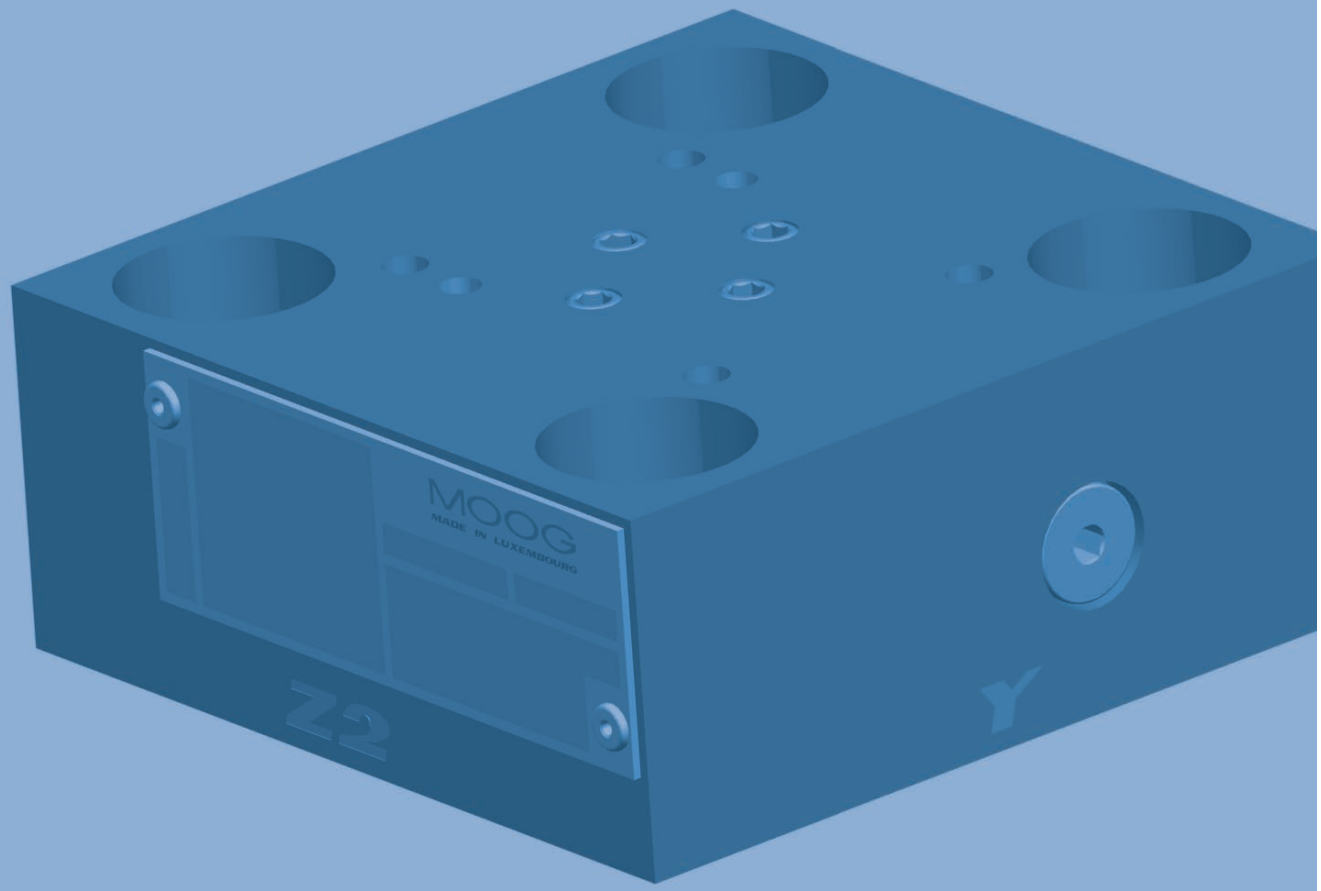
CARTRIDGE COVERS
D SERIES



D SERIES COVERS FOR CARTRIDGES
TO ISO 7368
NG16 TO NG100

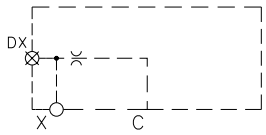
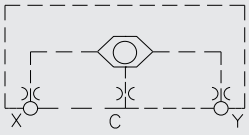
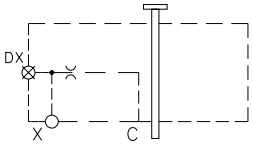
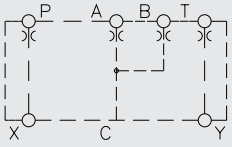
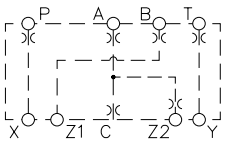
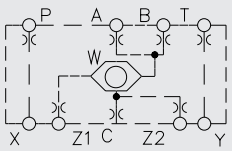
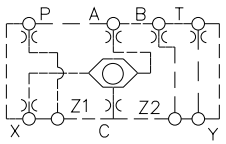
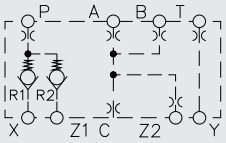
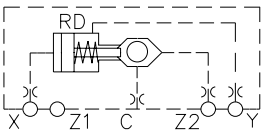
WHAT MOVES YOUR WORLD

MOOG

Our Quality Management System conforms to DIN EN ISO9001.

NOTICE

This catalogue is for users with some technical knowledge. To ensure that all the necessary characteristics for function and safety of the system are given, the user must check the suitability of the products described herein. In case of doubt, please contact Moog.

Cover	Symbol	Cover type code
Cartridge cover with remote control port size 16 - 100		_CCE_D61DX
Cartridge cover with integrated shuttle valve size 16 - 100		_CCE_D62DX
Cartridge cover with remote control port valve port and stroke limiter size 16 - 100		_CCE_D61H_X
Cartridge cover with mounting pattern for a directional control valve or a seat valve size 16-100		_CCE_D6RMX_
Cartridge cover with mounting pattern for a directional control valve or a seat valve with an additional port for a 2nd valve size 16-100		_CCE_D61WX_
Cartridge cover with integrated shuttle valve as check valve circuit and mounting pattern for a directional control valve or a seat valve size 16-100		_CCE_D62WX
Cartridge cover with integrated shuttle valve and mounting pattern for a directional control valve or a seat valve size 16-100		_CCE_D62WRX_
Cartridge cover with mounting pattern for a directional control valve or a seat valve with built in check valves size 16-100		_CCE_D64WX_
Cartridge cover for pilot operated check valve function, with remote control port size 16 - 100		_CCE_D6RVX
Cartridge cover for pressure relief function with remote control port size 16 - 100	UNDER PREPARATION!	UNDER PREPARATION!
Cartridge cover for pressure relief function with mounting pattern for a directional control valve or a seat valve size 16-100	UNDER PREPARATION!	UNDER PREPARATION!

1. ORIFICE INSTALLATION OPTIONS IN THE COVER

Type	Orifices in ports										Orifices can be changed from the outside
	P	A	B	T	X	Y	C	Z1	Z2	AP	
1D					X						All nominal sizes
2D					X	X	X				From NG63 to NG100 ➜ X, Y
2WR	X	X	X	X	X		X				From NG63 to NG100 ➜ X
1H					X						All nominal sizes
RM	X	X	X	X							-
1W	X	X	X	X			X		X		From NG63 to NG100 ➜ Z2
2W	X	X	X	X			X	X	X		From NG63 to NG100 ➜ Z1, Z2
4W	X	X	X	X			X		X		From NG63 to NG100 ➜ Z2
RV					X	X	X		X		From NG63 to NG100 ➜ X, Y, Z2
DBA	X	X	X	X	X		X		X	X	From NG63 to NG100 ➜ X, Z2
DBC					X	X	X				From NG63 to NG100 ➜ X, Y

Orifice installation options in the cover are identified on the cover, e.g., ' DX, DY, DZ1, DZ2 '.
DX means that an orifice can be installed in port X.
Identifiers starting with "M…" mark the test port for the port concerned.

2. ORIFICE THREAD SIZES

Port	NG16	NG25	NG32	NG40	NG50	NG63	NG80	NG100
P, A, B, T	M6	M6	M6	M6	M6	M10	M10	M10
X, C, Z1, Z2, Y	M5	M6	M6	M8	M8	M10	M14	M16
AP	M5	M6	M6	M8	M8	M10	M14	M16

3. TECHNICAL DATA

Maximum operating pressure [MPa]	35
Seals* for hydraulic fluids	FKM + PU ➜ M-CCE, M-CCE, hydraulic fluids on mineral oil basis FKM ➜ V-CCE, hydraulic fluids on mineral oil basis, HFD type fluids NBR ➜ N-CCE, N-CCE, hydraulic fluids on mineral oil basis, HFA, HFB, HFC type fluids Other hydraulic fluids on request
Hydraulic fluid temperature range [°C]	-30 to +80 for NBR seals -10 to +80 for FKM seals/PU seals
Viscosity range [mm²/s]	2,8 to 380
Cleanliness class to ISO-Code	Max. ISO 4406 (C) class 20/18/15

*PU : Polyurethane rubber
FKM : Fluorosilicone rubber (Viton®)
NBR : Nitrile rubber (Buna N)

SELECTION OF ORIFICE SIZE

This calculation is used to select the orifice size which influences the opening and closing times. It may be necessary to optimize the settings on the machine. Using the diagram below, the cartridge opening and closing times may be calculated for various orifice sizes.

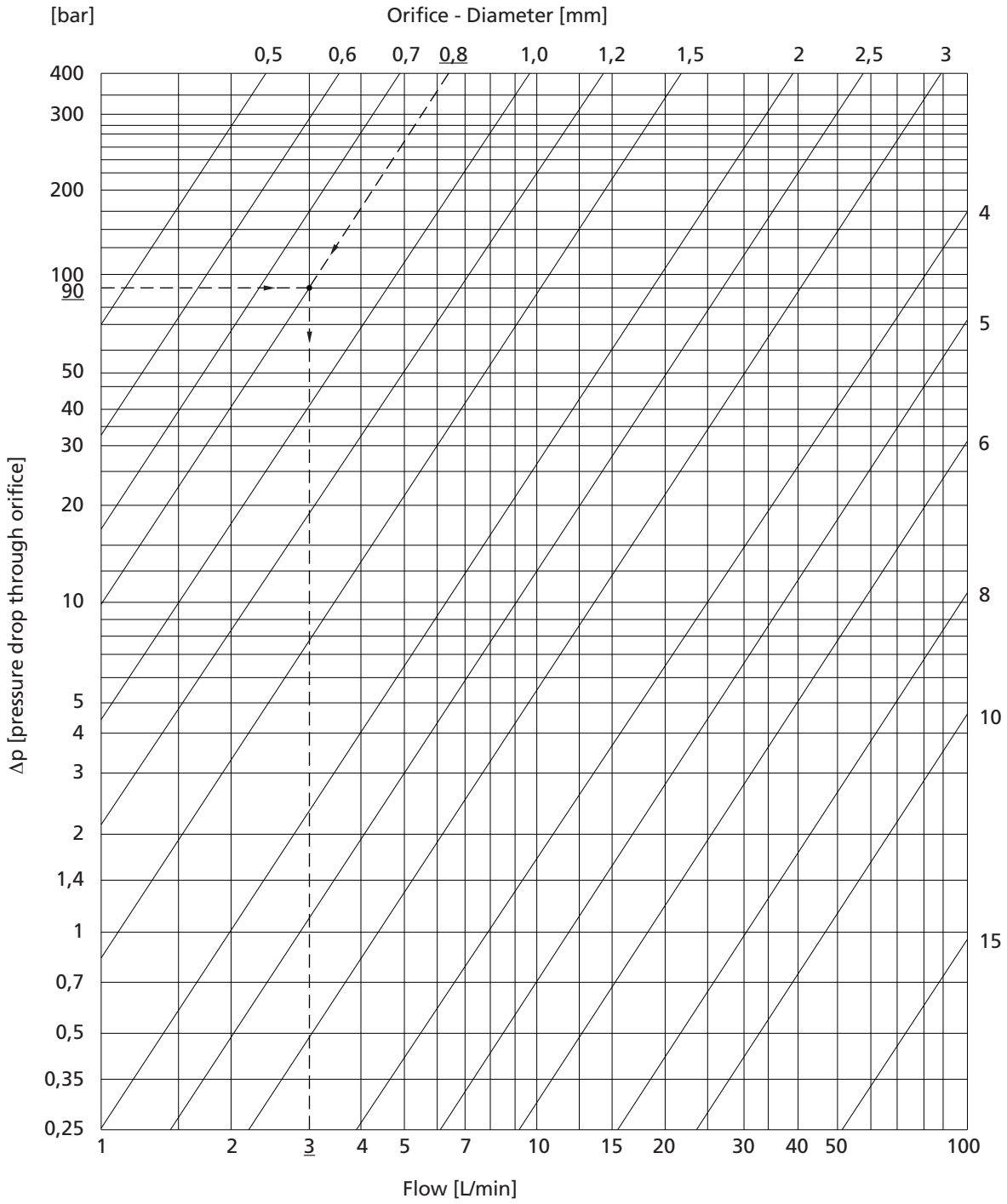
Equation:

$$\text{Opening and closing time [ms]} = \frac{\text{Pilot oil volume cartridge [cm}^3\text{] x 60}}{\text{Orifice flow (diagram) [l/min]}}$$

The pilot oil volume can be read from the applicable cartridge catalogue.

Example:
For Δp of 90 bar through a 0,8 mm nozzle in an NG25 cartridge with B cone, the cone takes approx. 88 ms for the complete stroke.

$$\text{Opening and closing time [ms]} = \frac{\text{4,4 [cm}^3\text{] x 60}}{\text{3 [l/min]}} = 88 \text{ ms}$$

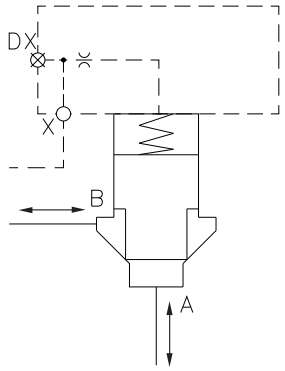


DESCRIPTION OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

1. DIRECTIONAL CONTROL FUNCTIONS

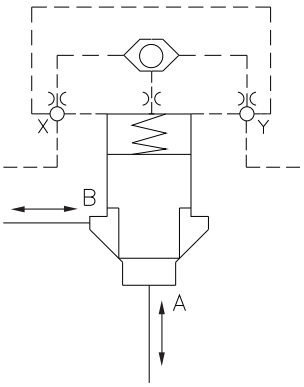
Cover 1D: NG16 to NG100 (pages 12-13)

When using a 1D cover in combination with a cartridge*, the pressure relief of cover port X towards the tank triggers a 2 directional control function where the flow direction is A ➜ B or B ➜ A.
If control port X of the cover is subjected to the maximum system pressure or the highest pressure of A or B, the flow from A to B and vice versa is blocked.



Cover 2D: NG16 to NG100 (pages 14-15)

For the 2D cover, the 2 directional control function is achieved using a integrated shuttle valve. To activate the function, cover ports X and Y are relieved towards the tank. In this case, the flow direction is A ➜ B or B ➜ A. If control valve port X or Y of the cover is subjected to the maximum system pressure or the highest pressure of A or B, the flow from A to B and vice versa is blocked.

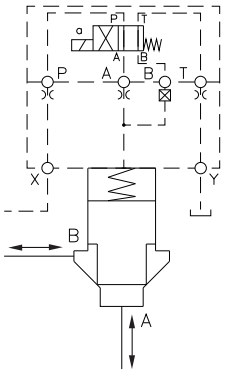


* Cartridge: B, C cone for standard cartridge or
S, T cone for high flow cartridge

2. PILOT-OPERATED DIRECTIONAL CONTROL FUNCTION

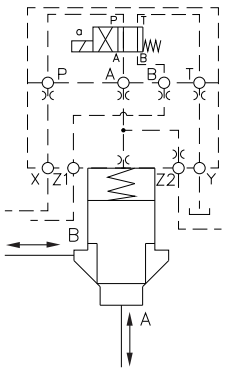
Cover RM: NG16 to NG100 (pages 18-19)

When using an RM cover in combination with a cartridge* and a control valve**, a 2 directional control function is achieved when the solenoid is energized and there is a plug in port B of the cover where the flow direction is A ➜ B or B ➜ A. This effect is achieved by pressure relief of the cartridge* spring chamber.
If control port X of the cover is subjected to the maximum system pressure or the highest pressure of A or B, the flow from A to B and vice versa is blocked when the solenoid is de-energized and there is a plug in port B of the cover. If the plug is installed in port A of the cover, the function with respect to an energized and a de-energized solenoid is exactly the opposite.



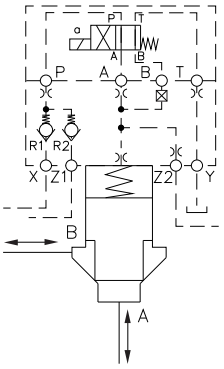
Cover 1W: NG16 to NG100 (pages 20-21)

When using a 1W cover in combination with a cartridge* and a control valve**, the function of the RM cover is copied. The Z1 or Z2 port can be used in order to activate another cartridge*.



Cover 4W: NG16 to NG100 (pages 26-27)

When using a 4W cover in combination with a cartridge* and a control valve**, the function is the same as for the RM cover. It offers parallel check functions on ports X and Z1. The higher pressure is applied to port P. This feature is helpful in applications where the risk of a short-term opening of the cartridge* during pilot pressure switching must be positively prevented. In addition, the Z2 port may be used to activate another cartridge*.



* Cartridge: B, C cone for standard cartridge or S, T cone for high flow cartridge

** Control valve: 4/2 NG06 directional control valve up to NG50 or 4/2 NG10 directional control valve from NG63 to NG100.

3. PILOT-OPERATED DIRECTIONAL CONTROL VALVE WITH INTEGRATED SHUTTLE FUNCTION

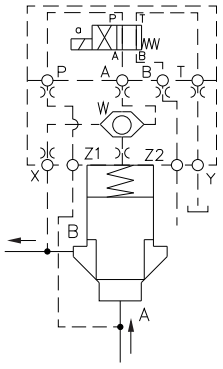
Cover 2WR + 2W: NG16 to NG100 (pages 22-25)

Using a 2WR or 2W cover in combination with a cartridge* or a control valve**, a check function is achieved when the solenoid is energized where the flow direction is A ➜ B. The flow direction B ➜ A is always blocked. When the solenoid is de-energized, the flow direction A ➜ B is blocked. For 2WR covers, control port Z1 is subjected to the maximum system pressure; for 2W covers, it is control port X. If the plug is installed in port A of the 2W cover, the function is exactly the opposite with regard to an energized and a de-energized solenoid. For 2WR covers, control port Z2 may be used to activate another cartridge*. For 2W covers, control port Z2 may be used in combination with a control valve** to unlock the check function from B ➜ A.

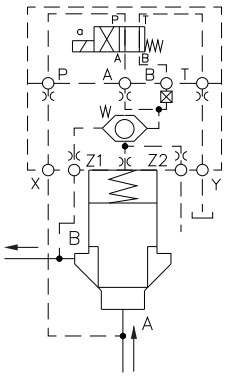
* Cartridge: B, C cone for standard cartridge or S, T cone for high flow cartridge

** Control valve: 4/2 NG06 directional control valve up to NG50 or 4/2 NG10 directional control valve from NG63 to NG100.

2WR



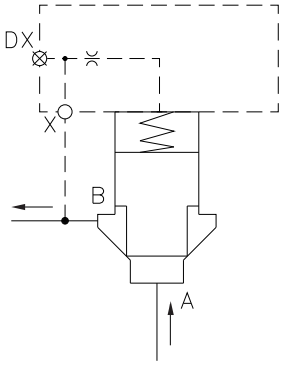
2W



4. CHECK FUNCTION

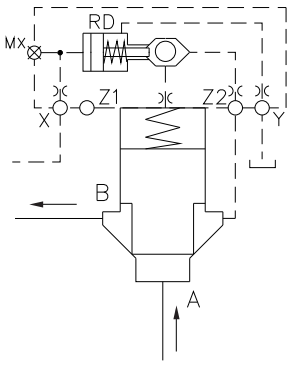
Cover 1D: NG16 to NG100 (pages 12-13)

When using a 1D cover in combination with a cartridge*, a check function may be achieved by connecting control port X with port B. The flow direction is A ➜ B (B ➜ A blocked).



Cover RV: NG16 to NG100 (pages 28-29)

When using an RV cover in combination with a cartridge*, an unlockable check function is achieved by connecting control port Z2 with port B. The flow direction is A ➜ B (B ➜ A blocked).
If control port X is subjected to pressure, the check function is cancelled and the spring chamber of the cartridge is relieved towards control port Y. To cancel the check function, the pilot pressure at port X must be at least 20% (1:5) of the load pressure in port B.

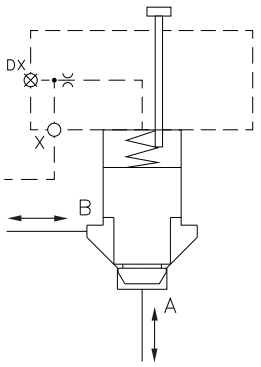


* Cartridge: B, C cone for standard cartridge or
S, T cone for high flow cartridge

5. THROTTLE FUNCTION

Cover 1H: NG16 to NG100 (pages 16-17)

When using a 1H cover in combination with a cartridge*, a 2 directional control function is achieved when the cover port X is relieved towards the tank. The flow direction is A ➜ B or B ➜ A.

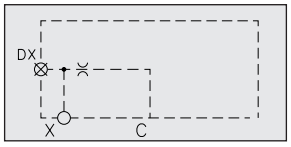


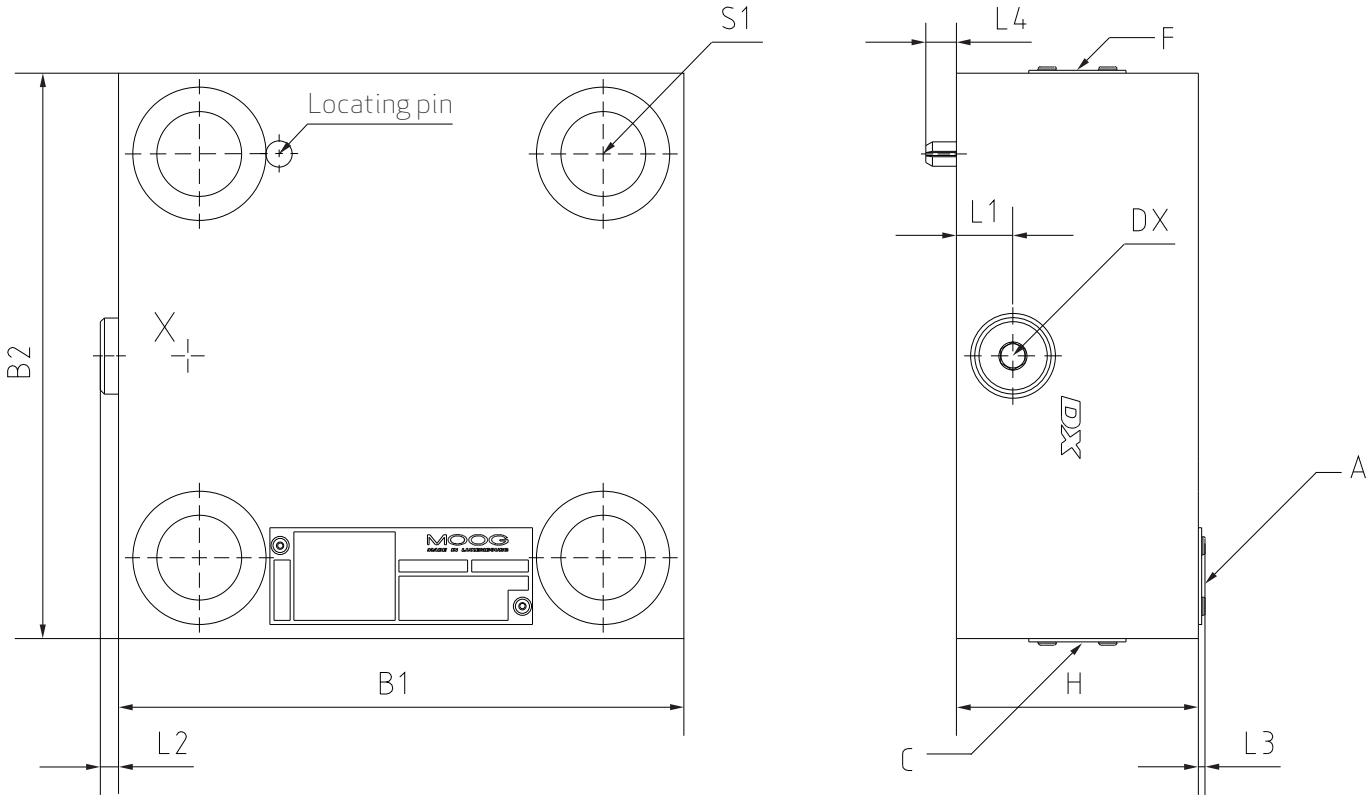
If control port X of the cover is subjected to the maximum system pressure or the highest pressure of A or B, the flow from A to B or vice versa is blocked. Due to the adjustable stroke limiter, the flow is throttled in both directions. The stroke limiter can only be adjusted to a limited extent while under pressure. The stroke limiter also allows the cartridge* to be closed.

* Cartridge: C cone for standard cartridge. High flow cartridge only on request.
Not in combination with internal cartridge spring and shaft seal cone.

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 1D NG16 TO NG63



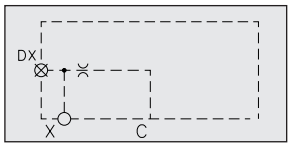


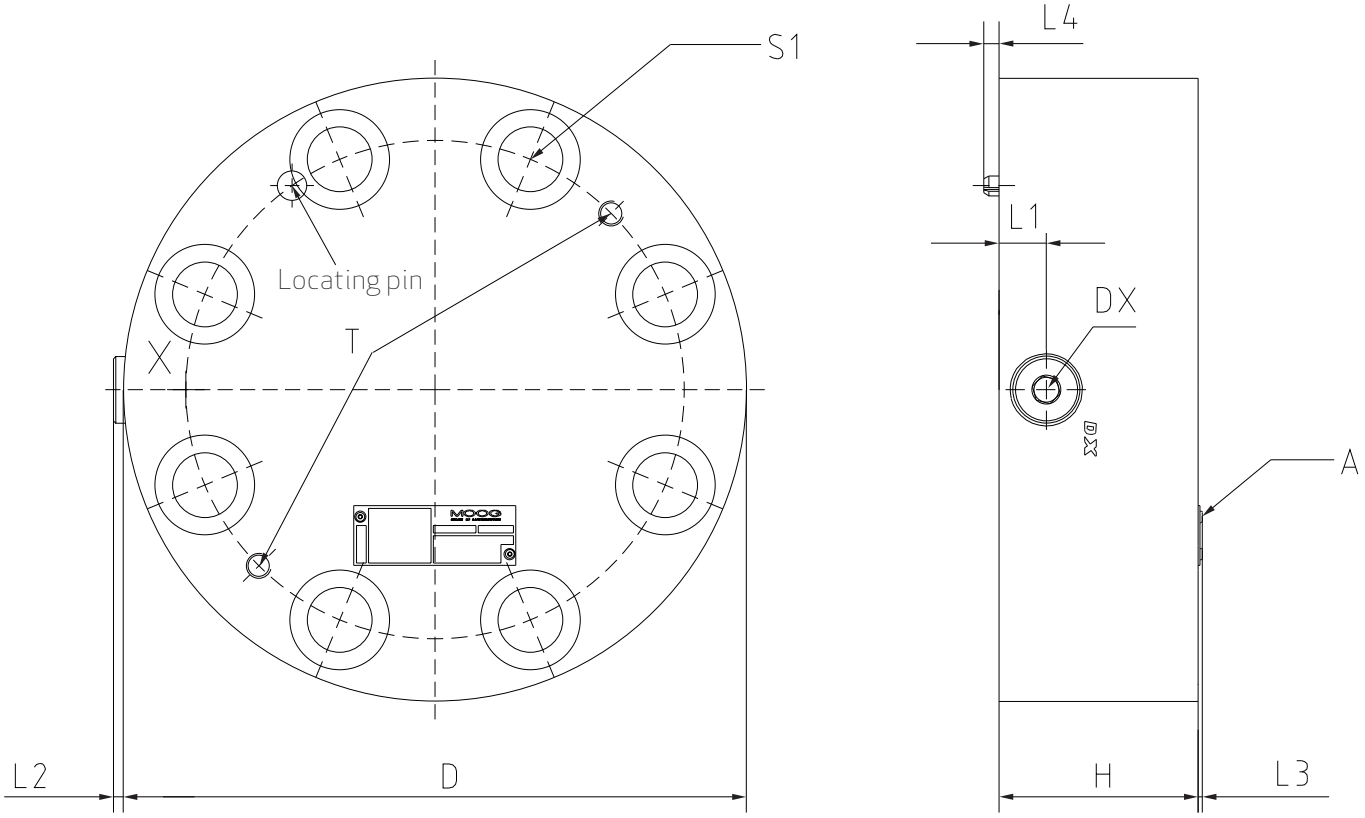
Size	16	25	32	40	50	63
B1 [mm]	65	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	35	45	60	60	80
L1 [mm]	17	12	21	20	14	27
L2 [mm]	3,5	3,5	4,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
Nameplate on the side	A	C	F	C	A	A
Plug DX **	G 1/8"	G 1/8"	G 1/4"	G 1/4"	G 1/4"	G3/8"
Tightening torque [Nm]	12	12	27	27	27	56
Socket width across flats	5	5	6	6	6	8
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,1	1,7	3,1	6,3	8,2	17

*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 1D NG80 AND NG100



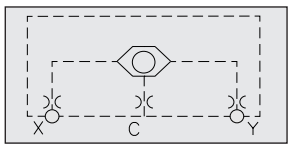


Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	19	18
L2 [mm]	4	4
L3 [mm]	1,6	1,6
L4 [mm]	6	6
Nameplate on the side	A	A
Plug DX **	G1/2"	G1/2"
Tightening torque [Nm]	72	72
Socket width across flats	10	10
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	27	43

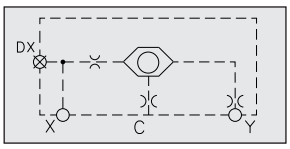
*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

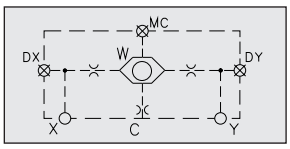
COVER 2D NG16 TO NG63



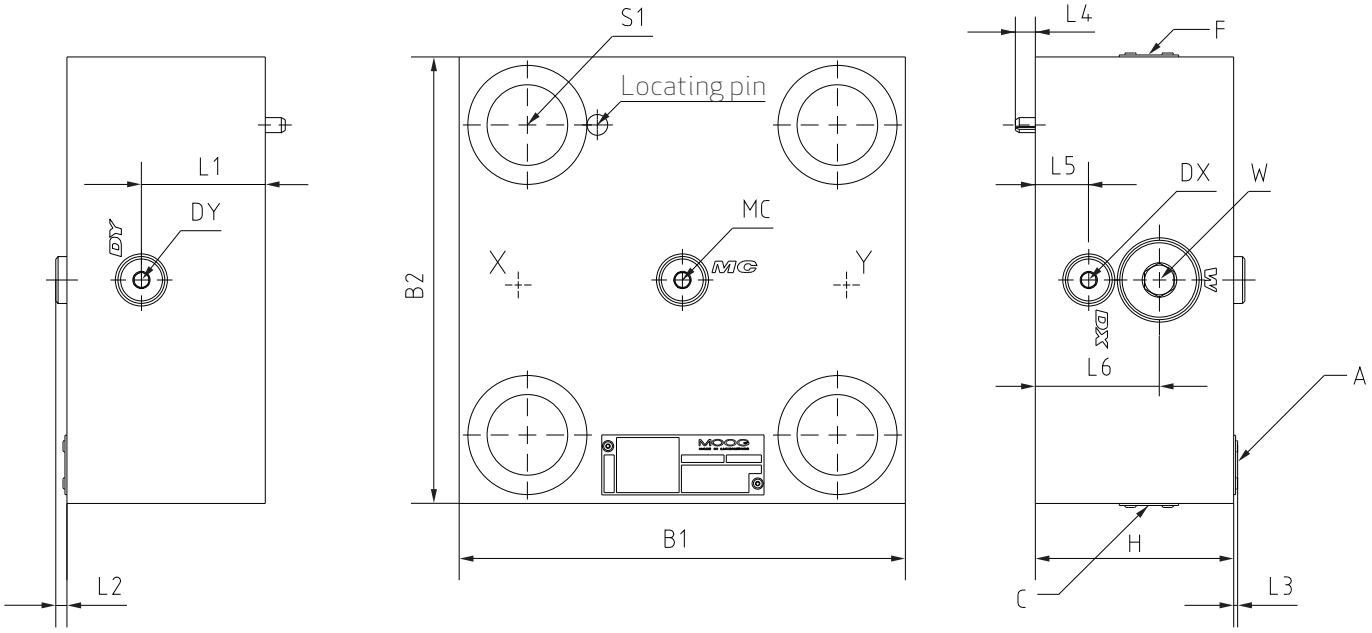
NG16, 25, 32, 50



NG40



NG63

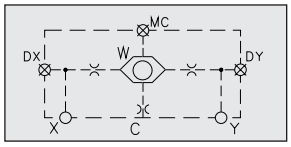


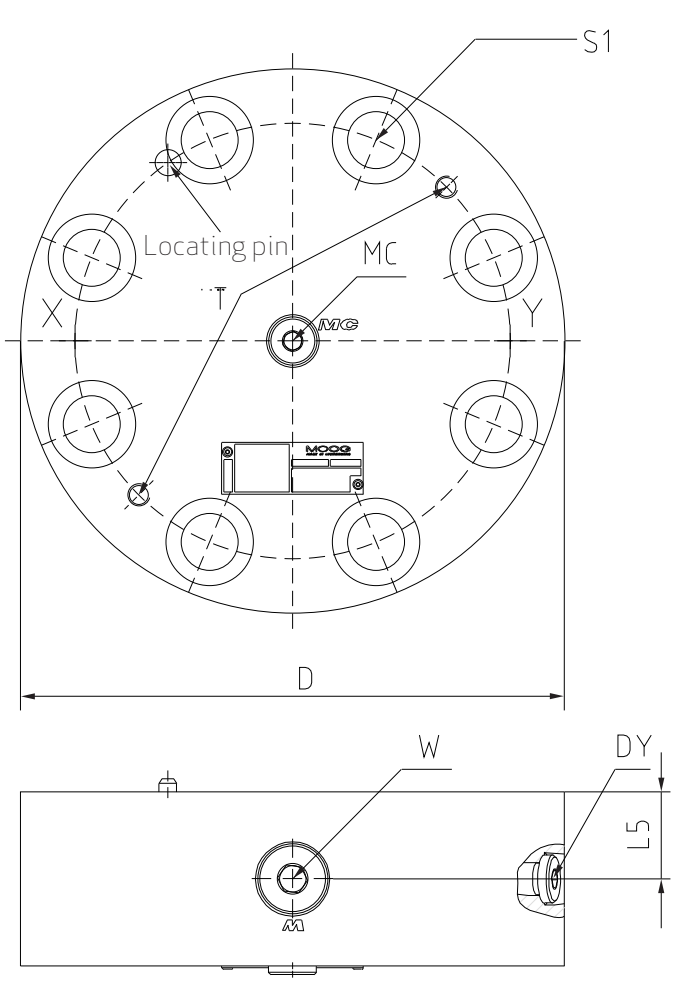
Size	16	25	32	40	50	63
B1 [mm]	65	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	35	45	60	60	80
L1 [mm]	-	-	-	-	-	50
L2 [mm]	4	0	0	0	0	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	-	12,5	-	21,5
L6 [mm]	21,5	21,5	30	33,5	45	50
Nameplate on the side	A	C	F	C	A	A
Plug DX, DY + MC	-	-	-	G 1/8"	-	G1/4"
Tightening torque [Nm]	-	-	-	12	-	27
Socket width across flats	-	-	-	5	-	6
Plug W	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/4"
Tightening torque [Nm]	56	56	56	56	56	120
Socket width across flats	8	8	8	8	8	12
Shuttle valve under plug W	-	-	-	-	-	G 1/2"
Tightening torque [Nm]	-	-	-	-	-	40
Socket width across flats	-	-	-	-	-	10
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,1	1,7	3,1	6,3	8,2	17

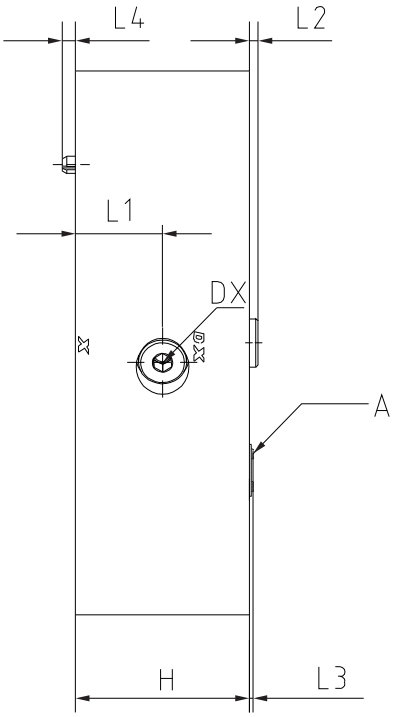
*not part of the delivery

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 2D NG80 AND NG100







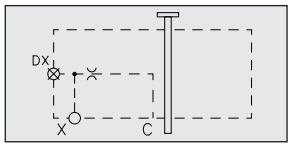
Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	40	45
L2 [mm]	4	4
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 [mm]	40	45
Nameplate on the side	A	A
Plug DX, DY + MC	G 3/8"	G 1/2"
Tightening torque [Nm]	56	72
Socket width across flats	8	10

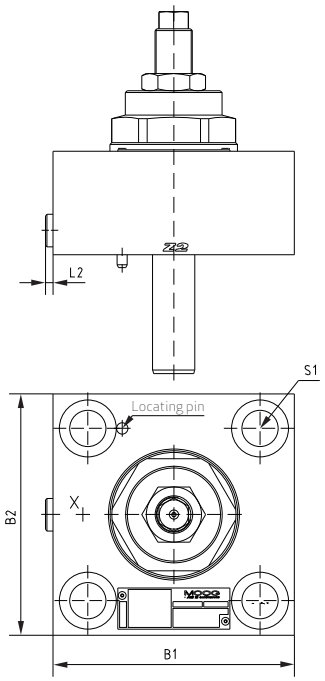
Size	80	100
Plug W	G 3/4"	G 3/4"
Tightening torque [Nm]	120	120
Socket width across flats	12	12
Shuttle valve under plug W	G 1/2"	G 1/2"
Tightening torque [Nm]	40	40
Socket width across flats	10	10
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	26	42

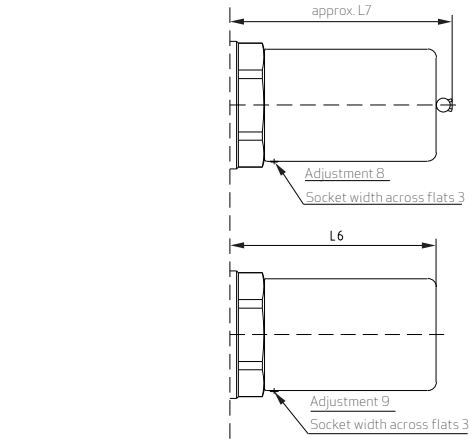
*not part of the delivery

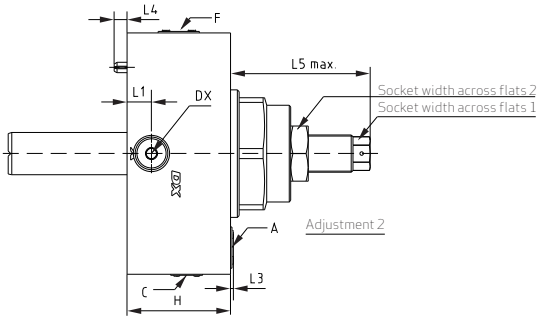
DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 1H NG16 TO NG63







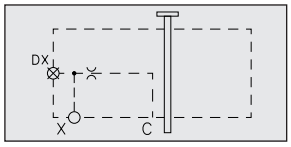


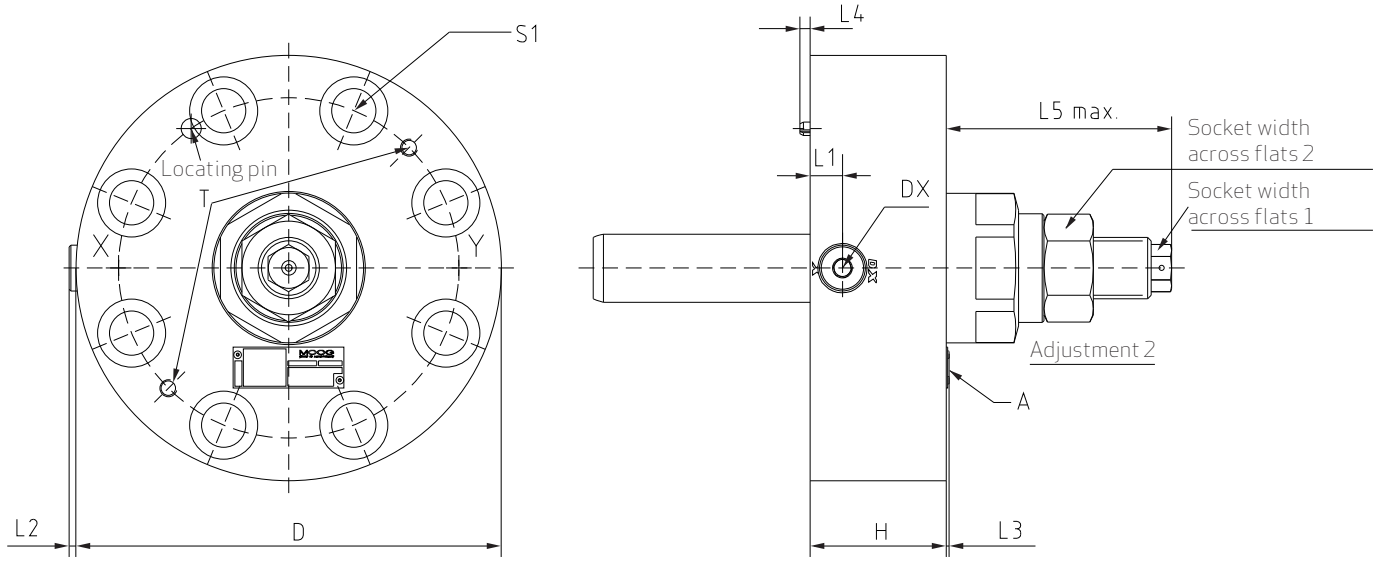
Size	16	25	32	40	50	63
B1 [mm]	65	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	35	45	60	60	80
L1 [mm]	17	12	21	20	14	27
L2 [mm]	3,5	3,5	4,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 max [mm]	50,5	50,5	62	62	81	117
L6 [mm]	83,5	83,5	80	80	120	131
approx. L7 [mm]	94	94	90,5	90,5	129	140
Nameplate on the side	C	C	F	C	A	A
Plug DX**	G 1/8"	G 1/8"	G 1/4"	G 1/4"	G 1/4"	G 3/8"
Tightening torque [mm]	12	12	27	27	27	56
Socket width across flats	5	5	6	6	6	8
Socket width across flats 1	8	8	10	10	17	19
Socket width across flats 2	19	19	24	24	32	46
Tightening torque Socket width across flats 2 [Nm]	65	65	85	85	110	150
Socket width across flats 3 (Allen screw)	2	2	2	2	2	2
Tightening torque Socket width across flats 3 [Nm]	5	5	5	5	5	5
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,4	2,7	4	7,3	10,3	19,2

*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 1H NG80 AND NG100



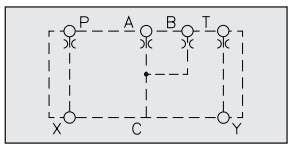


Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	19	18
L2 [mm]	4	4
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 max [mm]	132,5	166
Nameplate on the side	A	A
Plug DX **	G 1/2"	G 1/2"
Tightening torque [Nm]	72	72
Socket width across flats	10	10
Socket width across flats 1	24	30
Socket width across flats 2	55	65
Tightening torque Socket width across flats 2 [Nm]	175	240
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	31	40

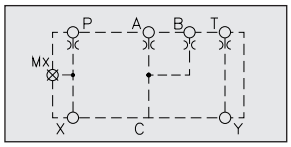
*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

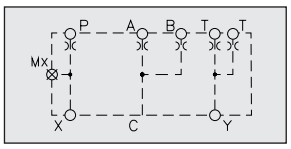
COVER RM NG16 TO NG63



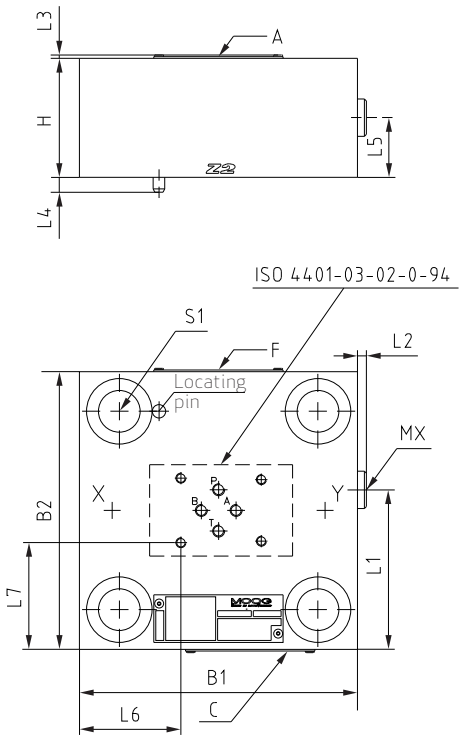
NG16, 25

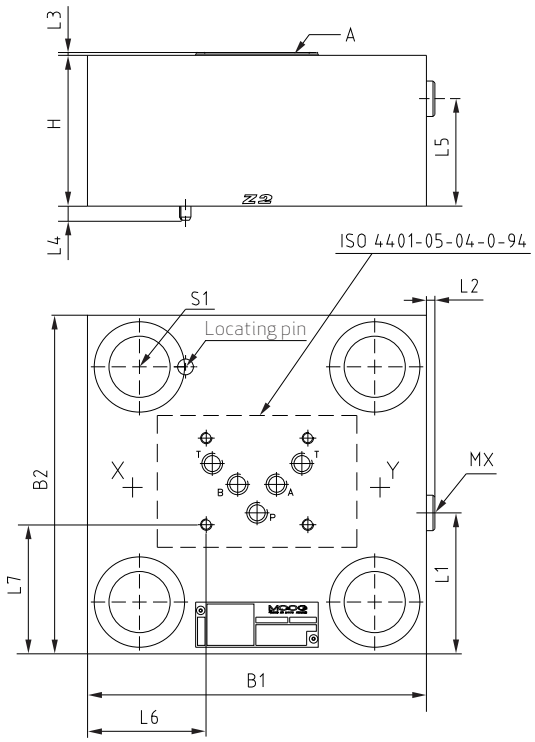


NG32, 40, 50



NG63



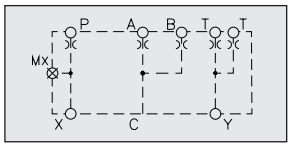


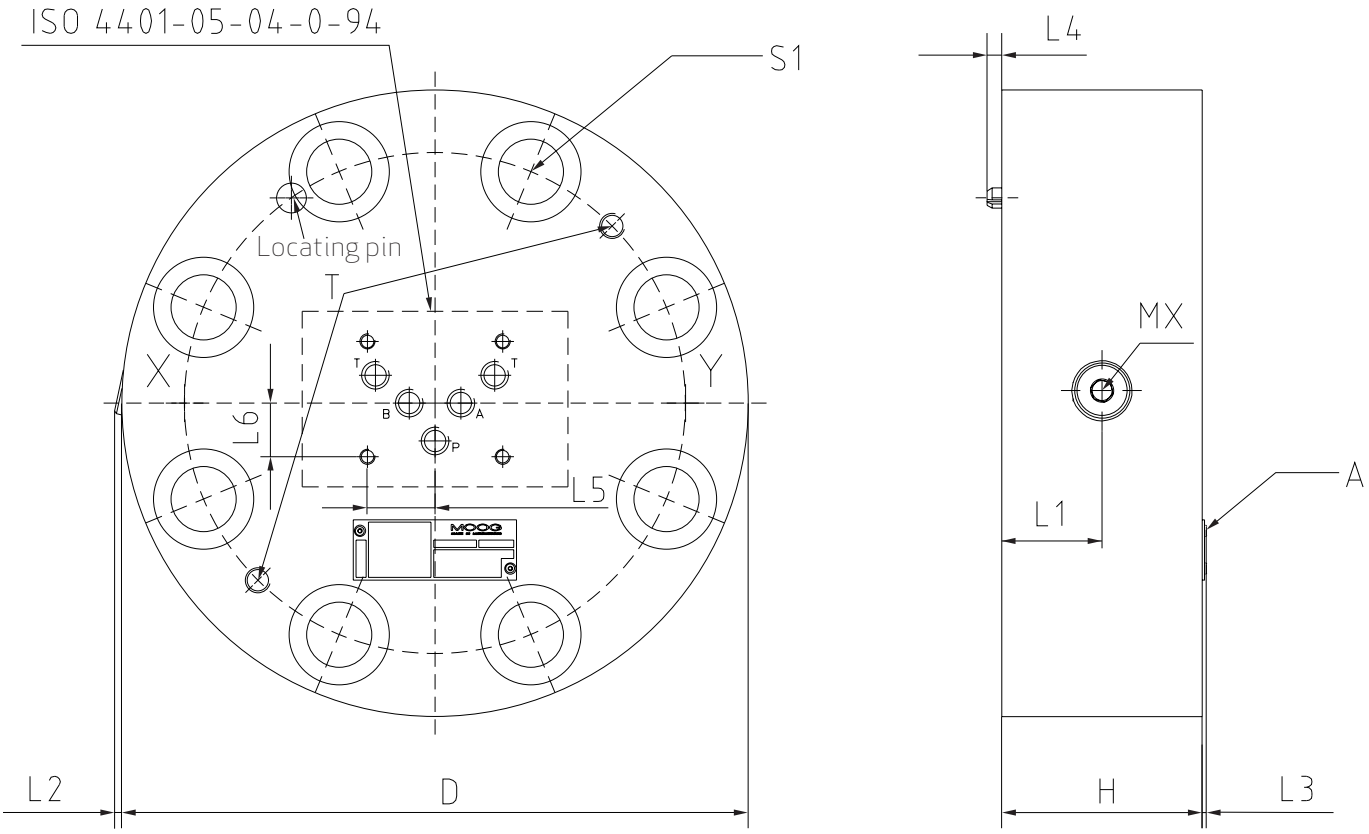
Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	40	45	60	60	80
L1 [mm]	-	-	61,3	73	80,4	74,9
L2 [mm]	-	-	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	27	30	30	57
L6 [mm]	7	22,25	30,75	43,5	51	63
L7 [mm]	16,25	26,25	34,75	46,25	53,75	68,6
Nameplate on the side	C	C	F	C	A	A
Plug MX	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,3	2	3	6,2	8	17

*not part of the delivery

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER RM NG80 AND NG100



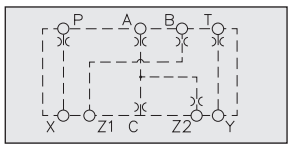


Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	40	43
L2 [mm]	2,5	2,5
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 [mm]	27	27
L6 [mm]	23	23
Nameplate on the side	A	A
Plug MX	G 3/8"	G 1/2"
Tightening torque [Nm]	56	72
Socket width across flats	8	10
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	26	42

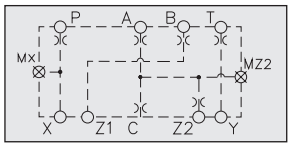
*not part of the delivery

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

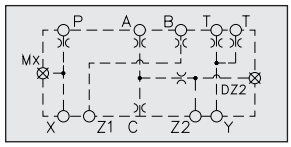
COVER 1W NG16 TO NG63



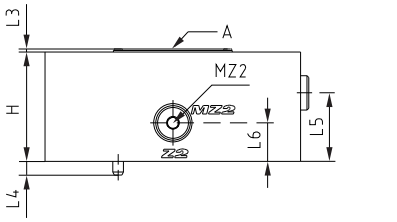
NG16, 25

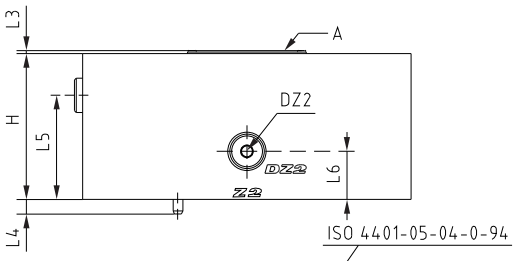


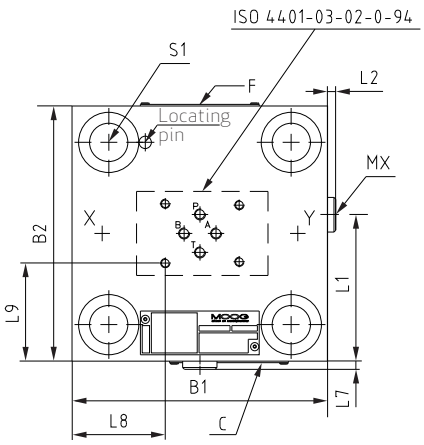
NG32, 40, 50

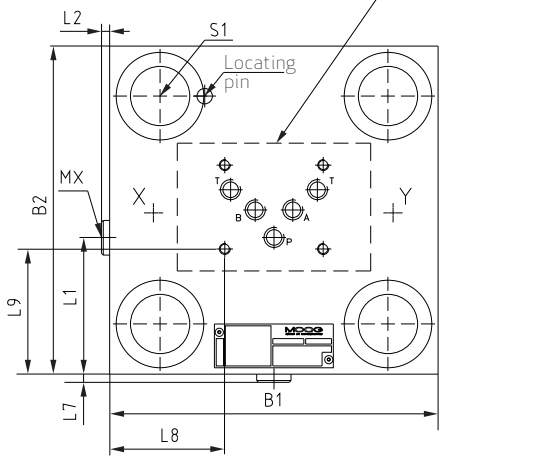


NG63







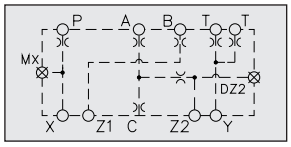


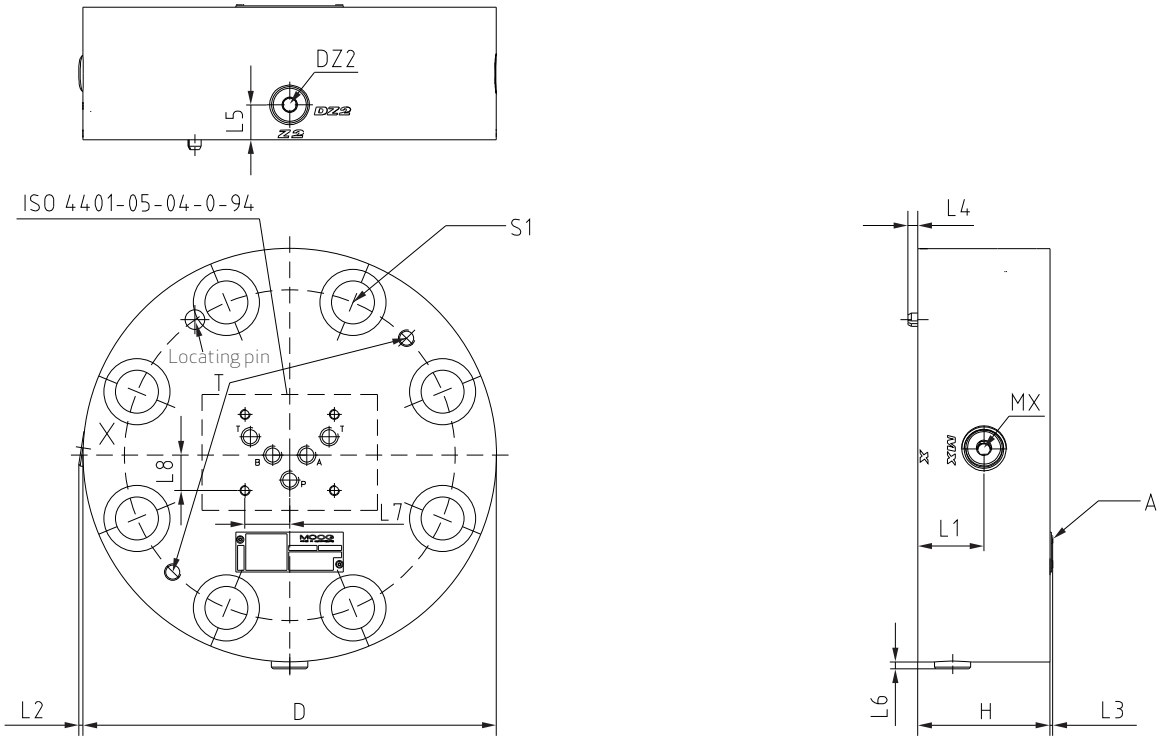
Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	40	45	60	60	80
L1 [mm]	-	-	61,3	80	80,4	74,9
L2 [mm]	-	-	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	26	33,9	37,5	57
L6 [mm]	-	-	15	20	21	26,25
L7 [mm]	-	-	3,5	4,5	4,5	4,5
L8 [mm]	7	22,25	30,75	43,5	51	63
L9 [mm]	16,25	26,25	34,75	46,25	53,75	68,6
Nameplate on the side	C	C	F	C	A	A
Plug MX, MZ2 + DZ2**	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,3	1,7	3	6,2	8	17

*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 1W NG80 AND NG100



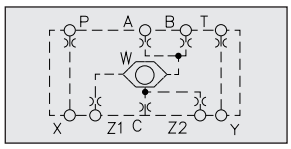


Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	40	43
L2 [mm]	2,5	2,5
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 [mm]	21	25
L6 [mm]	4	4
L7 [mm]	27	27
L8 [mm]	23	23
Nameplate on the side	A	A
Plug MX + DZ2 **	G 3/8"	G 1/2"
Tightening torque [Nm]	56	72
Socket width across flats	8	10
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	26	42

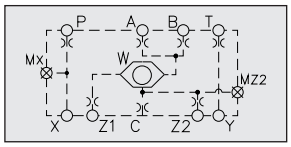
*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

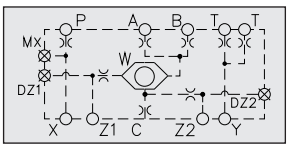
COVER 2W NG16 TO NG63



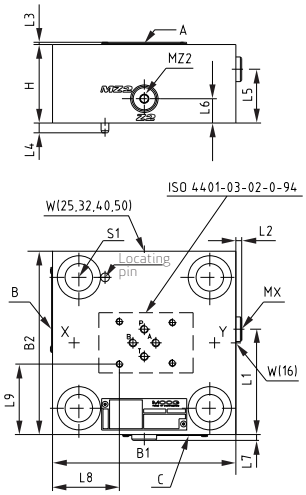
NG16, 25

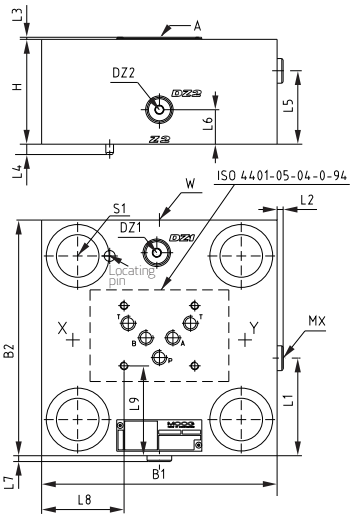


NG32, 40, 50



NG63



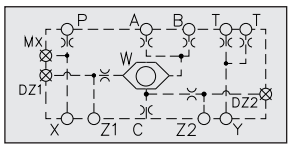


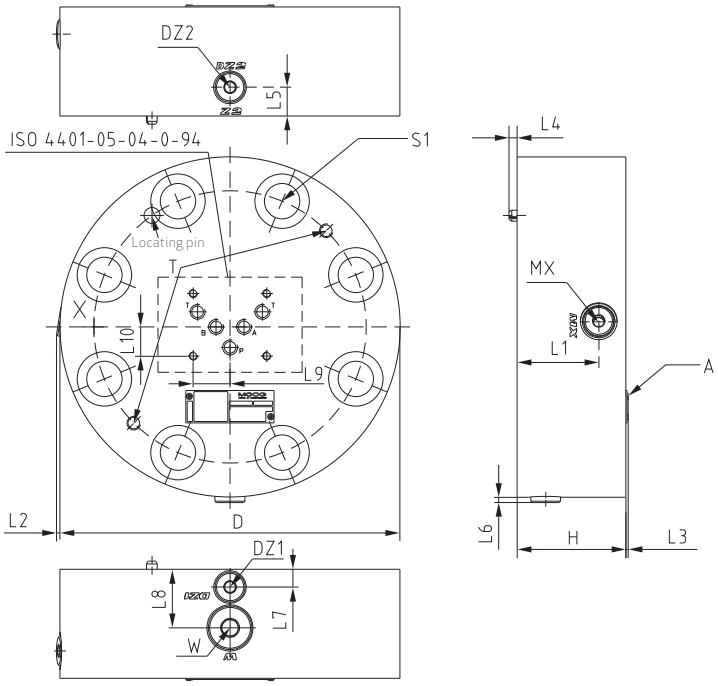
Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	40	45	60	60	80
L1 [mm]	-	-	58,9	73	80,4	74,5
L2 [mm]	-	-	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	34	40,5	41	56
L6 [mm]	-	-	21	17	18,5	26,25
L7 [mm]	-	-	3,5	4,5	4,5	4,5
L8 [mm]	7	23,5	32	43,5	51	63
L9 [mm]	16,25	26,25	34,65	46,25	53,75	68,6
Nameplate on the side	C	C	B	C	A	A
Plug MX, MZ2, DZ1 + DZ2**	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
Plug W	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 1/2"
Tightening torque [Nm]	56	56	56	56	56	72
Socket width across flats	8	8	8	8	8	10
Shuttle valve under plug W	-	-	-	-	-	G 1/2"
Tightening torque [Nm]	-	-	-	-	-	40
Socket width across flats	-	-	-	-	-	10
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,3	2	3	6,2	8	16,5

*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 2W NG80 AND NG100



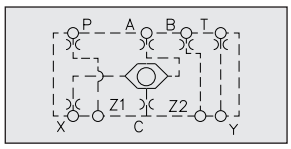


Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	60	43
L2 [mm]	2,5	2,5
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 [mm]	21	23,9
L6 [mm]	4	4
L7 [mm]	13	24
L8 [mm]	43	56,9
L9 [mm]	27	27
L10 [mm]	23	23
Nameplate on the side	A	A
Plug MX, DZ1 + DZ2**	G 3/8"	G 1/2"
Tightening torque [Nm]	56	72
Socket width across flats	8	10
Plug W	G 3/4"	G 3/4"
Tightening torque [Nm]	120	120
Socket width across flats	12	12
Shuttle valve under plug W	G 1/2"	G 1/2"
Tightening torque [Nm]	40	40
Socket width across flats	10	10
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	26	44

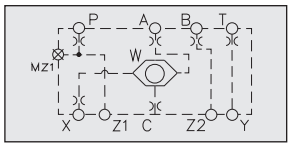
*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

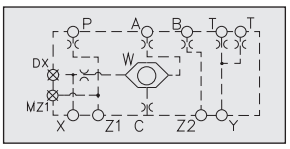
COVER 2WR NG16 TO NG63



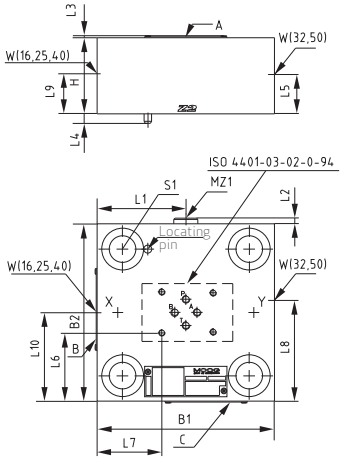
NG16, 25

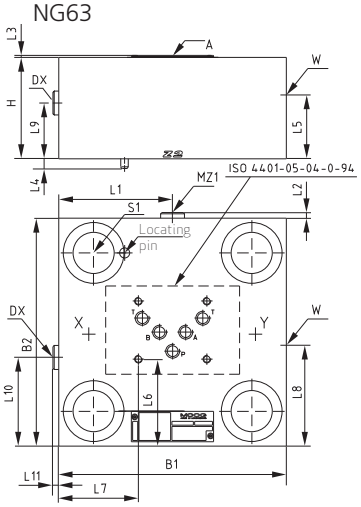


NG32, 40, 50



NG63



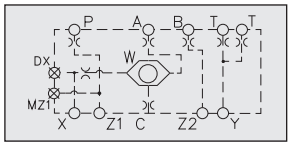


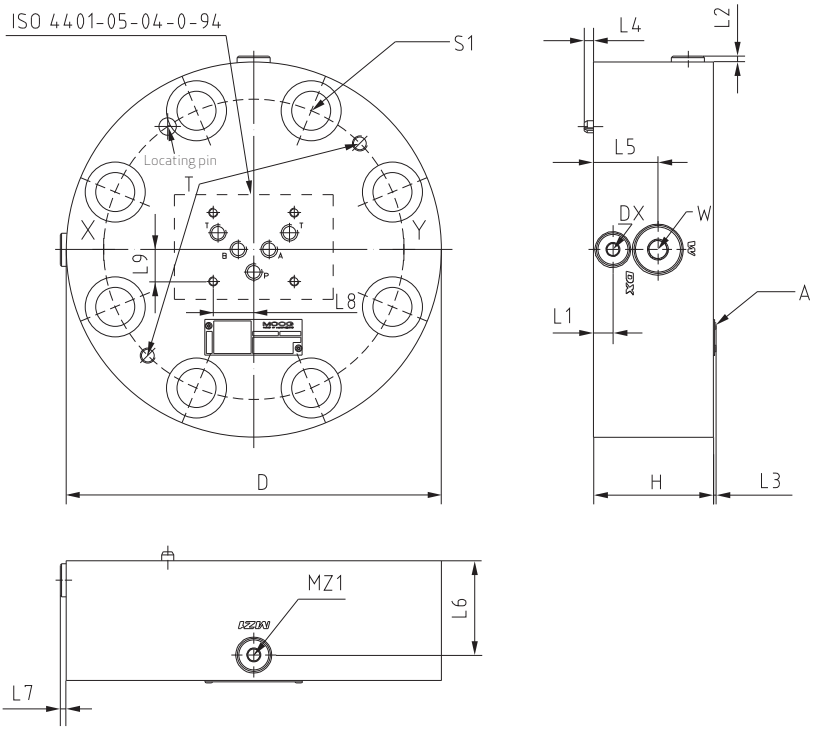
Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	40	40	45	60	60	80
L1 [mm]	-	-	51	62,5	70	90
L2 [mm]	-	-	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	17,5	-	31	44
L6 [mm]	16,25	26,25	34,65	46,25	73	68,6
L7 [mm]	7	23,5	32	43,5	53,75	63
L8 [mm]	-	-	63	-	51	70
L9 [mm]	16,5	21	-	34,5	-	44
L10 [mm]	31,5	43,5	-	64	-	70
L11 [mm]	-	-	-	-	-	4,5
Nameplate on the side	C	C	B	C	A	A
Plug DX** + MZ1	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
Plug W	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/4"
Tightening torque [Nm]	56	56	56	56	56	120
Socket width across flats	8	8	8	8	8	12
Shuttle valve under plug W	-	-	-	-	-	G 1/2"
Tightening torque [Nm]	-	-	-	-	-	40
Socket width across flats	-	-	-	-	-	10
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,5	2	3	6,2	8	16,5

*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 2WR NG80 AND NG100



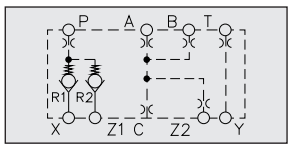


Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	13	15,5
L2 [mm]	4	4
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 [mm]	43	48
L6 [mm]	63	72
L7 [mm]	4	4
L8 [mm]	27	27
L9 [mm]	23	23
Nameplate on the side	A	A
Plug DX** + MZ1	G 3/8"	G 1/2"
Tightening torque [Nm]	56	72
Socket width across flats	8	10
Plug W	G 3/4"	G 3/4"
Tightening torque [Nm]	120	120
Socket width across flats	12	12
Shuttle valve under plug W	G 1/2"	G 1/2"
Tightening torque [Nm]	40	40
Socket width across flats	10	10
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	26	42

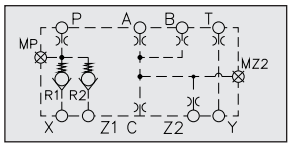
*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

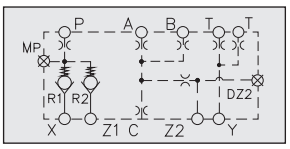
COVER 4W NG16 TO NG63



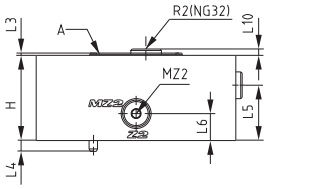
NG16, 25

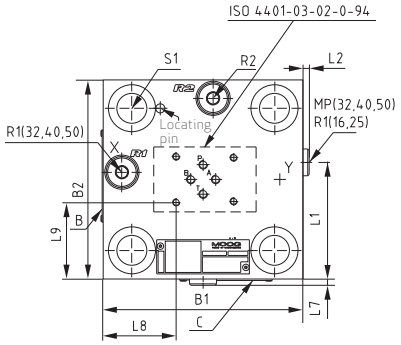


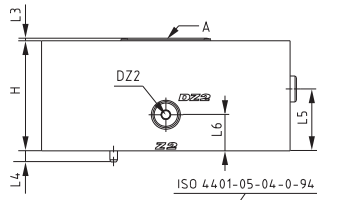
NG32, 40, 50

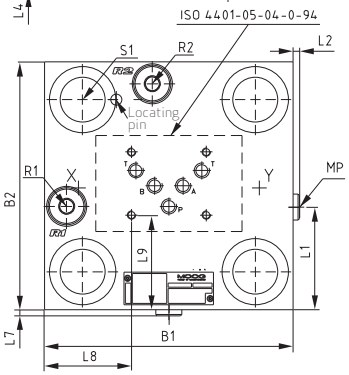


NG63







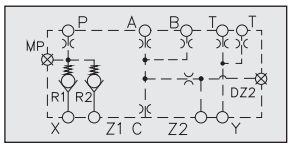


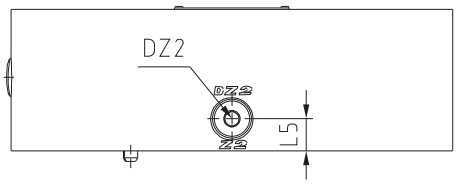
Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	40	40	45	60	60	80
L1 [mm]	43	53	59,5	73	82	74,5
L2 [mm]	0	0	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	17	20	25	38,5	39	45
L6 [mm]	-	-	18	19	19	26,25
L7 [mm]	-	-	3,5	4,5	4,5	4,5
L8 [mm]	7	23,5	32	43,5	51	63
L9 [mm]	16,25	26,25	34,65	46,25	53,75	68,6
Nameplate on the side	C	C	B	C	A	A
Plug MP, MZ2 + DZ2***	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
Plug R1 + R2	G 1/8"	G 1/8"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
Tightening torque [Nm]	12	12	27	56	56	72
Socket width across flats	5	5	6	8	8	10
RKVE valve under plug R	G 1/8"	G 1/8"	G 1/4"	G 3/8"	G 3/8"	-
Tightening torque [Nm]	3	3	7	15	15	-
Socket width across flats**	M-04	M-04	M-06	M-08	M-08	-
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,5	2	3	6,2	8	16,5

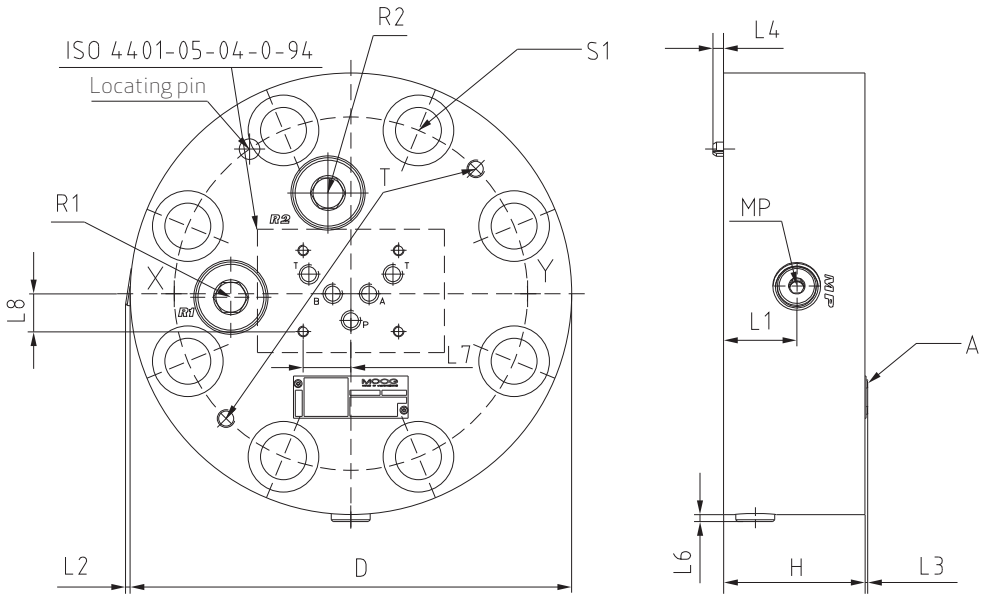
*not part of the delivery, **special tool, please contact Moog, ***may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER 4W NG80 AND NG100





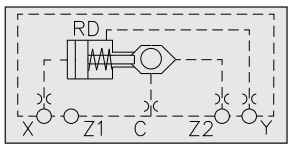


Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	41,5	50
L2 [mm]	2,5	2,8
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 [mm]	18	25
L6 [mm]	4	4
L7 [mm]	27	27
L8 [mm]	23	23
Nameplate on the side	A	A
Plug MP + DZ2**	G 3/8"	G 1/2"
Tightening torque [Nm]	56	72
Socket width across flats	8	10
Plug R1 + R2	G 1"	G 1"
Tightening torque [Nm]	170	170
Socket width across flats	17	17
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Thread for eye locating pin T	M10	M10
Weight [kg]	26	44

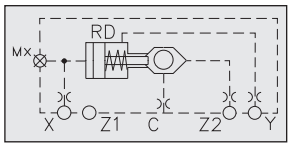
*not part of the delivery, **may also be used as test port

DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

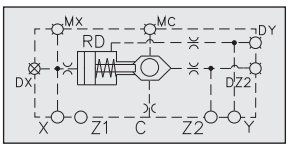
COVER RV NG16 TO NG63



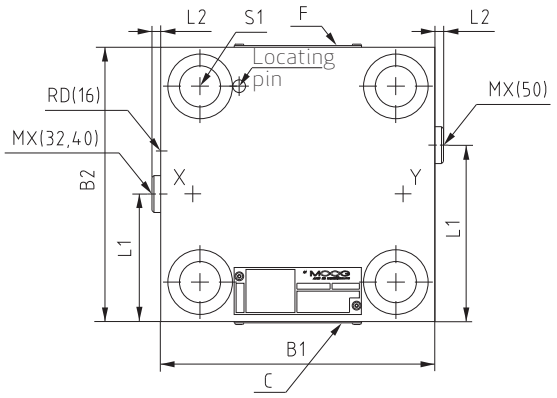
NG16, 25

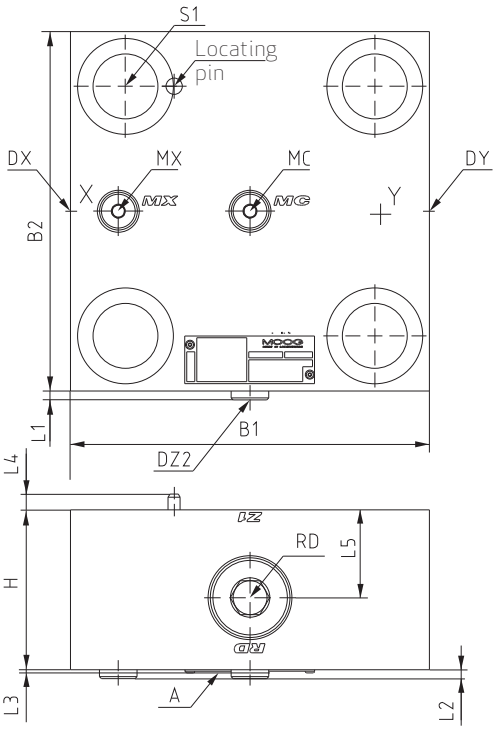


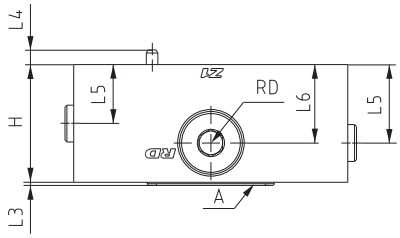
NG32, 40, 50



NG63





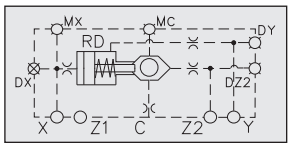


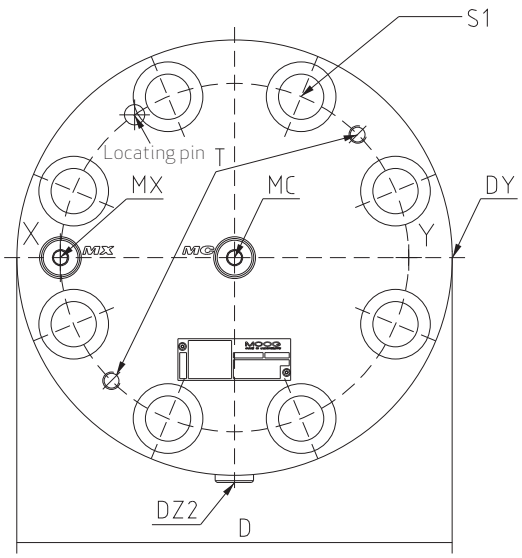
Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	65	60	45	60	60	80
L1 [mm]	-	-	48	59	90	4,5
L2 [mm]	4,5	-	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	19	40	40	44
L6 [mm]	45	42	27	40	40	-
Nameplate on the side	C	C	C	C	A	A
Plug MX, MC, DX, DY + DZ2**	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
Plug RD	G 3/4"	G 3/4"	G 3/4"	G 3/4"	G 3/4"	G 1"
Tightening torque [Nm]	120	120	120	120	120	170
Socket width across flats	12	12	12	12	12	17
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Area ratio RD	1:5,4					
Weight [kg]	2,1	2,6	3	6	8	16,5

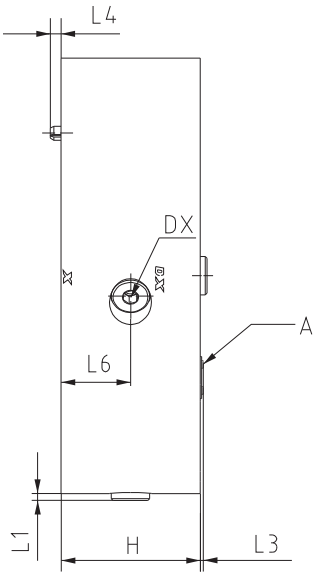
*not part of the delivery, **may also be used as test port

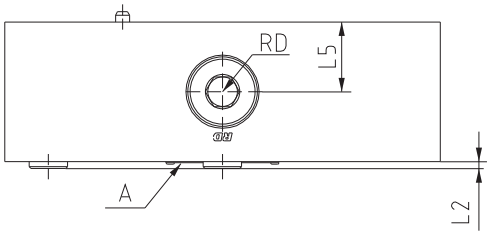
DIMENSIONS OF CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

COVER RV NG80 AND NG100









Size	80	100
D [mm]	250	300
H [mm]	80	90
L1 [mm]	4	4
L2 [mm]	4	4
L3 [mm]	1,6	1,6
L4 [mm]	6	6
L5 [mm]	40	45
L6 [mm]	40	45
Nameplate on the side	A	A
Plug MX, MC, DX, DY + DZ2**	G 3/8"	G 1/2"
Tightening torque [Nm]	56	72
Socket width across flats	8	10
Plug RD	G 1"	G 1"
Tightening torque [Nm]	170	170
Socket width across flats	17	17
S1* DIN EN ISO 4762 - 12.9	M24x90	M30x100
Tightening torque [Nm]	900	1800
Area ratio RD	1:5,4	
Thread for eye locating pin T	M10	M10
Weight [kg]	26	41

*not part of the delivery, **may also be used as test port

ORDERING INFORMATION CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

NG16-100

M – C C E ☐ D 6 ☐ ☐ X ☐ / ☐

Seals	
M	FKM + PU (standard)
V	FKM
N	NBR

Valve Type	
C	Cartridge Valve

Valve Function	
C	Cartridge Cover Unit

Mounting	
E	Manifold Mounting

Nominal Bore	
16	NG 16
25	NG 25
32	NG 32
40	NG 40
50	NG 50
63	NG 63
80	NG 80
100	NG 100

D	Serial Number

Line	
6	Connections Recommended by ISO 7368

Orifices*
Indication of 10th of a mm of the diameter and in the same order as given in the function symbol (P, A, B, T, C, X, Z1, Z2, Y, AP) ..00 = Plug ..08 = Orifice 0,8 mm ..15 = Orifice 1,5 mm e.g.: X08 = orifice 0,8 mm in X e.g.: Z210 = orifice 1,0 mm in Z2

Connection Pilot Valve	
06	Connection as per ISO 4401-03-02-0-94
10	Connection as per ISO 4401-05-04-0-94

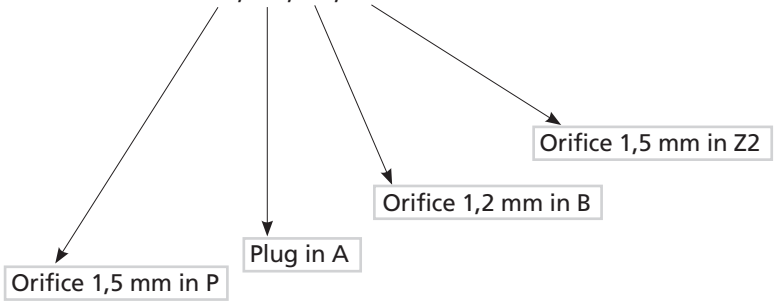
Pilot Connection	
X	X through connection / Y through connection

Adjustment (only for 1H Cover)	
2	Socket screw with lock nut
9	Socket screw with lock nut and cover, can be lead sealed
8	Socket screw with lock nut and cover, factory lead sealed

Cover Code
1D, 2D, 1H, RM, 1W, 2W, 2WR, 4W, RV

***Order Example:**

M-CCE32D64WX06 / P15;A00;B12;Z215



ORDER NUMBERS AND SEAL KITS CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

ORDER NUMBERS OF COMPLETE CARTRIDGE COVERS* PLEASE NOTE: WITHOUT ORIFICES!

Cover type	NG16	NG25	NG32	NG40
1D	XEB18534-000M01	XEB18516-000M01	XEB18498-000M01	XEB18440-000M01
2D	XEB18535-000M01	XEB18517-000M01	XEB18499-000M01	XEB18441-000M01
1H2	XEB18537-000M01	XEB18519-000M01	XEB18503-000M01	XEB18444-000M01
RM	XEB18540-000M01	XEB18527-000M01	XEB18504-000M01	XEB18445-000M01
1W	XEB18542-000M01	XEB18521-000M01	XEB18506-000M01	XEB18447-000M01
2W	XEB18549-000M01	XEB18528-000M01	XEB18507-000M01	XEB18448-000M01
2WR	XEB18548-000M01	XEB18525-000M01	XEB18501-000M01	XEB18442-000M01
4W	XEB18550-000M01	XEB18529-000M01	XEB18508-000M01	XEB18449-000M01
RV	XEB18919-000M01	XEB18918-000M01	XEB18510-000M01	XEB18451-000M01

Cover type	NG50	NG63	NG80	NG100
1D	XEB18422-000M01	XEB18330-000M01	XEB18307-000M01	XEB18292-000M01
2D	XEB18423-000M01	XEB18331-000M01	XEB18308-000M01	XEB18293-000M01
1H2	XEB18426-000M01	XEB18334-000M01	XEB18311-000M01	XEB18296-000M01
RM	XEB18427-000M01	XEB18335-000M01	XEB18312-000M01	XEB18297-000M01
1W	XEB18429-000M01	XEB18337-000M01	XEB18314-000M01	XEB18299-000M01
2W	XEB18430-000M01	XEB18338-000M01	XEB18315-000M01	XEB18300-000M01
2WR	XEB18424-000M01	XEB18332-000M01	XEB18309-000M01	XEB18294-000M01
4W	XEB18431-000M01	XEB18339-000M01	XEB18316-000M01	XEB18301-000M01
RV	XEB18433-000M01	XEB18341-000M01	XEB18318-000M01	XEB18303-000M01

* For covers with other seals, the order number remains the same, however "**M**" identifying the seal is replaced by the identifier for the required seal, i.e., **V(FKM)** or **N(NBR)**.
Example:
XEB18534-000**M**01 becomes XEB18534-000**V**01 or XEB18534-000**N**01.

ORDER NUMBERS AND SEAL KITS CHECK, DIRECTIONAL CONTROL AND THROTTLE FUNCTIONS

ORDER NUMBERS OF COMPLETE SEAL KITS* (EXAMPLE 1D COVER)

Cover type	NG16	NG25	NG32	NG40
M-1D	XEB18534D000M00	XEB18516D000M00	XEB18498D000M00	XEB18440D000M00
V-1D	XEB18534D000V00	XEB18516D000V00	XEB18498D000V00	XEB18440D000V00
N-1D	XEB18534D000N00	XEB18516D000N00	XEB18498D000N00	XEB18440D000N00

Cover type	NG50	NG63	NG80	NG100
M-1D	XEB18422D000M00	XEB18330D000M00	XEB18307D000M00	XEB18292D000M00
V-1D	XEB18422D000V00	XEB18330D000V00	XEB18307D000V00	XEB18292D000V00
N-1D	XEB18422D000N00	XEB18330D000N00	XEB18307D000N00	XEB18292D000N00

* For seal kits, the basic number remains the same as the order number for the complete cartridge cover, but it is followed by the letter 'D', see example of 1D cover.

ORDER NUMBERS OF SEALS FOR PORTS X, Y, Z1, Z2

NG	PU	FKM	NBR
16	CA52618-001	X980-02010	X783-00206
25	CA23742-001	X980-02012	X783-00288
32	C97155-001	X980-02013	X783-00292
40, 50	C97076-001	X980-02112	X783-00207
63	C97939-001	X980-02116	X783-00293
80	C97918-001	X980-02215	X783-00281
100	C97058-001	X980-02220	X783-00296

CONVERSION TABLE

GENERAL CONVERSION TABLE

1 bar	=	14,5038 lb/in^2 (PSI)
1 PSI	=	0,0689 bars
1 mm	=	0,0394 in
1 in	=	25,4 mm
1 cm^3	=	0,0610 in^3 = 0,000264 gal (US)
1 in^3	=	16,3871 cm^3 = 0,004329 gal (US)
1 Liter	=	0,26417 gal (US) = 61,024 in^3
1 gal (US)	=	3,7854 Liter [l] = 231 in^3
1 kg	=	2,2046 lb
1 lb	=	0,4536 kg
1 Nm	=	8,8507 lbf.in
1 lbf.in	=	0,1130 Nm
1 kW	=	1,3596 PS = 1,3410 hp (UK)
1 hp (UK)	=	1,0139 PS = 0,7457 kW
1 °F	=	0,5556°C
1 °C	=	1,8 °F
		(°F-32) x 0,5556 = °C
		(°C/0,5556) + 32 = °F
0 °F	=	-17,778 °C
0 °C	=	32 °F
100 °F	=	37,778 °C
100 °C	=	212 °F

MASS MOMENT OF INERTIA

1 kg.cm^2	=	0,3417 lb.in^2
1 lb.in^2	=	2,9264 kg.cm^2

KINEMATIC VISCOSITY

1 mm^2/s	=	1 cSt = 0,00155 in^2/s
1 in^2/s	=	645,16 cSt = 645,16 mm^2/s

All dimensions in the catalog are in mm unless otherwise specified.

GLOBAL SUPPORT

As a recognized leader in motion control technologies, Moog offers a full range of services to support our products and ensure that they meet the expectations of customers. Moog experts are the best at helping customers select the right products and ensuring that they run reliably for a long time.

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Cartridge
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