบุคคลซึ่งไม่ใช่จากบริษัท ฯ หรือผู้แทนจำหน่าย ที่บริษัท โอฟ/ คออินดิส จำกัด แต่งตั้ง (ต้องมีการแต่งตั้งอย่างจริงจัง มีเอกสาร, มีการอบรมสอนวิธีการใช้อุปกรณ์-เครื่องมือในการเปลี่ยนที่ถูกต้อง)
- ความเสียหายที่เกิดจากการขนส่งสินค้า เช่น การขนส่งสาธารณะ
- ค่าใช้จ่ายต่าง ๆ ค่าน้ำมัน ค่ารถบรรทุก ค่าลากจูง ค่าที่พิก ค่าเสียเวลา รวมถึงค่าเสียหาย เนื่องจากความไม่สะดวกหรือทำให้ธุรกิจเสียหาย
- ปรากฏการณ์ปกติ เช่น เสียงดัง การสั่นสะเทือน ซึ่งไม่มีผลกระทบต่อคุณภาพและสมรรถนะของสินค้า
- สินค้าที่ถูกทำให้มีเตอร์วัดชั่วโมงการใช้งานไม่ตรงกับความเป็นจริง

* บริษัท ฯ สงวนสิทธิ์ในการที่จะเปลี่ยนแปลงข้อกำหนดในเรื่องการรับประกันนี้ได้โดยไม่ต้องแจ้งล่วงหน้า

CONTENTS

Description	Page
1. Solenoid Operated Directional Valve HWE Series	9
2. Manual Operated Directional Control Valve L-4HWE Series	17
3. Compact Monoblock Directional Control Valve MB20 Series	22
4. Monoblock Directional Control Valve MCD20 Series	26
5. Monoblock Directional Control Valve MCD50 Series	29
6. Sectional Directional Control Valve MCD10 Series	33
7. Sectional Directional Control Valve MCD24 Series	37
8. Sectional Directional Control Valve MCD25 Series	42

Solenoid Operated Directional Valve

HWE Series

Features and Handling

- WE Series is a direct solenoid operated directional spool valve. The valve porting pattern follows DIN 24 340 form A. The Valves come with wet pin DC or AC solenoids with removable coil which can be rotated through 90 degree.
- The standard valves come with DIN 43650 electrical connector with light and manual override to permit the spool to be moved without the solenoid being energized.
- For correct operation, ensure that the solenoid pressure chamber is filled with oil. Do not exceed permissible voltage range of the coil.
- Keep surge pressure below the maximum permissible back pressure port T. Keep hydraulic oil clean at ISO cleanliness code 19/16



Specification

Model	Maximum Flow L/min (USgpm)	Maximum Pressure bar (psi)	Weight kg (lb)
4HWE 6	60 (15.8)	300 (4350)	Single coil 1.6 (3.52) Double coil 2.4 (5.28)
4HWE10	100 (26.4)		Single coil 4.5 (9.9) Double coil 6.2 (13.64)

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change at any time without notice.

Solenoid Operated Directional Valve HWE Series

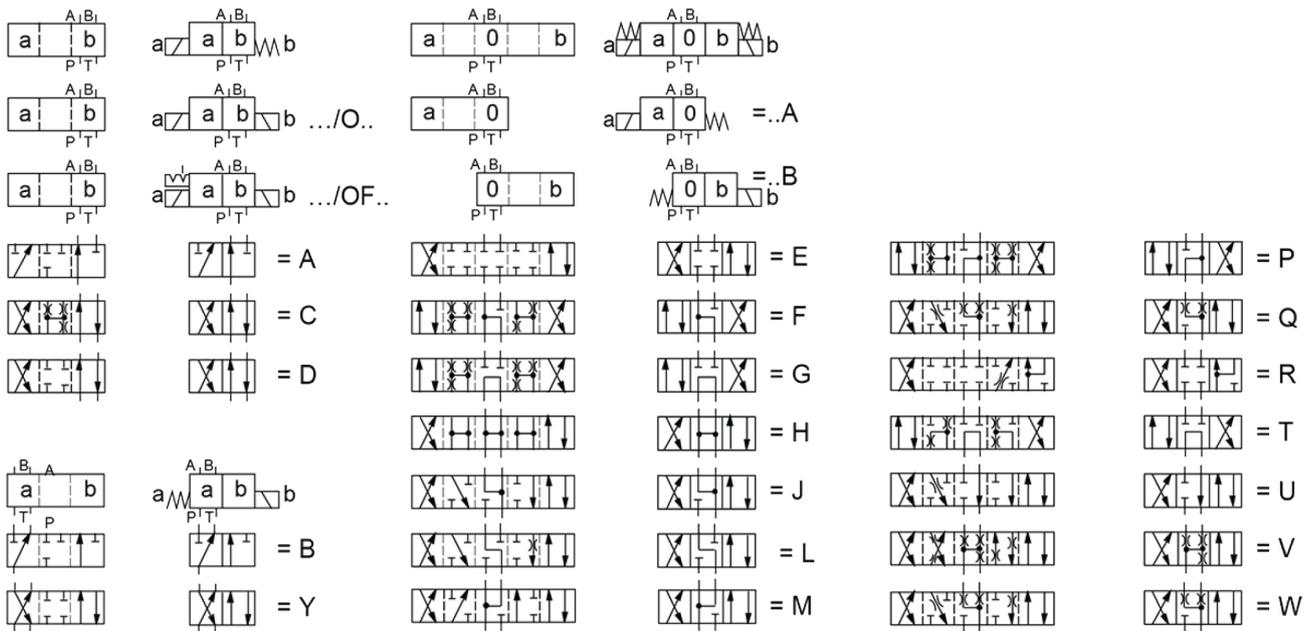
Symbols

Notes

1. With ../O and ../OF, spool A, C, and D can come without spring return with or without detent.
2. With ordering a spool with only two position "0" & "a" or "0" & "b", specify the desired position a or b after the spool code.

Example : Spool E with spool position "a"

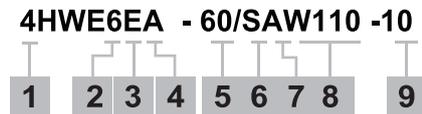
Ordering code : 4HWE6EA-60/0AW110-10



Solenoid Operated Directional Valve

HWE Series

Ordering Code



1. Number of port

4 - 4 ports

2. Valve Size

6 - NG6 (CETOP3)
10 - NG10 (CETOP5)

3. Spool type (see the table below)

4. Three position spool with
solenoid A only = A
solenoid B only = B

5. Design

60 - for HWE6
30 - for HWE10

6. Spring and Detent

S - Spring return

7. Coil type

A - Wet pin oil immersed with removable coil

8. Coil Voltage

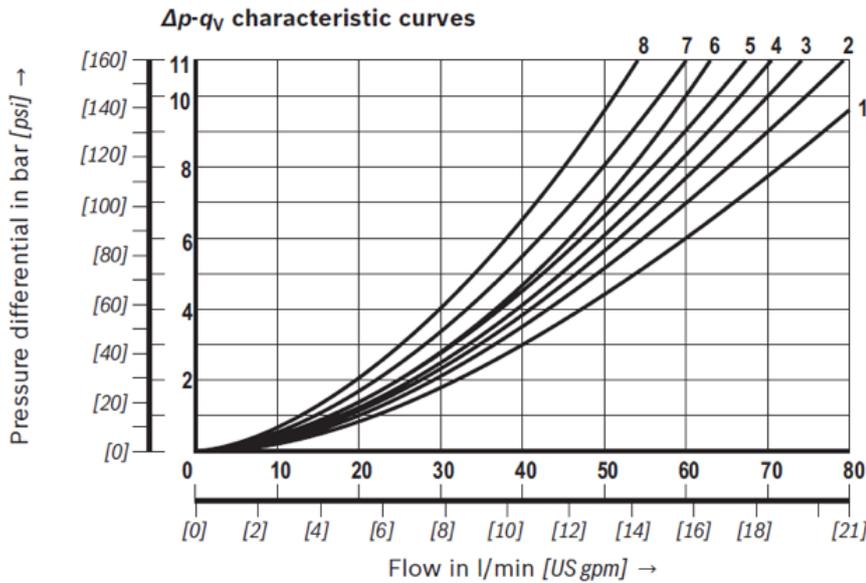
G12 - 12V DC
G24 - 24V DC
W220 - 220V AC 50/60 Hz
W110 - 110V AC 50/60 Hz

9. Further detail for future use

Solenoid Operated Directional Valve HWE Series

Characteristic curves HWE6

(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$ [104 ± 9 °F])



- 7 Symbol "R" in spool position B – A
- 8 Symbol "G" and "T" in central position P – T
- 9 Symbol "H" in central position P – T

Symbol	Direction of flow			
	P – A	P – B	A – T	B – T
A; B	5	5	–	–
C	3	3	5	3
D; Y	6	6	5	5
E	5	5	3	3
F	3	5	3	3
T	8	8	4	4
H	2	1	2	2
J; Q	3	3	2	3
L	5	5	1	4
M	2	1	5	5
P	5	3	3	3
R	6	6	1	–
V	3	2	3	3
W	3	3	2	2
U	5	5	4	1
G	7	7	4	4

Solenoid Operated Directional Valve HWE Series

Performance limits HWE6

(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$ [104 ± 9 °F])

Notice!

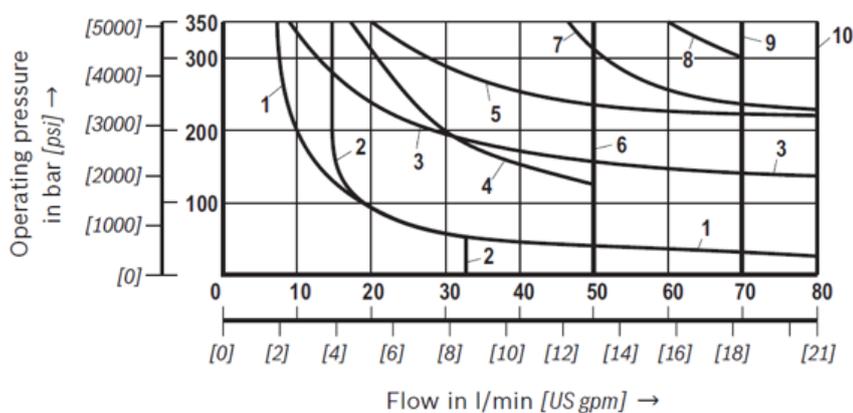
The specified performance limits are valid for operation with two directions of flow (e.g. from P to A and simultaneous return flow from B to T).

Due to the flow forces acting within the valves, the admissible performance limit may be considerably lower

with only one direction of flow (e.g. from P to A while port B is blocked).

In such cases of application, please consult us!

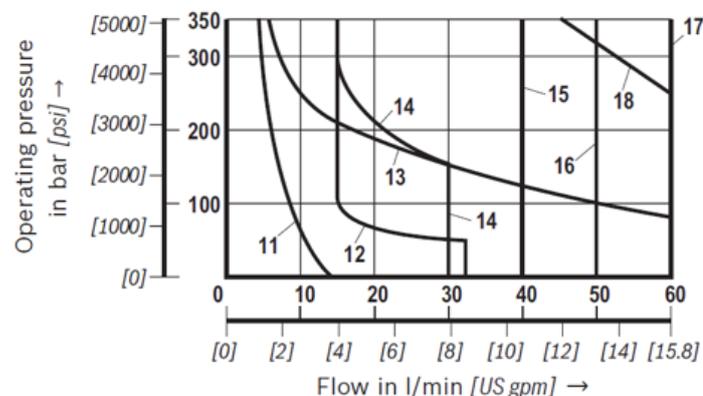
The performance limit was determined when the solenoids were at operating temperature, at 10% under-voltage and without tank preloading.



DC solenoid	
Characteristic curve	Symbol
1	A; B ¹⁾
2	V
3	A; B
4	F; P
5	J
6	G; H; T
7	A/O; A/OF; L; U
8	C; D; Y
9	M
10	E ²⁾ ; R ³⁾ ; C/O; C/OF; D/O; D/OF; Q; W

- 1) With manual override
- 2) P – A/B pre-opening
- 3) Return flow from actuator to tank

Solenoid voltage (DC solenoid)
12; 24 V



AC solenoid	
Characteristic curve	Symbol
11	A; B ¹⁾
12	V
13	A; B
14	F; P
15	G; T
16	H
17	A/O; A/OF; C/O; C/OF; D/O; D/OF; E ²⁾ ; J; L; M; Q; R ³⁾ ; U; W
18	C; D; Y

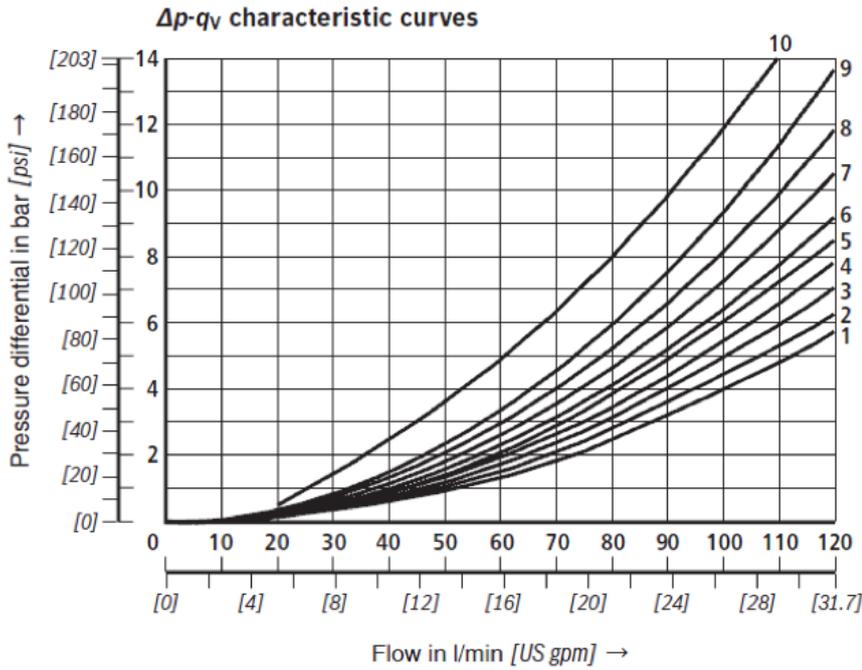
- 1) With manual override
- 2) P – A/B pre-opening
- 3) Return flow from actuator to tank

Solenoid voltage (AC solenoid)
110 V; 50 Hz 220 V; 50 Hz

Solenoid Operated Directional Valve HWE Series

Characteristic curves HWE10

(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$ [104 ± 9°F])



Central position:

Spool symbol	Direction of flow				
	P - A	P - B	B - T	A - T	P - T
F	4	-	-	9	9
P	-	5	8	-	10
G, T	-	-	-	-	9
H	-	-	-	-	3

Spool symbol	Direction of flow			
	P - A	P - B	A - T	B - T
A; B	3	3	-	-
C	3	3	4	5
D; Y	5	5	6	6
E	1	1	4	4
F	2	3	7	4
G	3	3	6	7
H	1	1	6	7
J	1	1	3	3
L	2	2	3	5
M	1	1	4	5
P	4	2	5	7
Q	1	2	1	3
R	3	6	4	-
T	3	3	6	7
U; V	2	2	3	3
W	2	2	4	5

Spool position:

Spool symbol	Direction of flow			
	P - A	B - A	A - T	P - T
R	-	9	-	-

Solenoid Operated Directional Valve HWE Series

Performance limits HWE10

(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$ [104 ± 9 °F])

Notice!

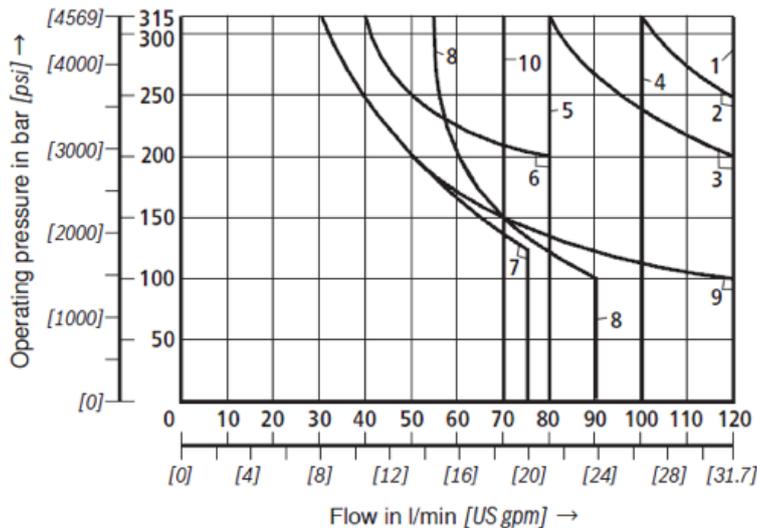
The specified performance limits are valid for operation with two directions of flow (e.g. from P to A and simultaneous return flow from B to T).

Due to the flow forces acting within the valves, the admissible performance limit may be considerably lower

with only one direction of flow (e.g. from P to A while port B is blocked).

In such cases of application, please consult us!

The performance limit was determined when the solenoids were at operating temperature, at 10% undervoltage and without tank preloading.



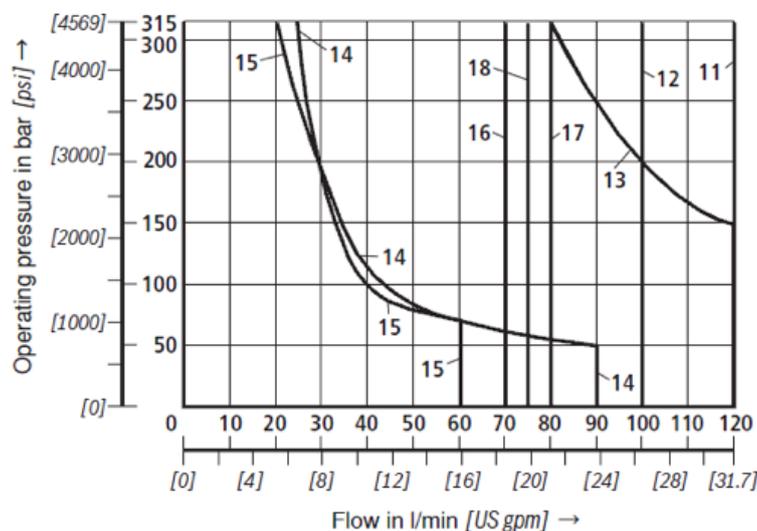
Solenoid voltage (DC solenoid)

12; 24 V

Curve	DC voltage Spool symbol
1	G; C/O; C/OF; D; D/O; D/OF; Y; M
2	E
3	A/O; A/OF; L; U; J; Q; W
4	H
5 ¹⁾	R; L ²⁾ ; U ²⁾
6	G
7	T
8	F; P
9	A; B
10	V

¹⁾ Return flow from actuator to tank (irrespective of the area ratio)

²⁾ Central position only



Solenoid voltage (AC solenoid)

110 V; 50 Hz 220 V; 50 Hz

Curve	AC voltage Spool symbol
11	G; C/O; C/OF; D; D/O; D/OF; Y
12	E; L; U; Q; W
13	A/O; A/OF; J
14	F; P
15	T
16	H
17	R
18 ²⁾	L; U
19	M

²⁾ Central position only

Manual Operated Directional Control Valve L-4HWE Series

Features and Handling

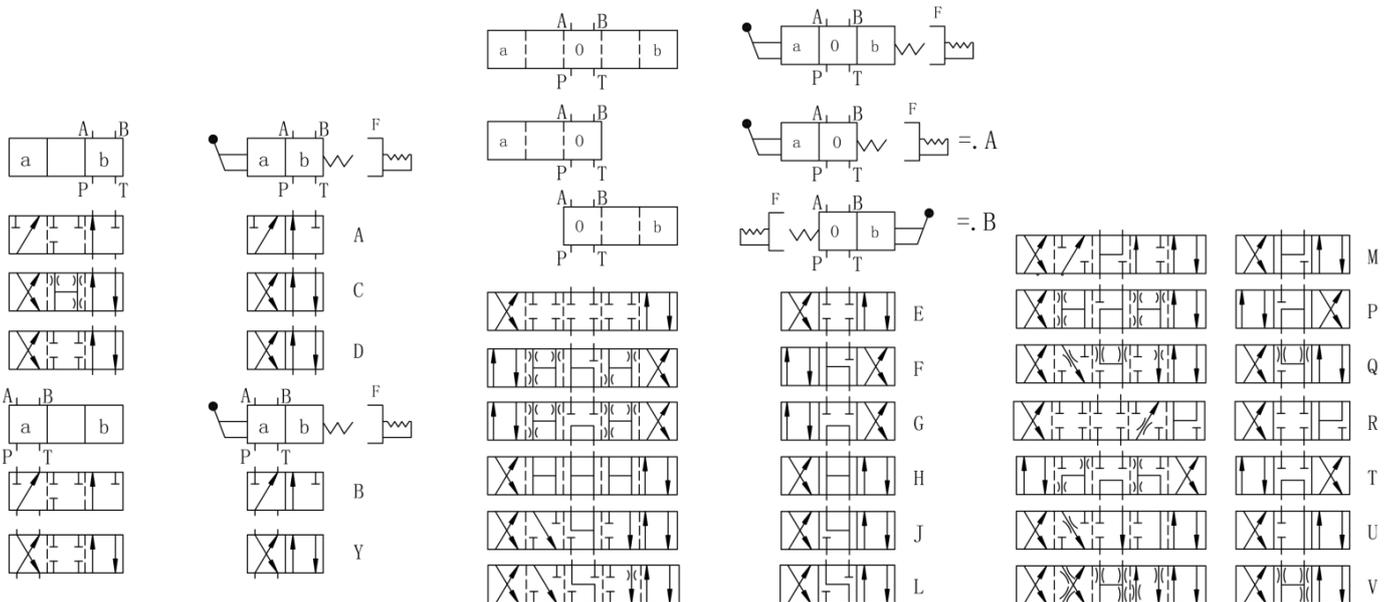
Manual operated directional control valve are direct type directional valves. It can control the start, stop & direction of fluid flow. This series with detent or return spring are available.



Specification

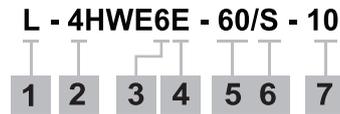
Model	Working Pressure		Flow rate	Working fluid	Fluid temp	Viscosity	Weight
	Port P, A, B	Port T					
L-4HWE6	315 bar (4570 psi)	100 bar (1450 psi)	60 L/min (15.8 USgpm)	Mineral oil; phosphate-ester	-20 - 70 °C	2.8 - 380 mm ² /S	1.4 kg.
L-4HWE10			100 L/min (26.4 USgpm)				3.3 kg.

Symbols



Manual Operated Directional Control Valve L-4HWE Series

Ordering Code



1. Control Lever

2. Number of Port

4 - 4 port

3. Valve Size

6 - NG6 (CETOP3)

10 - NG10 (CETOP5)

4. Spool Type (see the table below)

5. Design

60 - for HWE6

30 - for HWE10

6. Spring and Detent

S - Spring return

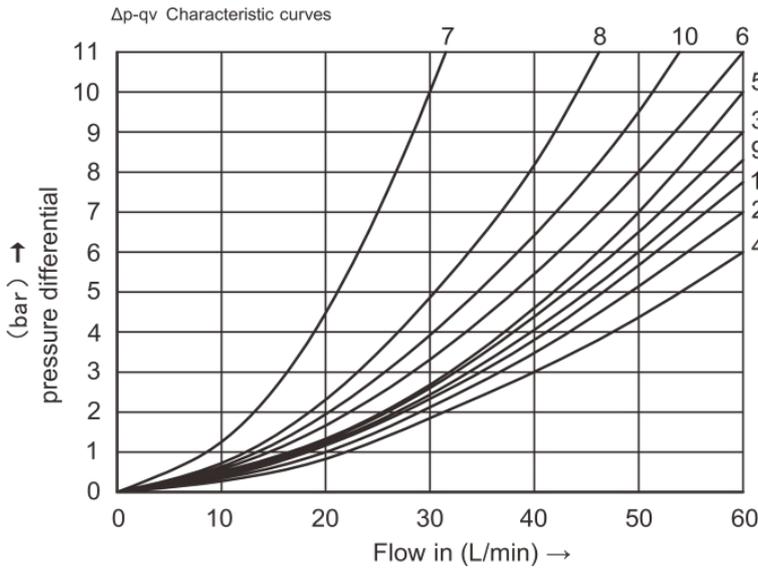
D - With detent

7. Further detail for future use

Manual Operated Directional Control Valve L-4HWE Series

Characteristic curves

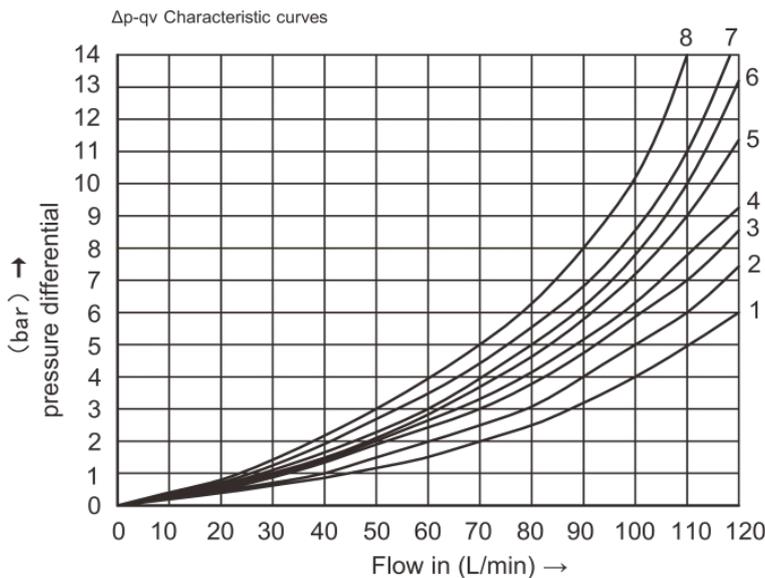
L-4HWE6



7 Symbol "R" in spool position "b" (A → B)
8 Symbols "G" and "T" in central position (P → T)

Spool symbol	Spool position			
	P-A	P-B	A-T	B-T
A	3	3	-	-
B	3	3	-	-
C	1	1	3	1
D	5	5	3	3
E	3	3	1	1
F	1	3	1	1
G	6	6	9	9
H	2	4	2	2
J	1	1	2	1
M	2	4	3	3
P	3	1	1	1
Q	1	1	2	1
T	10	10	9	9
U	3	3	9	4
V	1	2	1	1
Y	5	5	3	3

L-4HWE10



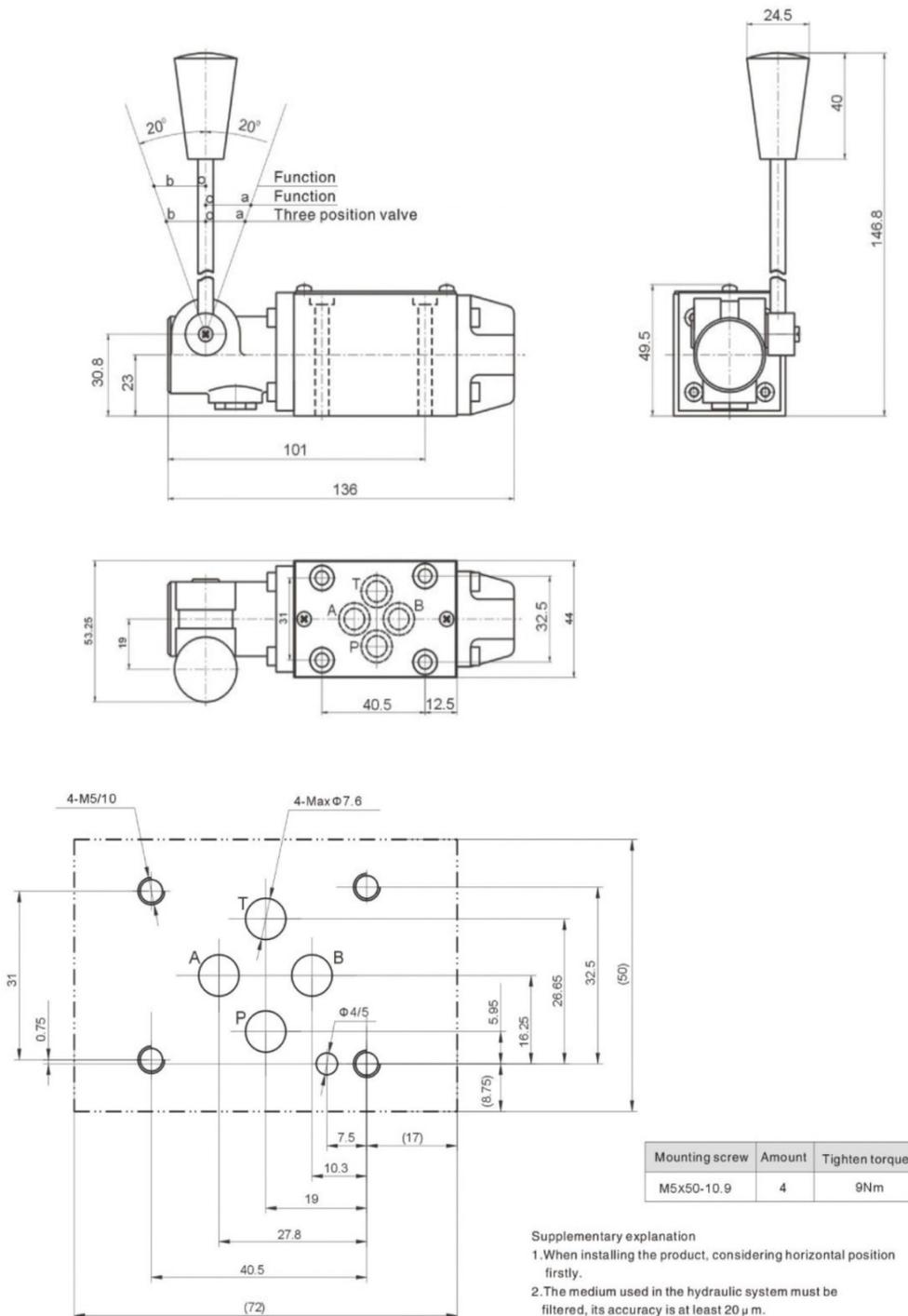
8 Symbol "R" in spool position "b" (A → B)
8 Symbols "G" and "T" in central position (P → T)

Spool symbol	Spool position			
	P-A	P-B	A-T	B-T
A	4	3	-	-
B	3	4	-	-
C	3	3	4	4
D	3	3	5	5
E	2	2	4	4
F	1	2	3	4
G,T	4	4	7	7
H	1	1	5	5
J	2	2	3	3
L	3	3	2	4
P	3	1	5	5
R	3	4	3	-
U	3	3	5	2
V	2	2	3	3

Manual Operated Directional Control Valve L-4HWE Series

Installation Dimension mm (inch)

L-4HWE6



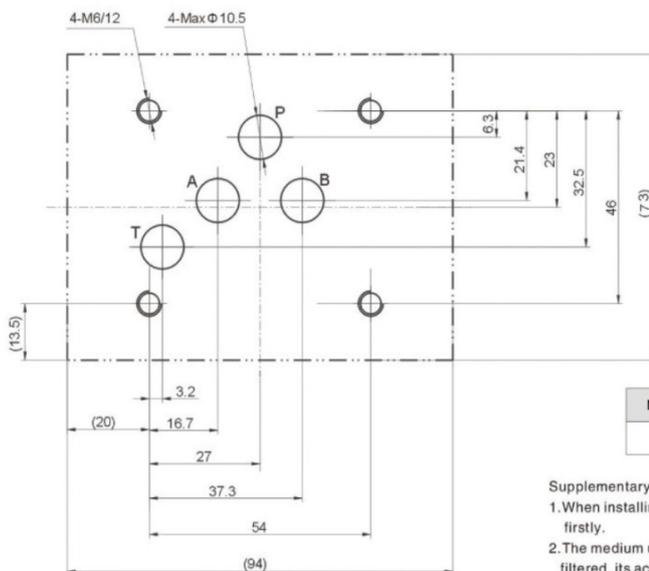
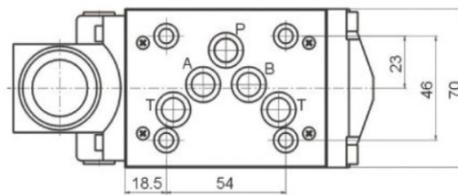
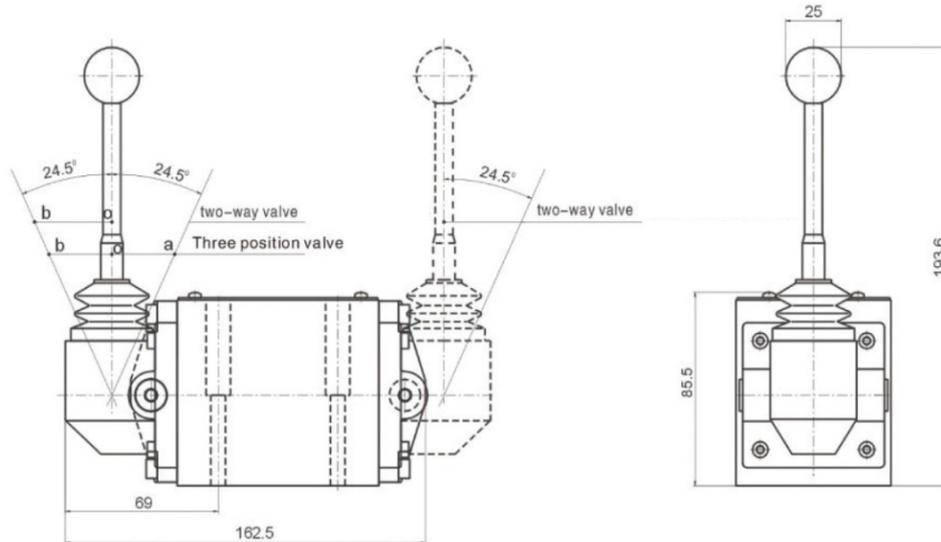
Mounting screw	Amount	Tighten torque
M5x50-10.9	4	9Nm

Supplementary explanation

1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μm.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

Manual Operated Directional Control Valve L-4HWE Series

L-4HWE10



Mounting screw	Amount	Tighten torque
M6x50-10.9	4	15Nm

Supplementary explanation

1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μm.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

Compact Monoblock Directional Control Valve MB20 Series

Features and Handling

- MB20 series is a monoblock directional control valve entirely developed to perform equivalent basic function as MCD20. MB20 is very compact in size yet comes with all standard feature such as adjustable main relief valve, check valve, carry over circuit, and 2 mounting holes.
- MB20 made of high strength cast iron. The spools are made of hardened and tempered steel with varieties of spool types and controls.

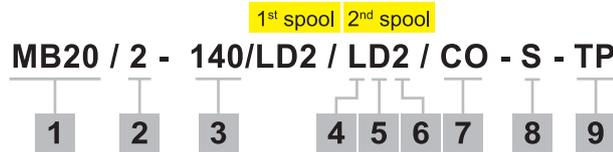


Specification

Model	Nominal Flow L/min (USgpm)	Maximum Pressure bar (psi)
MB20	45 (12)	350 (5100)

Compact Monoblock Directional Control Valve MB20 Series

Ordering Code



1. Model : MB20
2. Number of Spool
1 - 2
3. Relief Valve Setting
210 bar
140 bar
4. Spool Control B Port side
L - Standard Lever
5. Spool Control A Port side
S - Spring return to center
D - Detent in three positions
I - Detent in two positions
O - Detent out two positions
6. Spool Type
(Type.1) 1 - Double acting, 3 position with A and B closed in center (Cylinder spool)
(Type.2) 2 - Double acting, 3 position with A and B to tank in center (Motoring spool)
(Type.3) 3 - Single acting on A, 3 position B plugged
(Type.4) 4 - Single acting on B, 3 position A plugged
7. Circuit Option (Outlet cover)
OC - With open center plug
CO - With carry over plug
CC - With closed center plug

8. Port Connection

Code	Thread	Port A-B	Port P	Port T	Port CO
B3	BSP	3/8"	3/8"	3/8"	3/8"
S	SAE	SAE 8	SAE 8	SAE 8	SAE 8

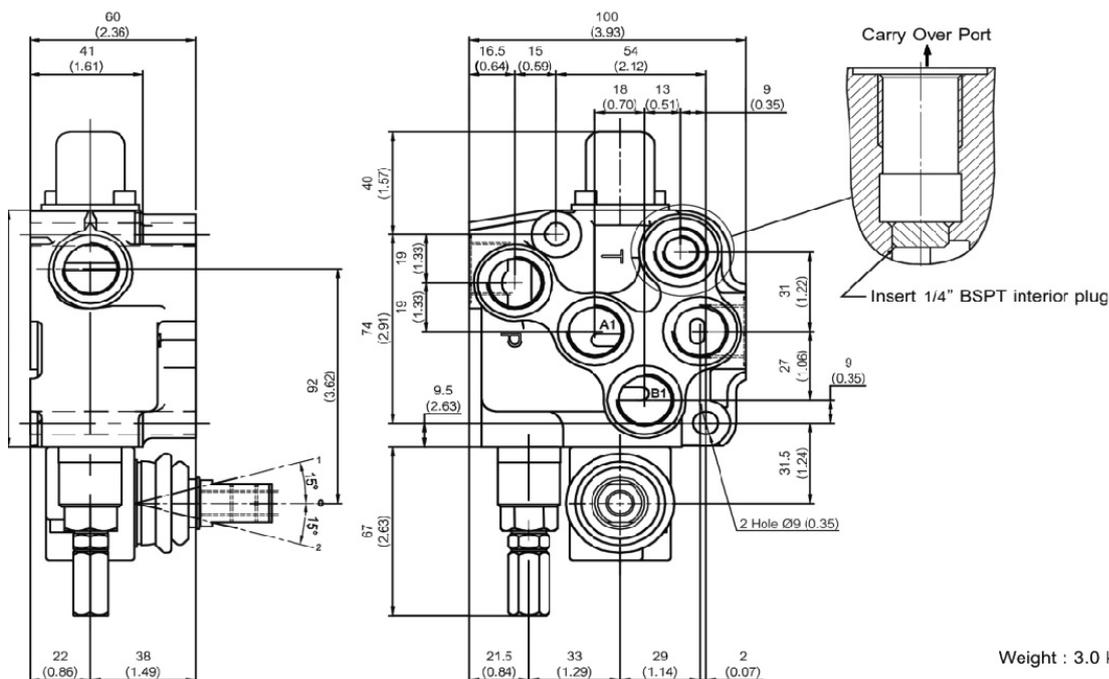
9. Optional Port Connection

- SP - Use port P and T at side
plugged P and T on top (standard)
- TP - Use port P and T on top
plugged P and T at side

Compact Monoblock Directional Control Valve MB20 Series

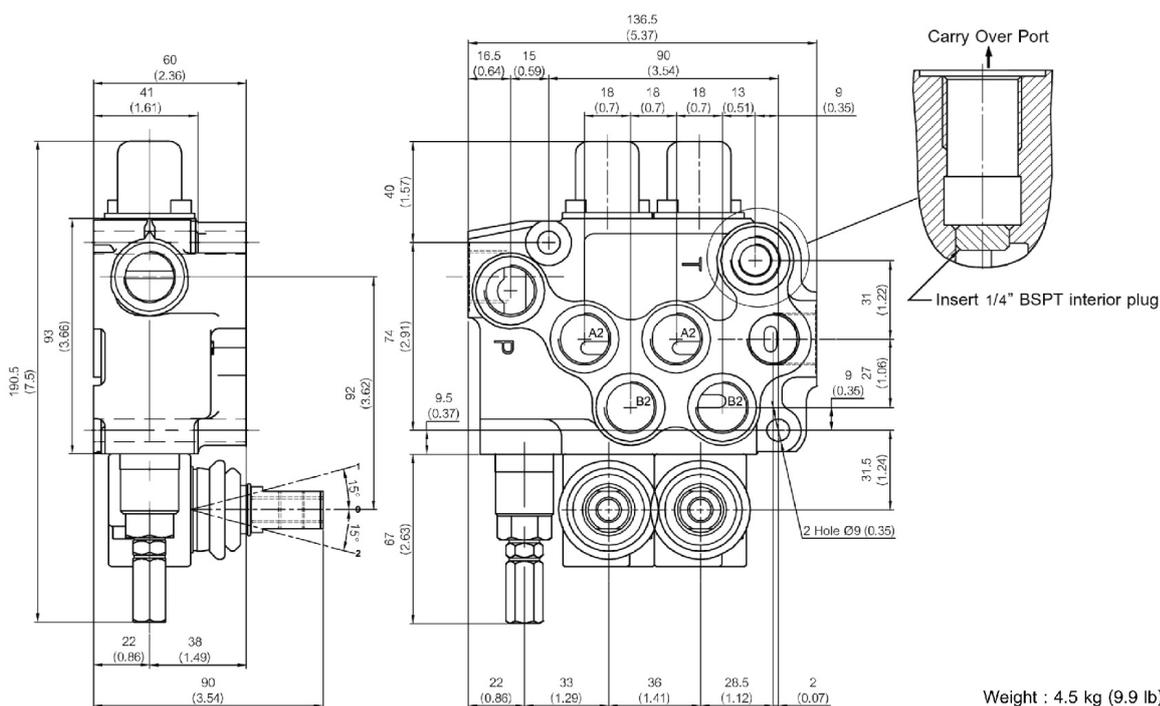
Installation Dimension mm (inch)

MB-20/1



Weight : 3.0 kg (6.6 lb)

MB-20/2

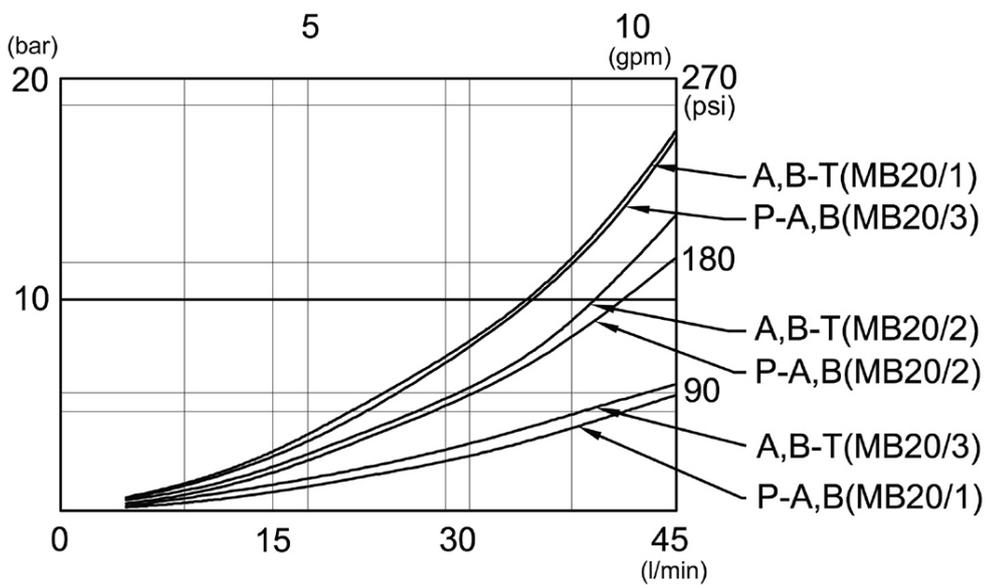
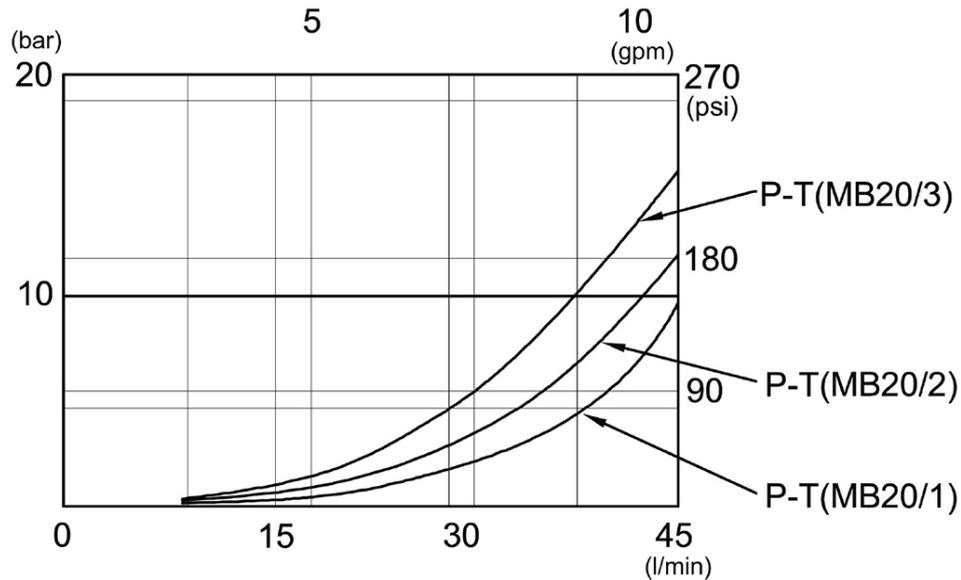


Weight : 4.5 kg (9.9 lb)

Compact Monoblock Directional Control Valve MB20 Series

Performance Characteristics

Pressure Drop



Monoblock Directional Control Valve

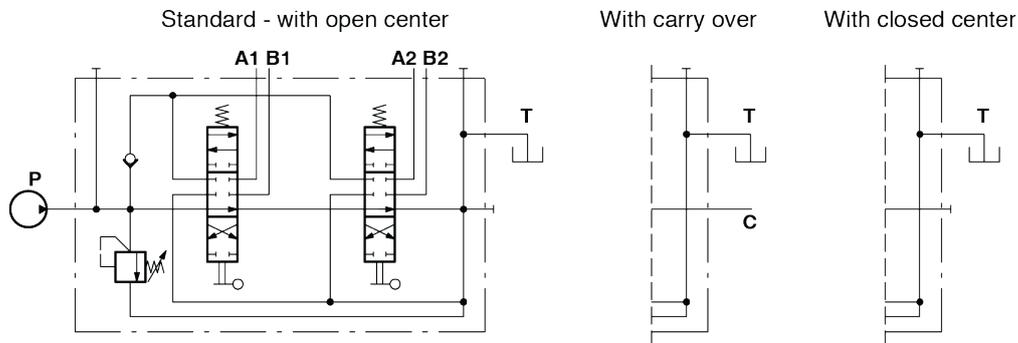
MCD20 Series

Features and Handling

- MCD20 series are monoblock directional control valve with parallel circuits. The standard valve comes with an adjustable main relief valve, check valve, and 4 mounting holes for standard and optional mounting. The carry over circuit, spool controls, and other options are available.
- The compact casting is made of high strength cast iron. The spools are made of hardened and tempered steel.



Specification



Model	Nominal Flow L/min (USgpm)	Maximum Pressure bar (psi)
MCD 20	45 (12)	350 (5100)

Monoblock Directional Control Valve

MCD20 Series

Ordering Code



1. Model : MCD20

2. Number of Spool
1 - 4

3. Relief Valve Setting
210 bar
140 bar

4. Spool Control B Port side
L - Standard Lever

5. Spool Control A Port side
S - Spring return to center
D - Detent in three positions
I - Detent in two positions
O - Detent out two positions
M - Microswitch connector operated in port 1 and 2

6. Spool Type
(Type.1) 1 - Double acting, 3 position with A and B closed in center (Cylinder spool)
(Type.2) 2 - Double acting, 3 position with A and B to tank in center (Motoring spool)
(Type.3) 3 - Single acting on A, 3 position B plugged
(Type.4) 4 - Single acting on B, 3 position A plugged

7. Service valve
N - Without valve
P - Without valve, but with pre-arranged holes
C - With pilot operated check valves on port A and B

*With service valve, the main valve body will come without Port P and T on top and Port A and B can be BSPT 3/8" only, but Port A and B on check valve can be any threads as specified in Ordering Code.

8. Circuit Option

OC - With open center plug
CO - With carry over plug
CC - With closed center plug

9. Port Connection

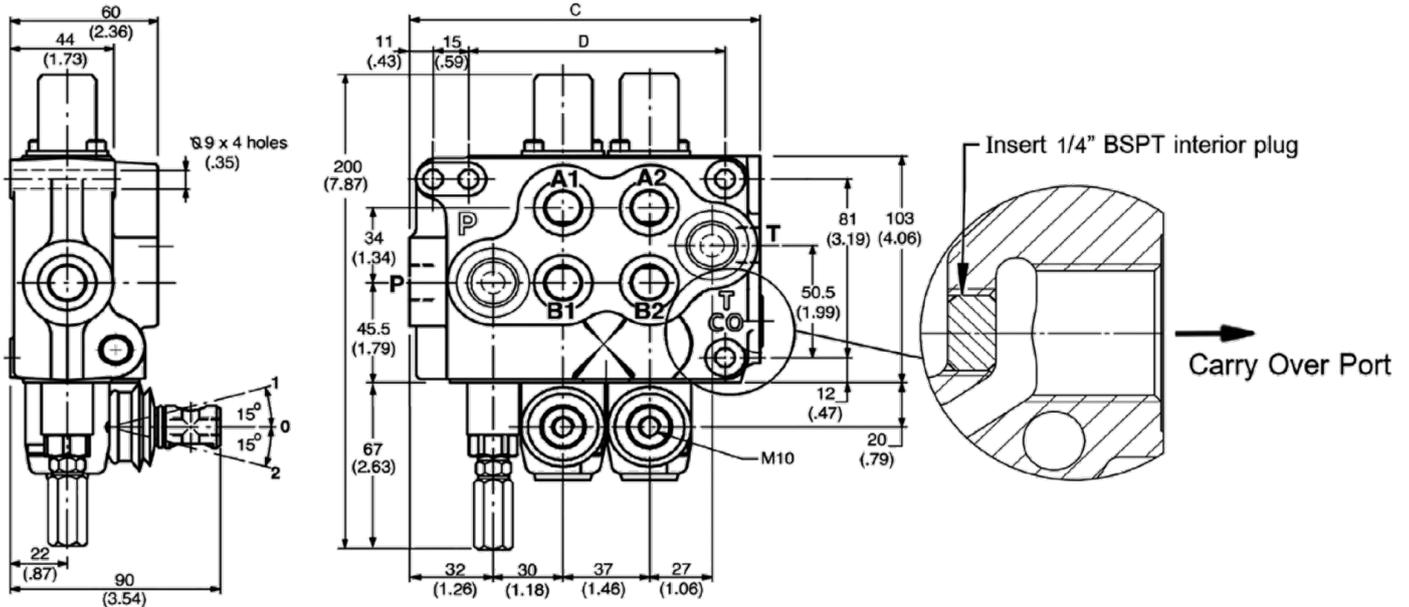
Code	Thread	Port A-B	Port P	Port T	Port CO
B3	BSP	3/8"	3/8"	3/8"	3/8"
S	SAE	SAE 8	SAE 10	SAE 10	SAE 10

10. Optional Port Connection

SP - Use port P and T at side plugged P and T on top (standard)
TP - Use port P and T on top plugged P and T at side

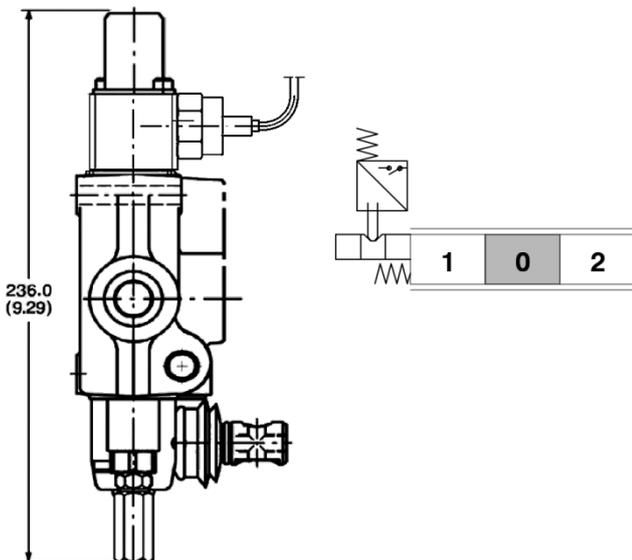
Monoblock Directional Control Valve MCD20 Series

Installation Dimension mm (inch)

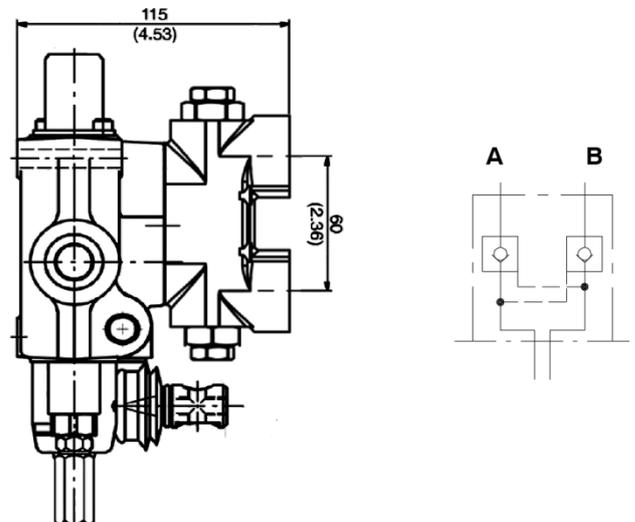


Model	Dimension mm (inch)		Weight kg (lb)
	C	D	
MCD 20/1	112 (4.41)	73 (2.87)	3.6 (7.9)
MCD 20/2	151 (5.95)	110 (4.33)	5.2 (11.4)
MCD 20/3	188 (7.40)	147 (5.78)	6.9 (15.18)
MCD 20/4	225 (8.86)	184 (7.25)	8.6 (18.9)

Option Microswitch



Option Service Valve (C)



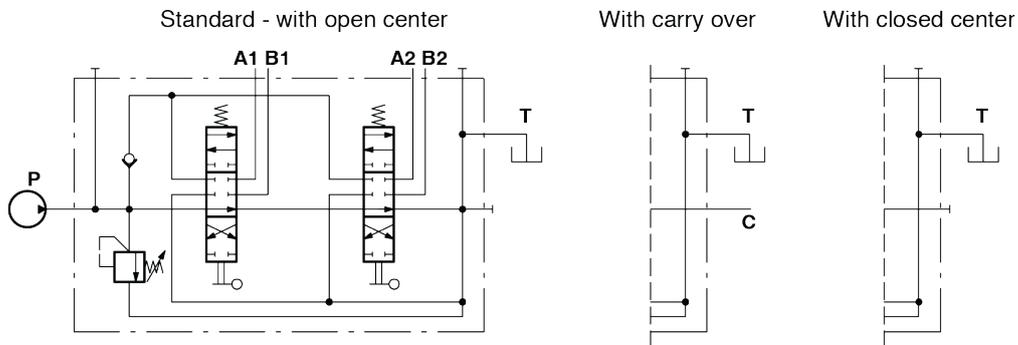
Monoblock Directional Control Valve MCD50 Series

Features and Handling

- MCD50 series are monoblock directional control valve with parallel circuits. The standard valve comes with an adjustable main relief valve, check valve, and 4 mounting holes for standard and optional mounting. The carry over circuit, spool types, spool controls, and other options are available.
- The compact casting is made of high strength cast iron. The spools are made of hardened and tempered steel.



Specification



Model	Nominal Flow L/min (USgpm)	Maximum Pressure bar (psi)
MCD 50	70 (18)	350 (5100)

Monoblock Directional Control Valve

MCD50 Series

Ordering Code



1. Model : MCD50

2. Number of Spool
1 - 4

3. Relief Valve Setting
210 bar
140 bar

4. Spool Control B Port side
L - Standard Lever

5. Spool Control A Port side
S - Spring return to center
D - Detent in three positions
I - Detent in two positions
O - Detent out two positions
K - Kick out with detent automatic in neutral position
M - Microswitch connector operated in port 1 and 2

6. Spool Type
(Type.1) 1 - Double acting, 3 position with A and B closed in center (Cylinder spool)
(Type.2) 2 - Double acting, 3 position with A and B to tank in center (Motoring spool)
(Type.3) 3 - Single acting on A, 3 position B plugged
(Type.4) 4 - Single acting on B, 3 position A plugged

7. Circuit Option
OC - With open center plug
CO - With carry over plug
CC - With closed center plug

8. Port Connection

Code	Thread	Port A-B	Port P	Port T	Port CO
B4	BSP	1/2"	1/2"	3/4"	1/2"
S	SAE	SAE 10	SAE 12	SAE 12	SAE 12

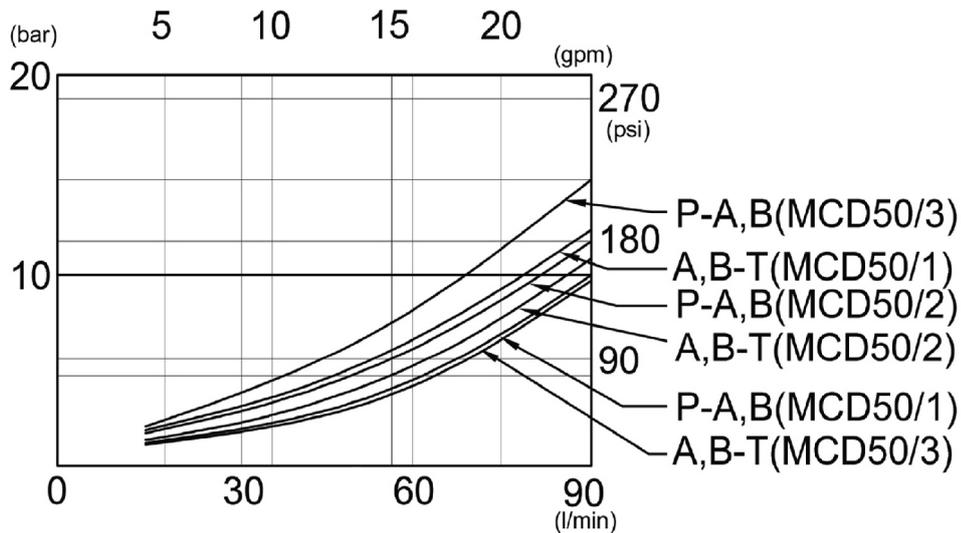
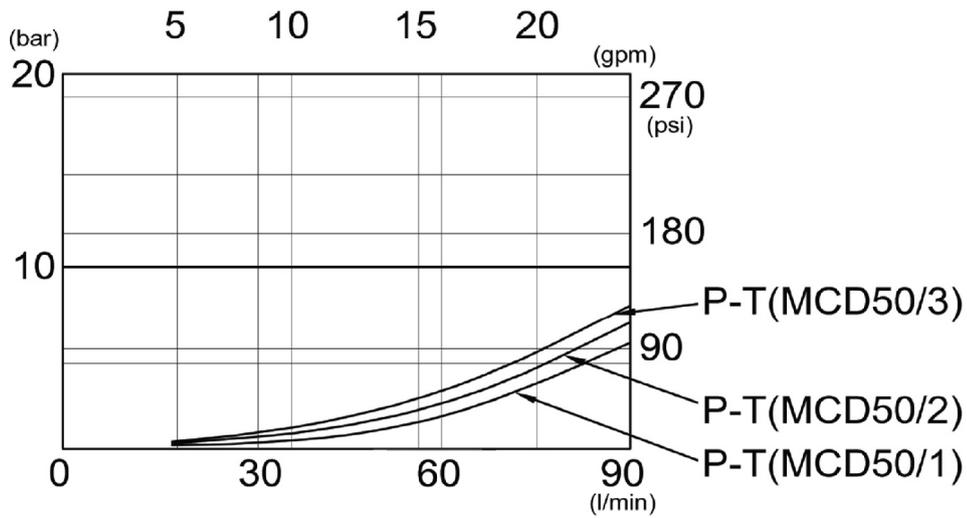
9. Optional Port Connection

SP - Use port P and T at side
plugged P and T on top (standard)
TP - Use port P and T on top
plugged P and T at side

Monoblock Directional Control Valve MCD50 Series

Performance Characteristics

Pressure Drop



Test condition Hydraulic oil ISO VG 32 temperature 50°C Viscosity 23.6 cSt

Sectional Directional Control Valve

MCD10 Series

Features and Handling

MCD10 series is a manual sectional directional control valve with nominal flow of 80L/min and operating pressure at 350 bar.

It can be used as open centre, carry over or closed centre circuit with extended range of options to cater various usage:

- Work port relief valve
- Anti-cavitation valve
- Combinations of anti-cavitation valve & work port relief valve

Applications : wheel loader, combined harvester, sugarcane harvester, truck crane, sea platform crane, hydraulic press, drilling rigs, and etc.



Specification

Model	Nominal Flow L/min (USgpm)	Maximum Pressure bar (psi)
MCD 10	80 (21)	350 (5100)

Sectional Directional Control Valve

MCD10 Series

Ordering Code



1. Model : MCD10

2. Number of Spool
1 - 12

3. Relief Valve Setting
210 bar
140 bar

4. Spool Control B Port side
L - Standard Lever

5. Spool Control A Port Side
S - Spring return to center
D - Detent in three positions
I - Detent in two positions
O - Detent out two positions

6. Spool Type
(Type.1) 1 - Double acting, 3 position with A and B closed in center (Cylinder spool)
(Type.2) 2 - Double acting, 3 position with A and B to tank in center (Motoring spool)
(Type.3) 3 - Single acting on A, 3 position B plugged
(Type.4) 4 - Single acting on B, 3 position A plugged

7. Service valve
N - Without pre-arranged holes and valve (Standard)
H - Without valve, but with pre-arranged holes
C - With anti-cavitation valves on port A and B
W - With work port relief valves on port A and B
CW - With anti-cavitation valves on port A and with work port relief valves on port B
WC - With work port relief valves on port A and with anti-cavitation valves on port B
ACBH - With anti-cavitation valves on port A
BCAH - With anti-cavitation valves on port B
AWBH - With work port relief valves on port A
BWAH - With work port relief valves on port B

8. Circuit Option

OC - With open center plug
CO - With carry over plug
CC - With closed center plug

9. Port Connection

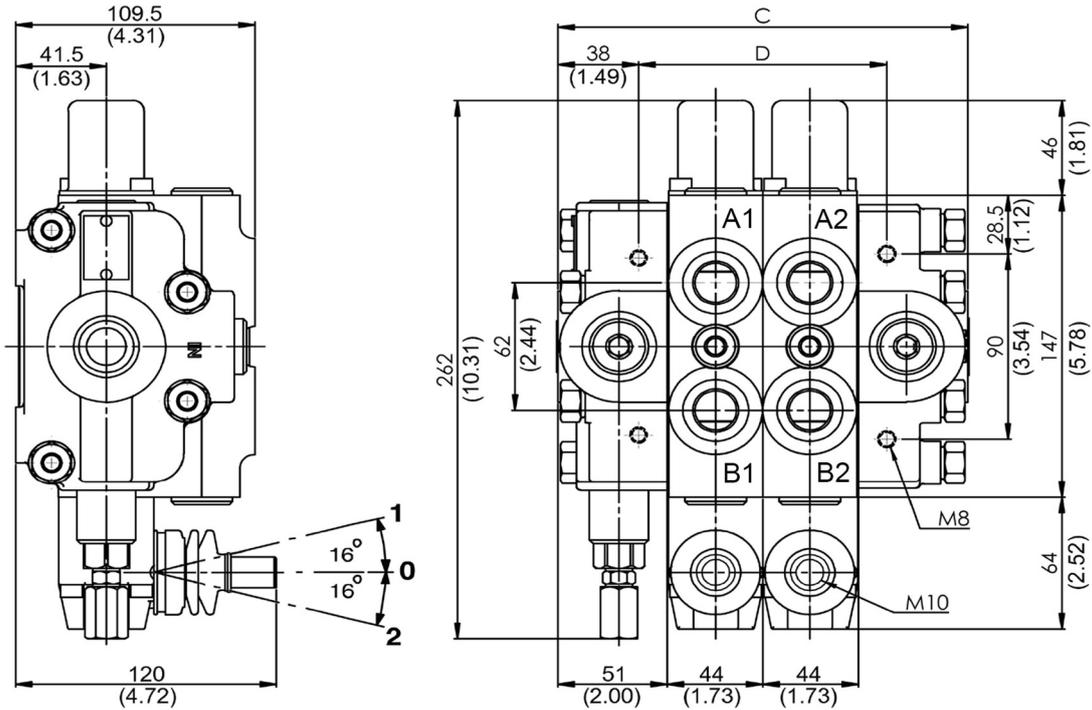
Code	Thread	Port A-B	Port P	Port T	Port CO
B4	BSP	1/2"	1/2"	3/4"	3/4"
B6	BSP	3/4"	3/4"	3/4"	3/4"
S	SAE	SAE 8	SAE 10	SAE 10	SAE 10

10. Optional Port Connection

SP - Use port P and T at side
plugged P and T on top (standard)
TP - Use port P and T on top
plug P and T at side

Sectional Directional Control Valve MCD10 Series

Installation Dimension mm (inch)

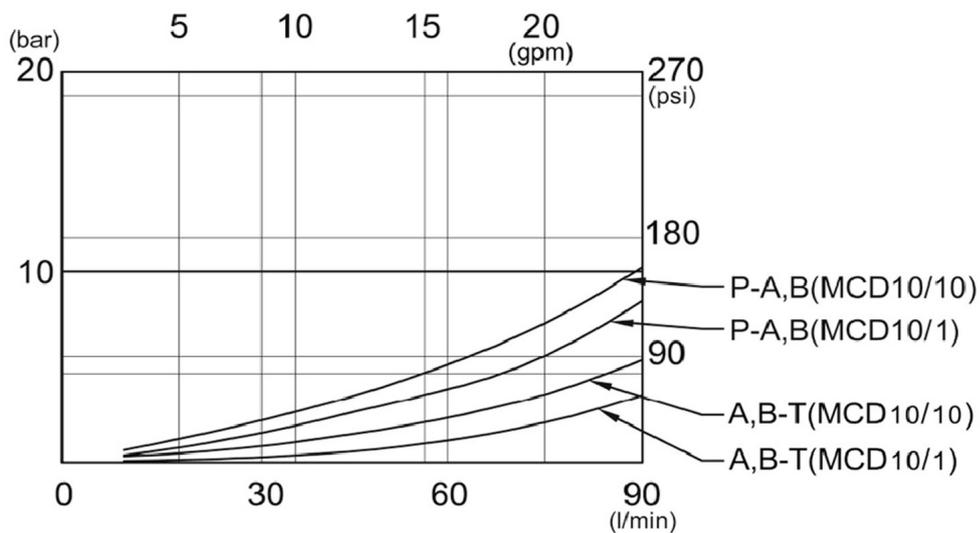
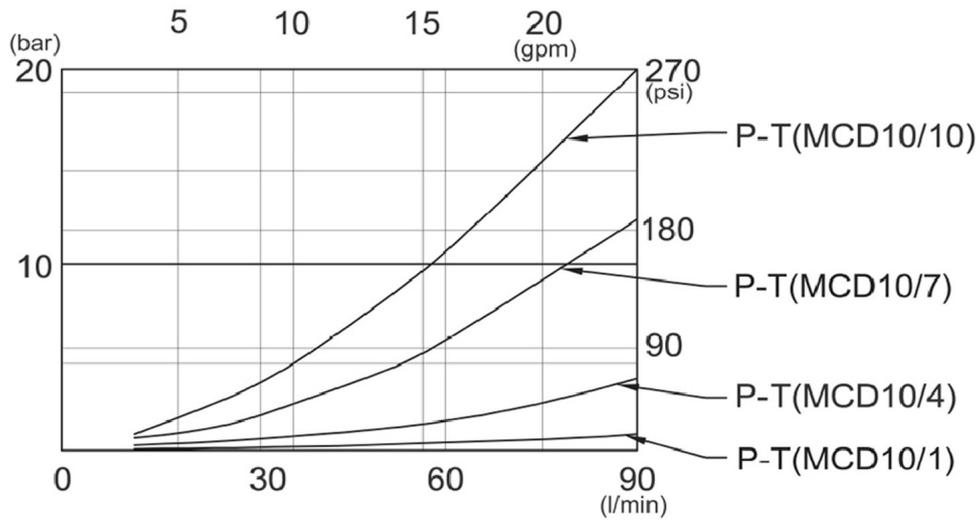


Model	Dimension mm (inch)		Weight
	C	D	kg (lb)
MCD 10/1	144 (5.67)	70 (2.76)	10.2 (22.4)
MCD 10/2	188 (7.40)	114 (4.49)	14.9 (32.8)
MCD 10/3	232 (9.13)	158 (6.22)	19.6 (43.1)
MCD 10/4	276 (10.87)	202 (7.95)	24.3 (53.5)
MCD 10/5	320 (12.60)	246 (9.69)	29.0 (63.8)
MCD 10/6	364 (14.33)	290 (11.42)	33.7 (74.1)
MCD 10/7	408 (16.06)	334 (13.15)	38.4 (84.5)
MCD 10/8	452 (17.80)	378 (14.88)	43.1 (94.8)
MCD 10/9	496 (19.53)	422 (16.61)	47.8 (105.2)
MCD 10/10	540 (21.26)	466 (18.35)	52.5 (115.5)
MCD 10/11	584 (23.00)	510 (20.07)	57.2 (126.1)
MCD 10/12	628 (24.70)	554 (21.81)	61.9 (136.4)

Sectional Directional Control Valve MCD10 Series

Performance Characteristics

Pressure Drop



Sectional Directional Control Valves

MCD24 Series

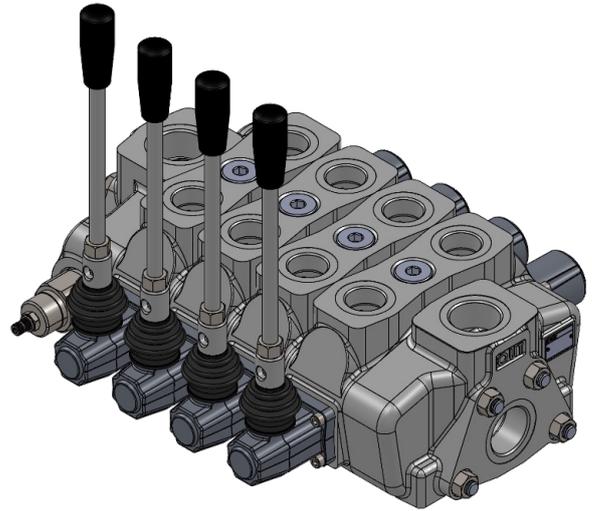
Features and Handling

MCD24 series sectional directional control valve , nominal flow of 240L/min(63GPM) at maximum pressure of 350 bar (5100 psi), with Spool options of Standard Lever, Hydraulic Pilot or Rotative Controller.

It can be used as open centre, carry over or closed centre circuit with extended range of options to cater various usage:

- Anti-shock valve with 3 pressure setting range
- Anti-cavitation valve
- Pilot-combined valve with 3 pressure setting ranges
- Combinations of anti-cavitation valve & anti-shock valve
- Combinations of anti-cavitation valve & pilot-combined valve

Applications : sea platform crane, hydraulic press, drilling rigs, and etc.



Specification

Model	Nominal Flow L/min (USgpm)	Maximum Pressure bar (psi)	Maximum Backpressure bar (psi)
MCD 24	240 (63)	350 (5100)	25 (360)

Sectional Directional Control Valves

MCD24 Series

Ordering Code



1. Model : MCD24
2. Number of Spool
1 -12
3. Relief Valve Setting
210 bar
140 bar
4. Spool Control B Port side
L - Standard Lever
HG02 - Hydraulic control ports 1/4"-19BSP (A,B Port side)
HU02 - Hydraulic control ports 9/16"-18UNF (A,B Port side)
R - Rotative control
5. Spool Control A Port side
S - Spring return to center
D - Detent in three positions
Omit - Hydraulic control and Rotative control
6. Spool Type
(Type.1) 1 - Double acting, 3 position with A and B closed in center (Cylinder spool)
(Type.2) 2 - Double acting, 3 position with A and B to tank in center (Motoring spool)
(Type.3) 3 - Single acting on A, 3 position B plugged
(Type.4) 4 - Single acting on B, 3 position A plugged
7. Service valve
N - Without pre-arranged holes and valve (Standard)
H - Without valve, but with pre-arranged holes
C - With anti-cavitation valves on port A and B
S - With anti-shock valves on port A and B
P - With pilot combined valves on port A and B
CS - With anti-cavitation valves on port A and with anti-shock valves on port B
CP - With anti-cavitation valves on port A and with pilot combined valves on port B
SC - With anti-shock valves on port A and with anti-cavitation valves on port B

- PC - With pilot combined valves on port A and with anti-cavitation valves on port B
- PS - With pilot combined valves on port A and with anti-shock valves on port B
- ACBH - With anti-cavitation valves on port A
- BCAH - With anti-cavitation valves on port B
- ASBH - With anti-shock valves on port A
- BSAH - With anti-shock valves on port B
- APBH - With pilot combined valves on port A
- BPAH - With pilot combined valves on port B

Code	Description	Setting range (bar)
		at full flow
C	Anti-cavitation valve	-
S	Anti-shock valve	63 / 125
		100 / 250
		200 / 315
P	Pilot combined valve	63 / 125
		100 / 250
		200 / 315

8. Circuit Option
OC - With open center plug
CO - With carry over plug
CC - With closed center plug

9. Port Connection

Code	Thread	Port A-B	Port P	Port T	Port CO
B08	BSP	1"	1"	1"/1/4	1"/1/4
B10	BSP	1"/1/4	1"/1/4	1"/1/4	1"/1/4
S	SAE	SAE 16	SAE 20	SAE 20	SAE 20

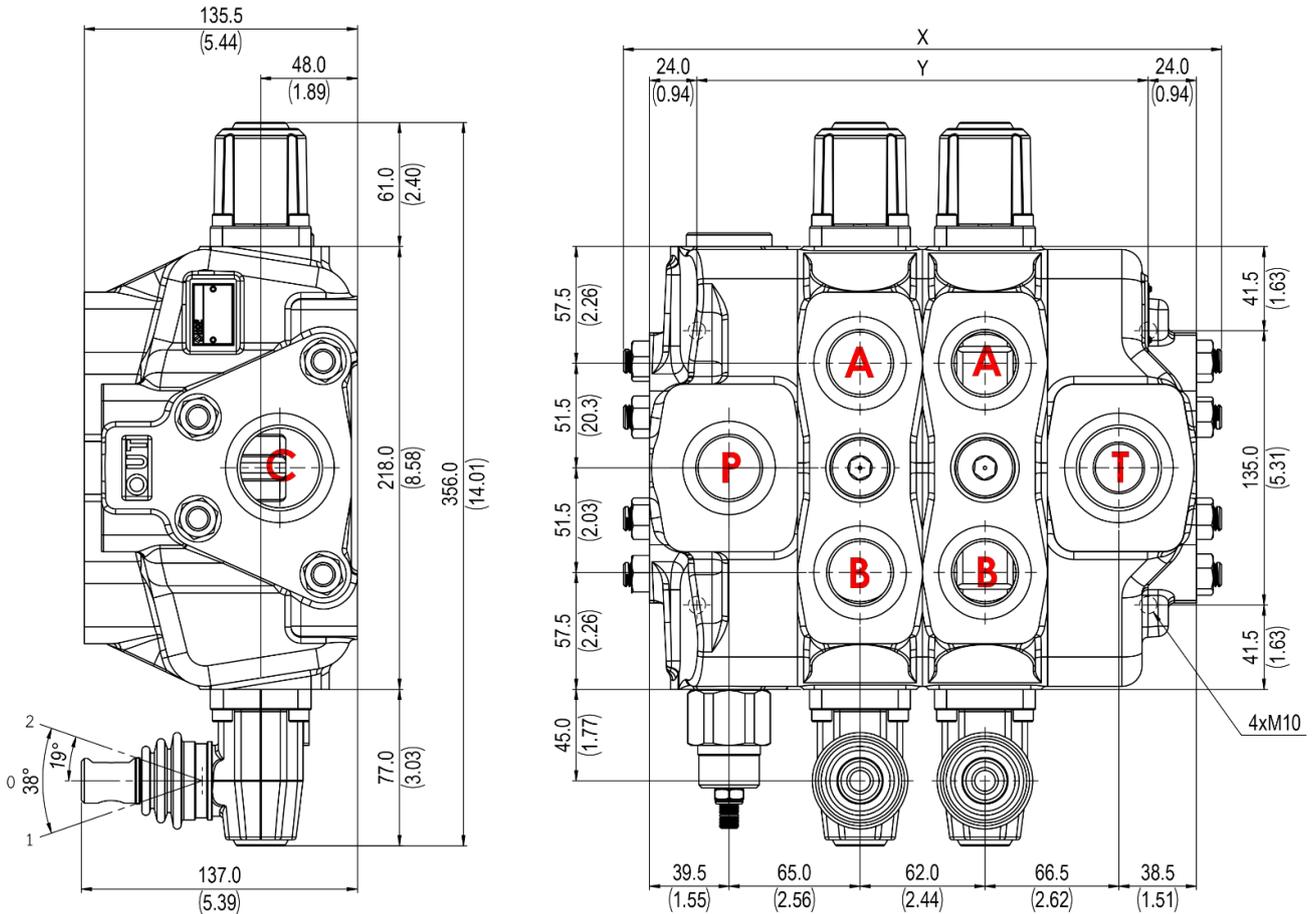
10. Optional Port Connection

- TP - Use port P and T on top
Without port P and T at side

Sectional Directional Control Valves

MCD24 Series

Installation Dimensions mm (inch)



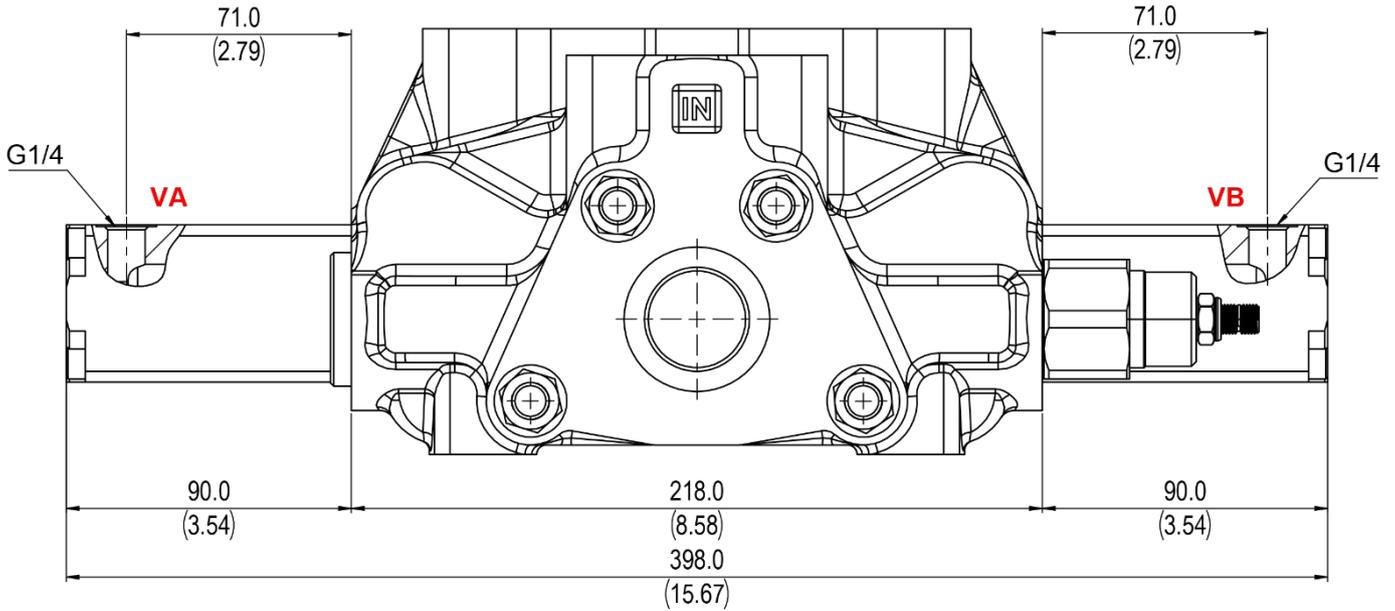
Model	Dimension mm (inch)		Weight kg (lb)
	X	Y	
MCD 24/1	235 (9.25)	162 (6.38)	26.5 (58.42)
MCD 24/2	297 (11.69)	224 (8.28)	36.9 (81.35)
MCD 24/3	359 (14.13)	286 (11.26)	47.3 (104.27)
MCD 24/4	421 (16.57)	348 (13.70)	57.7 (127.20)
MCD 24/5	483 (19.02)	410 (16.14)	68.1 (150.13)
MCD 24/6	545 (21.46)	472 (18.58)	78.5 (173.06)
MCD 24/7	607 (23.90)	534 (21.02)	88.9 (195.99)
MCD 24/8	669 (26.34)	596 (23.46)	99.3 (218.92)
MCD 24/9	731 (28.78)	658 (25.90)	109.7 (241.85)
MCD 24/10	793 (31.22)	720 (28.34)	120.1 (264.77)
MCD 24/11	855 (33.66)	780 (30.78)	130.5 (287.70)
MCD 24/12	917 (36.10)	844 (33.22)	140.9 (310.63)

Sectional Directional Control Valves

MCD24 Series

Installation Dimensions mm (inch)

Hydraulic pilot control

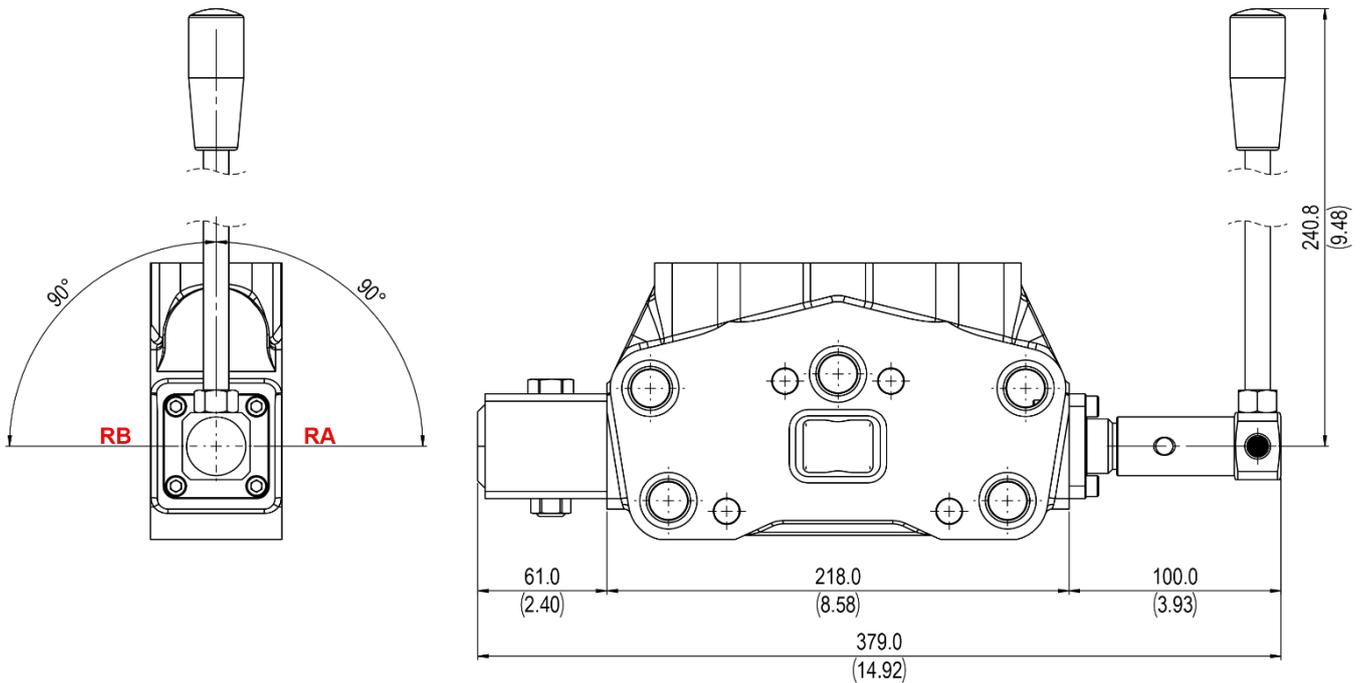


Operating features :

PILOT PRESSURE : MAX. 50 BAR

INTERNAL LEAKAGE A(B) -> T : MAX. 6 CM³/MIN (100 BAR / 40°C)

Rotative control

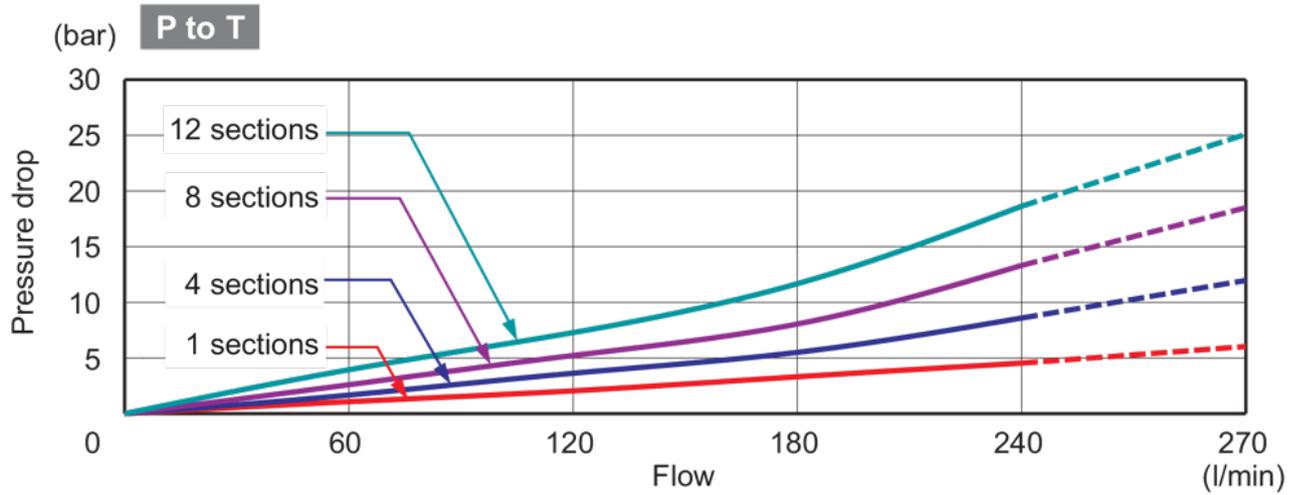


Sectional Directional Control Valves

MCD24 Series

Performance Characteristics

Pressure Drop



Spool type and Spool control System

Spools for Monoblock and Sectional Valves			
Type	Spools Description	Monoblock	Sectional
1	Double acting, 3 position with A and B closed in center (Cylinder spool)		
2	Double acting, 3 position with A and B to tank in center (Motor spool)		
3	Single acting on A, 3 position B plugged		
4	Single acting on B, 3 position A plugged		

Spools Control B Port side		
Code	Description	Scheme
1	Standard Lever	

Spools Control B Port side		
Code	Description	Scheme
S	Spring return to center	
D	Detent in three positions	
I	Detent in two positions	
O	Detent out two positions	

Sectional Directional Control Valve

MCD25 Series

Features and Handling

MCD25 series is a manual sectional directional control valve with nominal flow of 380L/min and operating pressure at 350 bar.

It can be used as open centre, carry over or closed centre circuit with extended range of options to cater various usage:

- Anti-shock valve with 5 pressure setting range
- Anti-cavitation valve
- Pilot-combined valve with 2 pressure setting ranges
- Combinations of anti-cavitation valve & anti-shock valve
- Combinations of anti-cavitation valve & pilot-combined valve

Applications : sea platform crane, hydraulic press, drilling rigs, and etc.



Specification

Model	Nominal Flow L/min (USgpm)	Maximum Pressure bar (psi)	Maximum Backpressure bar (psi)	Tightening Torque Nm (lbft)
MCD 25	380 (100)	350 (5100)	20 (290)	110 (81.13)

Sectional Directional Control Valve

MCD25 Series

Ordering Code



1. Model : MCD25
2. Number of Spool
1 - 12
3. Relief Valve Setting
210 bar
140 bar
4. Spool Control B Port side
L - Standard Lever
HG02 - Hydraulic control ports 1/4"-19BSP (A,B Port side)
HU02 - Hydraulic control ports 9/16"-18UNF (A,B Port side)
R - Rotative control
5. Spool Control A Port Side
S - Spring return to center
D - Detent in three positions
Omit - Hydraulic control and Rotative control
6. Spool Type
(Type.1) 1 - Double acting, 3 position with A and B closed in center (Cylinder spool)
(Type.2) 2 - Double acting, 3 position with A and B to tank in center (Motoring spool)
(Type.3) 3 - Single acting on A, 3 position B plugged
(Type.4) 4 - Single acting on B, 3 position A plugged
7. Service valve
N - Without pre-arranged holes and valve (Standard)
H - Without valve, but with pre-arranged holes
C - With anti-cavitation valves on port A and B
S - With anti-shock valves on port A and B
P - With pilot combined valves on port A and B
CS - With anti-cavitation valves on port A and with anti-shock valves on port B
CP - With anti-cavitation valves on port A and with pilot combined valves on port B

- SC - With anti-shock valves on port A and with anti-cavitation valves on port B
- PC - With pilot combined valves on port A and with anti-cavitation valves on port B
- PS - With pilot combined valves on port A and with anti-shock valves on port B
- ACBH - With anti-cavitation valves on port A
- BCAH - With anti-cavitation valves on port B
- ASBH - With anti-shock valves on port A
- BSAH - With anti-shock valves on port B
- APBH - With pilot combined valves on port A
- BPAH - With pilot combined valves on port B

Code	Description	Setting range (bar) at full flow
C	Anti-cavitation valve	-
S	Anti-shock valve	0/70
		71/120
		121/150
		151/300
P	Pilot combined valve	30/110
		111/350

8. Circuit Option
OC - With open center plug
CO - With carry over plug
CC - With closed center plug

9. Port Connection

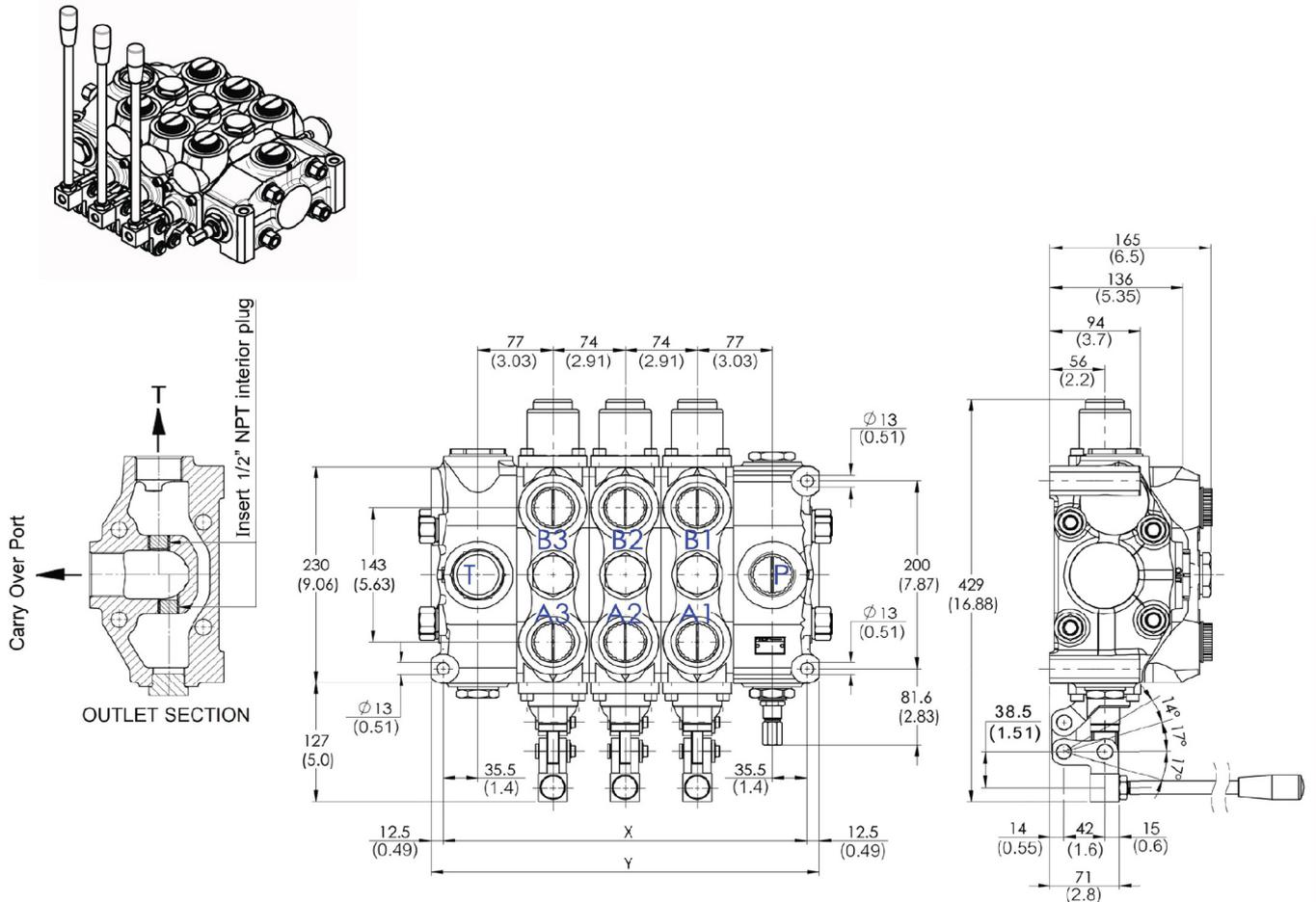
Code	Thread	Port A-B	Port P	Port T	Port CO
B10	BSP	1"1/4	1"1/4	1"1/2	1"1/2
B12	BSP	1"1/2	1"1/2	1"1/2	1"1/2
S	SAE	SAE 20	SAE 20	SAE 20	SAE 20

10. Optional Port Connection

- TP - Use port P and T on top
Without port P and T at side

Sectional Directional Control Valve MCD25 Series

Installation Dimension mm (inch)

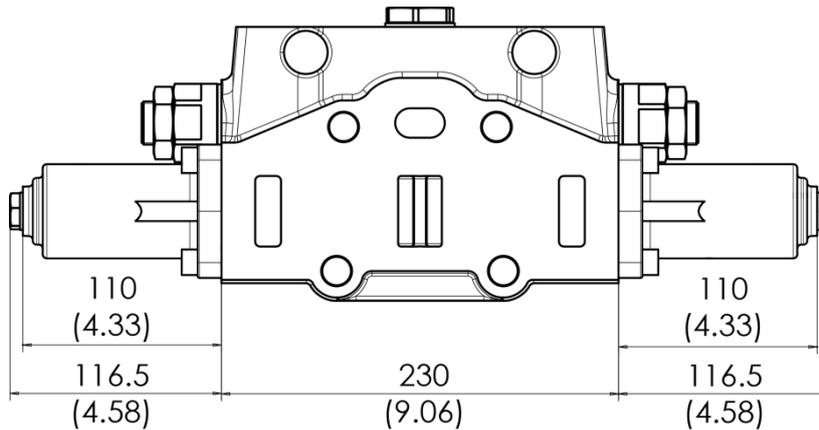


Model	Dimension mm (inch)		Weight
	X	Y	kg (lb)
MCD 25/1	225 (8.9)	250(9.84)	40.4 (89.06)
MCD 25/2	299 (11.8)	324 (12.8)	55.8 (123)
MCD 25/3	373 (14.7)	398(15.7)	71.2 (156.9)
MCD 25/4	447 (17.6)	472 (18.6)	86.6 (190.9)
MCD 25/5	521 (20.5)	546 (21.5)	102 (224.8)
MCD 25/6	595 (23.4)	620 (24.4)	117.4 (258.8)
MCD 25/7	669 (25.6)	694 (27.3)	132.8 (292.7)
MCD 25/8	743(28.5)	768 (30.2)	148.2 (326.7)
MCD 25/9	817 (31.4)	842 (33.1)	163.6 (360.6)
MCD 25/10	891 (34.3)	916 (36.1)	179 (394.6)
MCD 25/11	965 (37.2)	990 (38.9)	194.4 (428.5)
MCD 25/12	1039 (40.1)	1064 (41.8)	209.8 (462.5)

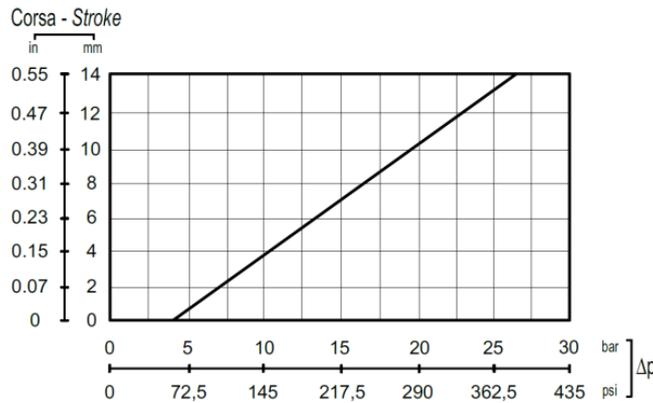
Sectional Directional Control Valve MCD25 Series

Installation Dimension mm (inch)

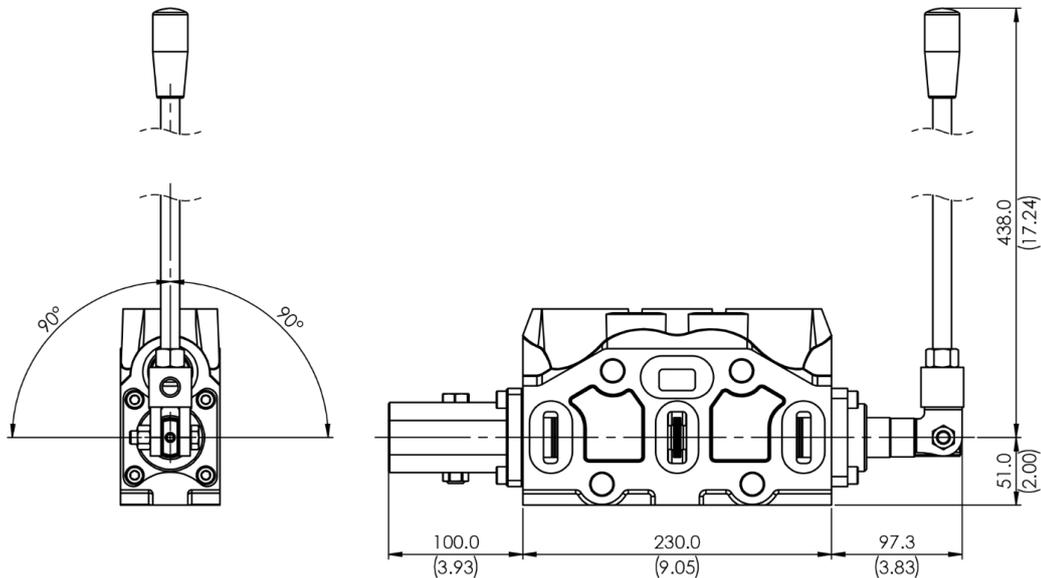
Hydraulic pilot control



Hydraulic pilot control curve



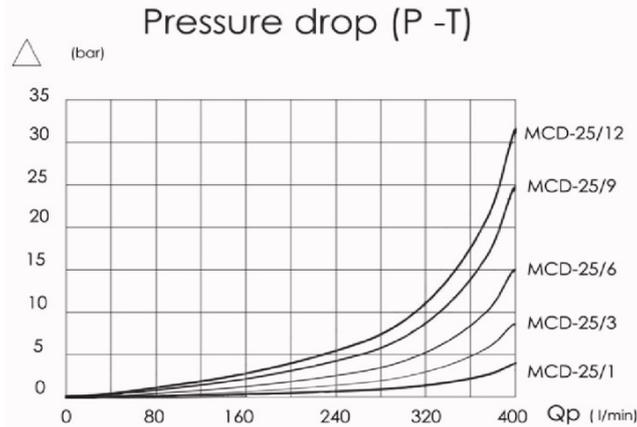
Rotative control



Sectional Directional Control Valve MCD25 Series

Performance Characteristics

Pressure Drop



Spool type and Spool control System

Spools for Monoblock and Sectional Valves			
Type	Spools Description	Monoblock	Sectional
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Spools Control B Port side		
Code	Description	Scheme
1	Standard Lever	

Spools Control B Port side		
Code	Description	Scheme
S	Spring return to center	
D	Detent in three positions	
I	Detent in two positions	
O	Detent out two positions	

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