

EX54 Series

Flow Sharing Valves



QUICK REFERENCE GUIDE

GENERAL SPECIFICATIONS	EX34	EX38	EX46	EX54	EX72
Working section number	1 - 10	1 - 10	1 - 10	1 - 10	1 - 8
CIRCUIT					
Spool stroke (mm)	7	7	8	9	11
Spool pitch (mm)	34	38	46	54	72
RATED FLOW					
Pump flow rate (l/min)	130	150	220	300	450
A/B port flow rate (l/min) (*)	80	100	180	250	350
RATED PRESSURE					
working pressure inlet port P (bar)	350	350	350	350	350
BACK PRESSURE MAX					
Max pressure outlet port T (bar)	10	10	10	10	10

(*) with fixed Pump inlet compensator

OPTION CHART	EX34	EX38	EX46	EX54	EX72
LS Signal pressure relief valve	•	•	•	•	•
Pump pressure relief valve	•	•	•	•	•
LS Signal dump valve (electric 12/24 Vdc)	•	•	•	•	•
Pump dump valve (electric 12/24 Vdc)	•	•	•	•	
SPOOLS TYPE					
Single acting	•	•	•	•	•
Double acting	•	•	•	•	•
Float spool	•	•	•	•	•
SPOOL ACTUATION					
Hydraulic actuation	•	•	•	•	•
Lever actuation	•	•	•	•	
Without lever	•	•	•	•	•
Cloche control		•	•		
Prop. electrohydraulic actuation 12-24 Vdc (*)	•	•	•	•	•
ON/OFF electrohydraulic actuation 12-24 Vdc (*)	•	•	•	•	•
CAN BUS interface actuation				on development	•
SPOOL RETURN ACTION					
Return spring	•	•	•	•	•
Mechanical detent	•	•	•	(•)	(•)
Hydraulic load limit	(•)	(•)	(•)		
Pneumatic control	(•)	(•)	(•)		
Spools displacement sensor (HLPS)	•	•	•	•	•
PORT RELIEF VALVE					
Antishock valve				•	•
Anticavitation valve	•	•	•	•	•
Antishock and anticavitation valve	•	•	•	•	•
Plug	•	•	•	•	•

• = available

(•) = special arrangement available on request

(*) = we recommend to keep the T line for the electrohydraulic cartridges separate from the T line of the valve.

EX54 Series

Flow Sharing Valves



GENERAL SPECIFICATION

Standard working conditions

Ambient operating temperature range	-40°C / +60°C
Kinematic viscosity range	10 ÷ 300 cSt
Max contamination level	9 (NAS 1638) - 20/18/15 (ISO 4406:1999)
Recommended filtration level	β10 > 75 (ISO 16889:2008)
Internal filter (on electroproportional valves pilot line)	30 μm

All information and diagrams in this catalogue refer to a mineral base oil VG46 at 50°C temperature (32 cSt kinematic viscosity)

Fluid options

Types of fluid (according to ISO 6743/4) Oil and Solutions	Temperature (°C)		Compatible gasket
	min	max	
Mineral Oil HL, HM (or HLP acc. to DIN 51524)	-25	+80	NBR
Oil in water emulsions HFA	+5	+55	NBR
Water in oil emulsions HFB	+5	+55	NBR
Polyglycol-based aqueous solution HFC	-10	+60	NBR

For special applications and different fluids, please call our Technical Department.

Applications

Flow Sharing valve for 300 l/min inlet flow rate. The most common application for this control valve are excavators, wheeled loaders, rough terrain cranes, drilling machines, mobile cranes, mining and off-shore equipment.



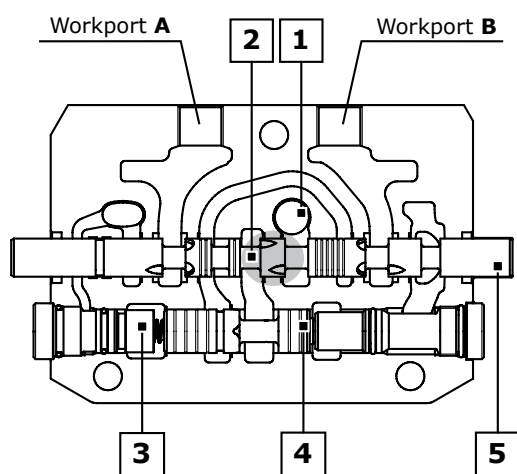
EX54 Series

Flow Sharing Valves



Operating principle

The flow sharing technology applied to the standard load sensing system characterizes the new control valves HC-EX. The valve, completely pressure compensated, guarantees great controllability to all actuators, making workport flow dependent only on metering area (spool position). When flow saturation occurs the system reacts by implementing an equal reduction of pressure margin across all spools, generating a proportional reduction of workport flow.



LEGEND:

- 1. Inlet line (High pressure)
- 2. Metering notches
- 3. Load sensing line
- 4. Local compensator
- 5. Metering spool

Single section

Referring to picture it's possible to remark some aspects of system functionality. Coming from the common inlet line the main flow, passing across the metering area, reaches local compensator. Metering area, according to the pressure margin, controls the total amount of flow to the workport selected by the main spool. The load sensing signal, picked up downstream the local compensator, feeds the common load-sensing line. When a single section is actuated, the local compensator fully opens to the left side, reaching its complete balanced position. The control of the LS system is made by the inlet compensator for fixed displacement pump or pump compensator for variable displacement pump.

Multi-section

When two or more sections are actuated only one, characterized by the highest pressure (dominant), is involved in the LS signal transmission, working as briefly described in the previous paragraph. The other functions (slaves) become directly dependent on it. The common LS line transfers the information coming from the dominant local compensator to all dependent compensators. Driven by the LS signal, the unbalanced slave compensators activate the pressure compensation creating an artificial pressure drop able to keep pressure margin nominally the same on all the spools. Workport flow becomes only a function of metering area making the system totally load independent.

Flow Sharing function

When saturation occurs the total amount of flow required by actuators is higher than the maximum pump flow rate. The system is able to keep the nominal pressure margin no more. The actual pressure margin reduces according to real flow demand. Since all the local compensators feel the same LS signal and the same pressure drop is applied to different metering areas, then workport flows are reduced proportionally in order to keep all actuators completely under control.

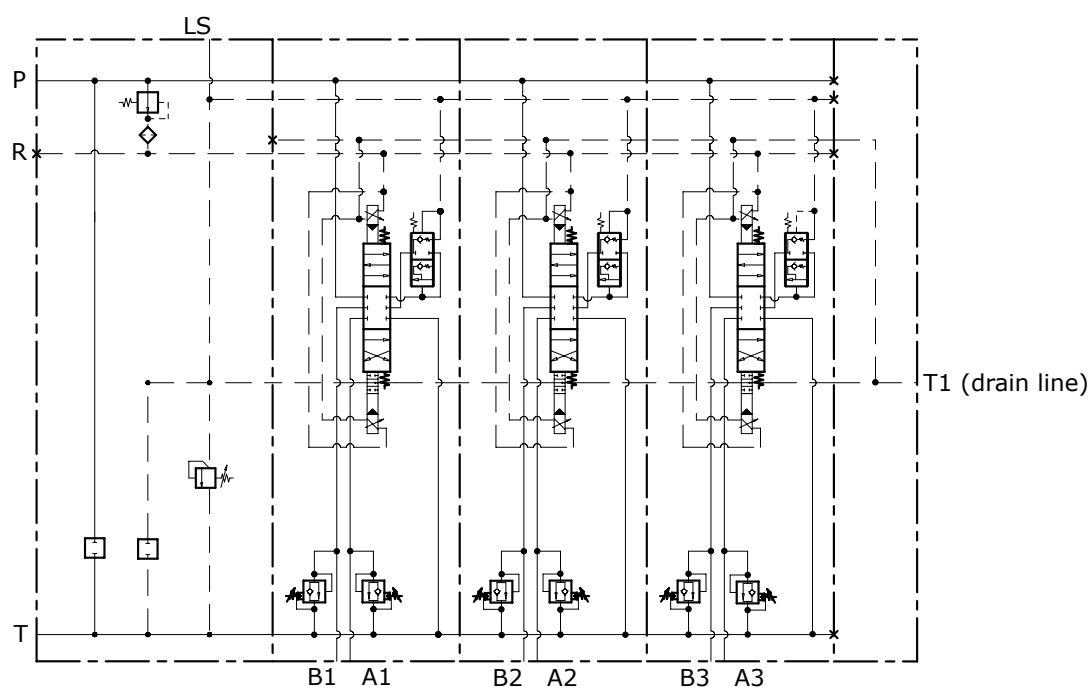
EX54 Series

Flow Sharing Valves

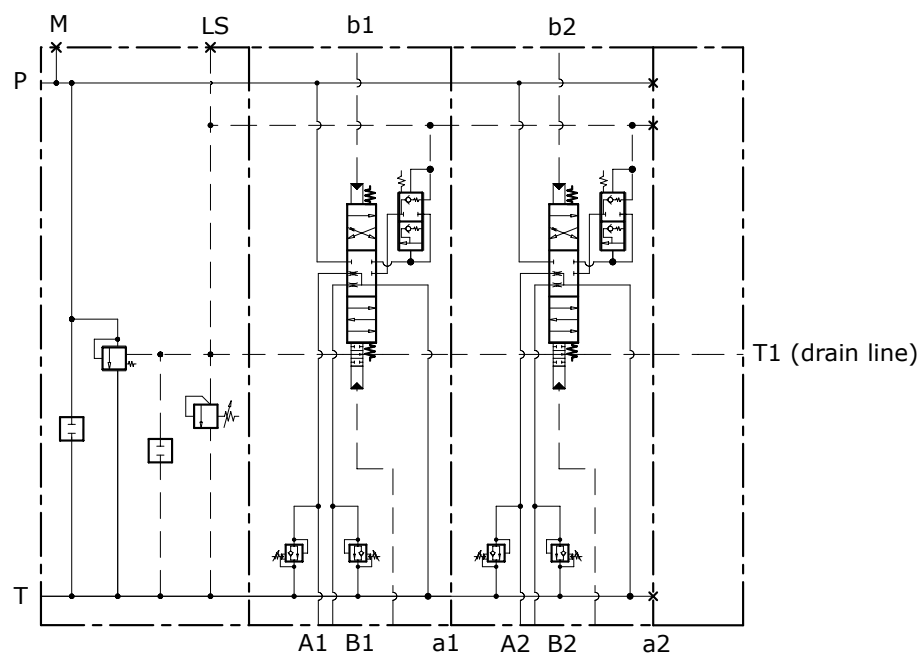


HYDRAULIC SCHEMATIC

Post compensated system Electrohydraulic control



Post compensated system hydraulic control



EX54 Series

Flow Sharing Valves



ORDER EXAMPLE

HC-EX54/2: MR 701 200 KV S35 - W001C 5050 H005C RC1 G06 04 PA 350 04 PB 350 - W001C 5050 H005C RCK1A G06 05 PA 05 PB

TYPE:

EX54: product type

/2: working section number

1) INLET ARRANGEMENT:

MR 701

inlet side and valve type

200

setting (bar)

KV S35

inlet position and available thread type

2) WORK SECTION ARRANGEMENT:

W001C 5050

type and spool delivery

H005C

spool actuation type

RC1 G06

section type and port threads

04 PA 350

auxiliary valve (port A)

04 PB 350

auxiliary valve (port B)

3) INTEGRATED OUTLET SECTION ARRANGEMENT:

W001C 5050

type and spool delivery

H005C

spool actuation type

RCK1A G06

section type and port threads

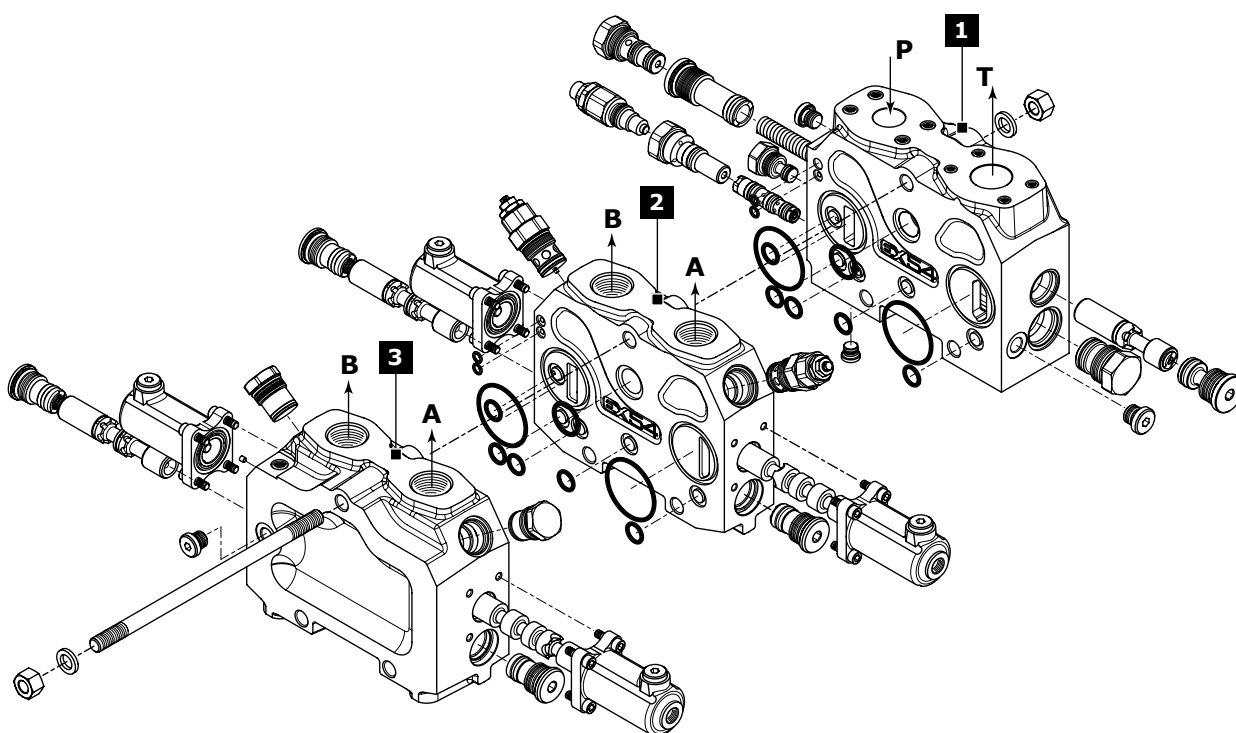
05 PA

auxiliary valve (port A)

05 PB

auxiliary valve (port B)

Ordering row 2 must be repeated for every work section



Standard thread

The connection ports size is indicated by an ordering code common for all Hydrocontrol products. Following table shows all available connections; for ordering code refer to table on page 30.

Ports	BSP (ISO - 228)	UN-UNF (ISO - 725)	SAE 3000 (ISO 6162-1)	SAE 6000 (ISO 6162-2)
P	G 1 1/4	1 5/8 - 12 UNF		1" MA - 1" UNC
T	G 1 1/4	1 5/8 - 12 UNF	1 1/4 MA - 1 1/4 UNC	
A - B	G 1"	1 5/16 - 12 UNF	3/4" MA - 3/4" UNC	

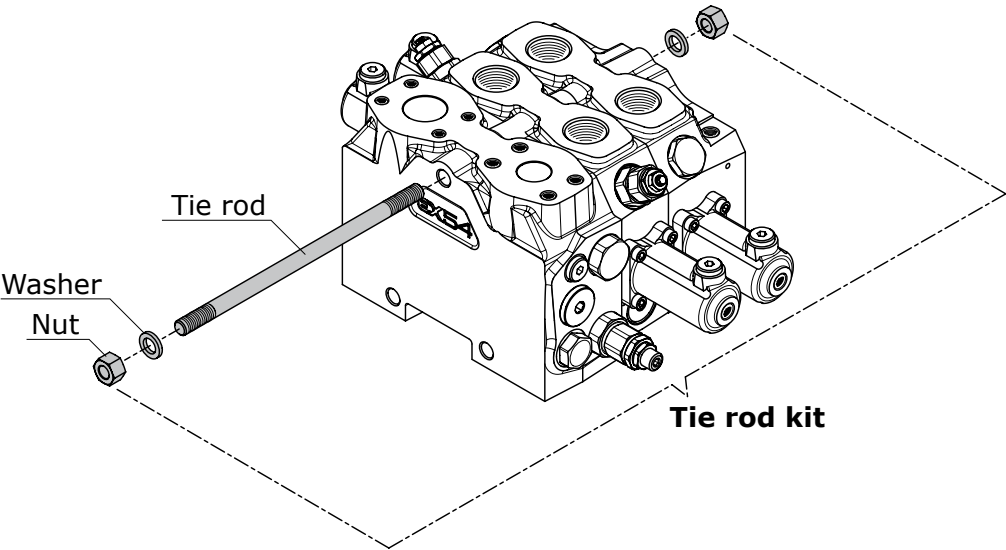
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Flow Sharing Valves



Tie-rod kit classification

Tie rod kit allows the correct assembly of sectional valves. Tie rod’s length depends on the number of sections; each valve is assembled with tie rod kits including a tie rod, nut and washer.



tie rod length	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10
(mm)	192	246	300	354	408	462	516	570	624	678
Tie rod clamping torque	60 Nm									

Painting

On request, all Hydrocontrol valves can be delivered painted (RAL 9005 black primer).

Order example of EX54/2 painted:

HC-EX54/2
MR 701 200 KV S35
W001C 5050 H005C RC1 G06 04 PA 350 04 PB 350
W001C 5050 H005C RCK1A G06 05 PA 05 PB
P006/2 N10

The painting is indicated with the following value:

P006 - /2 - N10
Color black
section number
Painted

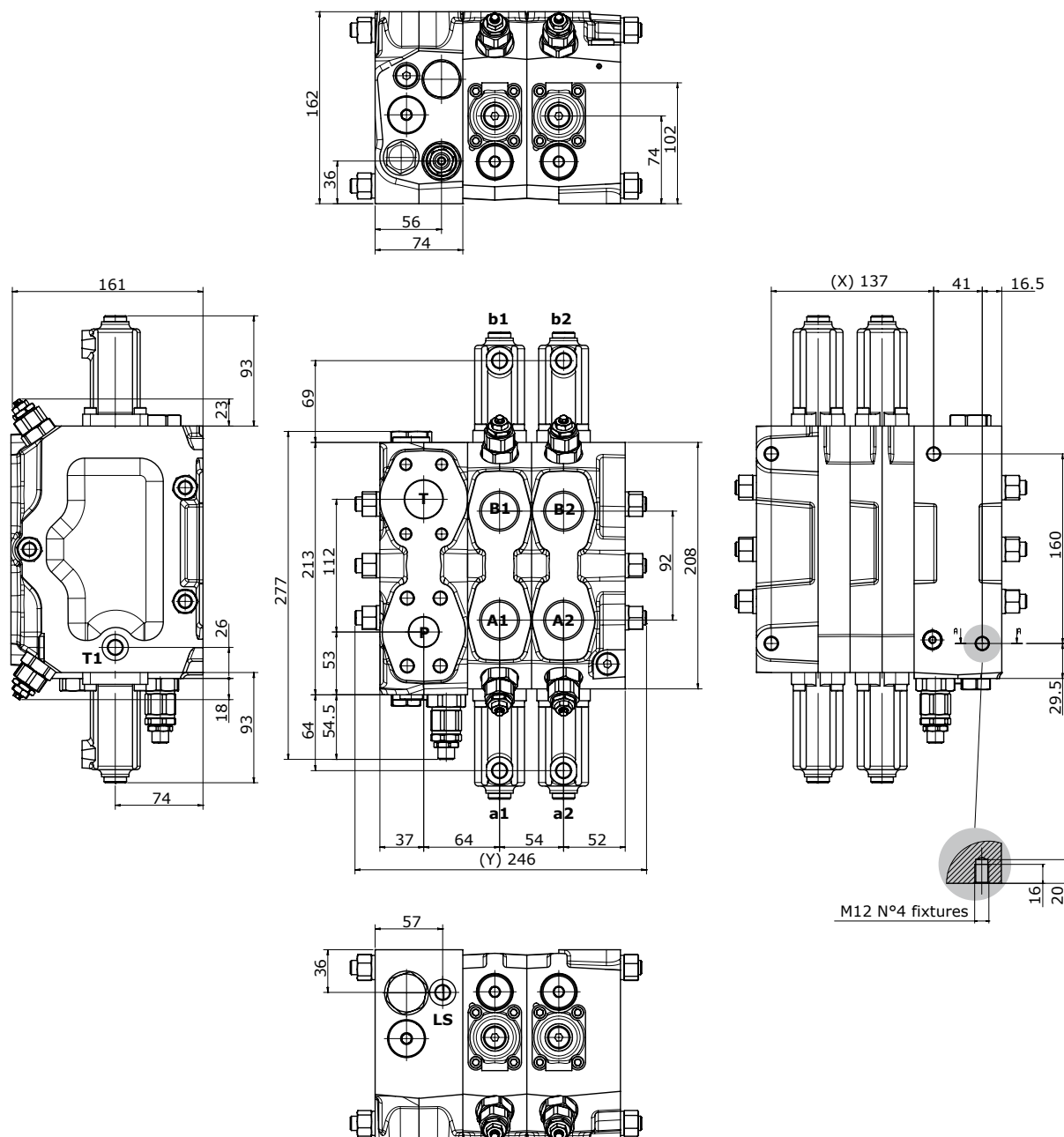
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Flow Sharing Valves



DIMENSIONS

HC-EX54 with hydraulic control



type	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10
X (mm)	83	137	191	245	299	353	407	461	515	569
Y (mm)	192	246	300	354	408	462	516	570	624	678
Weights (kg)	32	43	54	65	76	87	98	109	120	131

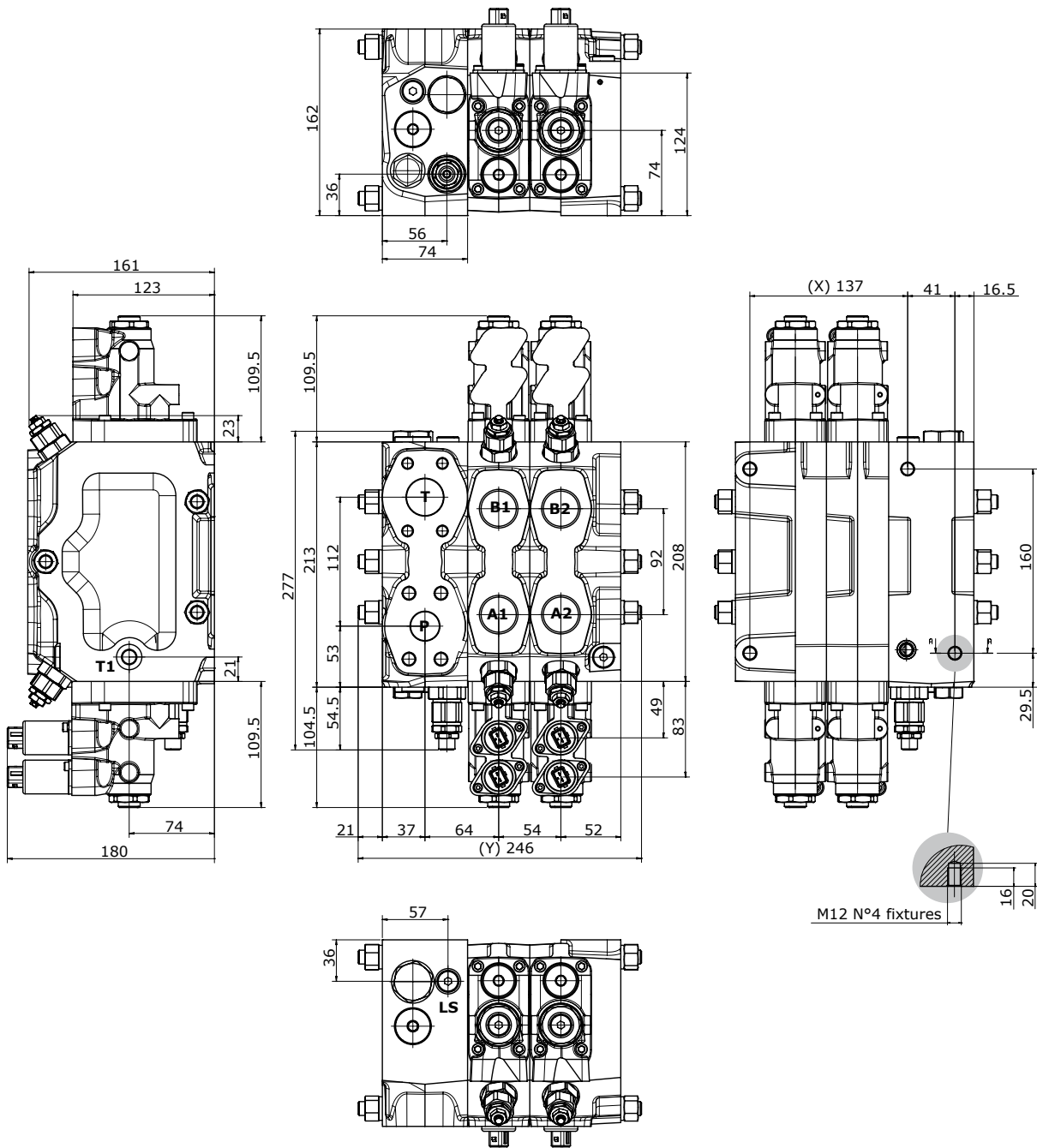
EX54 Series

Flow Sharing Valves



DIMENSIONS

HC-EX54 with Electrohydraulic control



type	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10
X (mm)	83	137	191	245	299	353	407	461	515	569
Y (mm)	192	246	300	354	408	462	516	570	624	678
Weights (kg)	32	43	54	65	76	87	98	109	120	131

EX54 Series

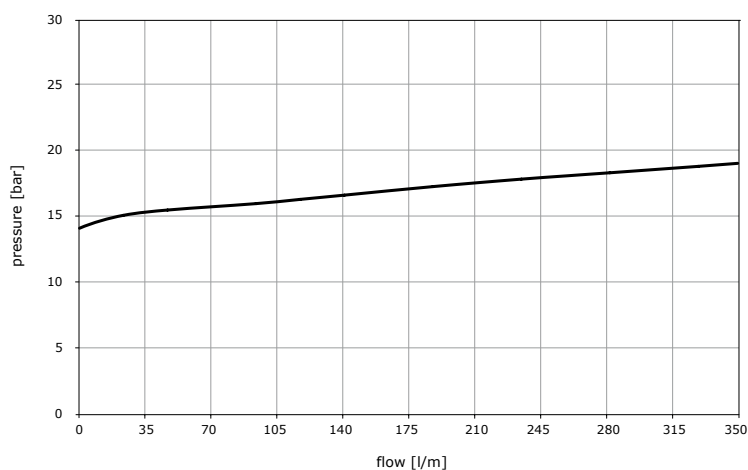
Flow Sharing Valves



TYPICAL CURVES

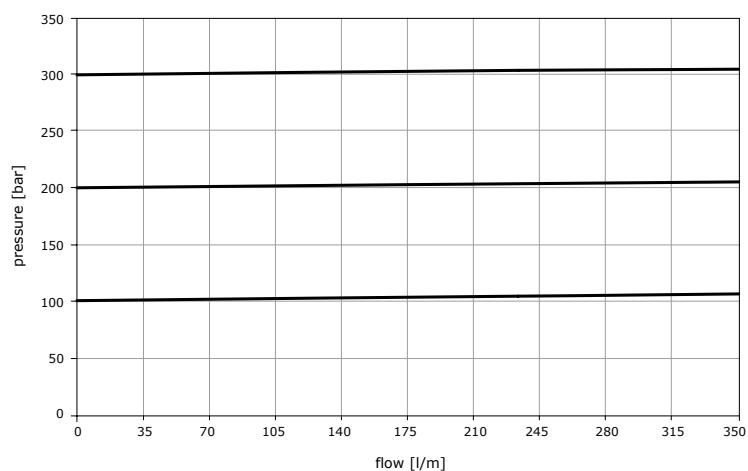
Inlet compensator Pressure drop (P-T)

Fixed displacement system (KV): pressure drop across the inlet compensator as function of pump flow



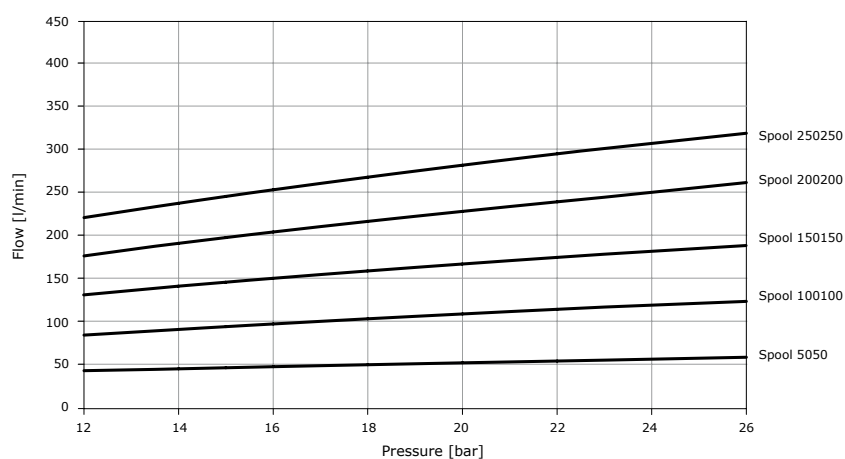
LS relief valve

Fixed displacement system (KV): LS relief valve characteristic



Post compensated spool flow with variable displacement pumps

Variable displacement systems (JV): spools maximum delivered flow as function of pump ΔP setting



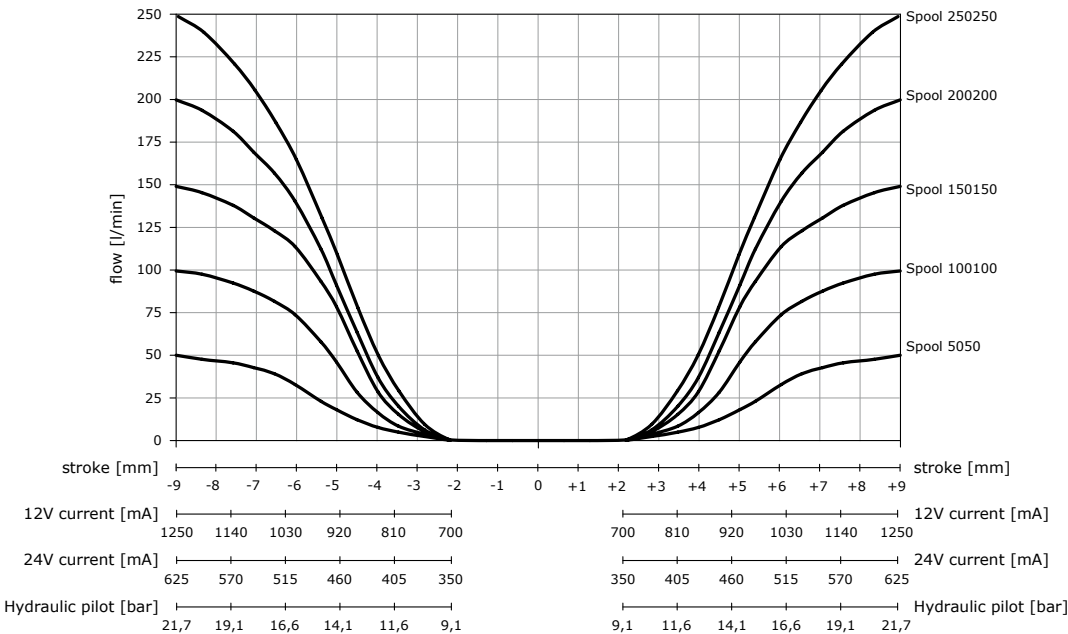
EX54 Series

Flow Sharing Valves

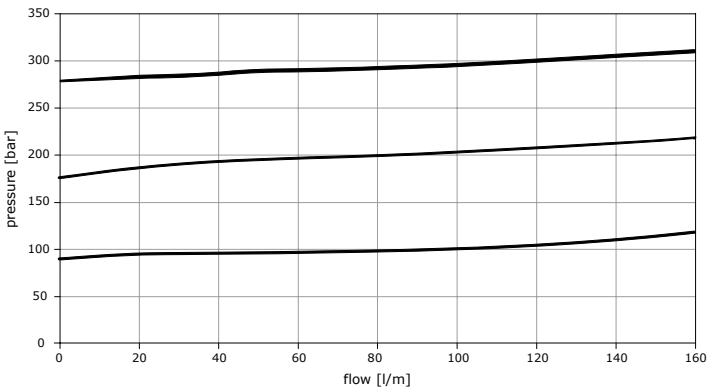


Post compensated spool flow characteristic

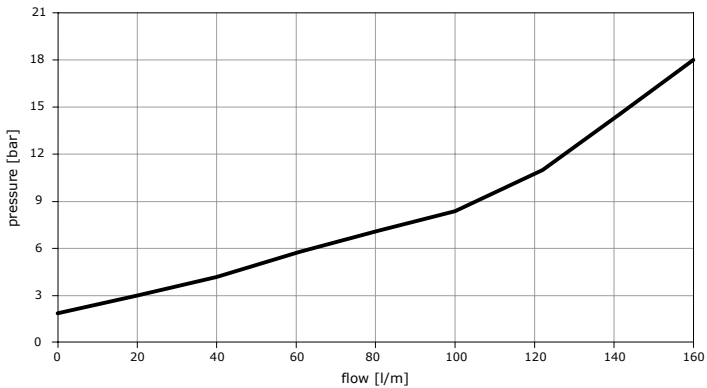
Fixed displacement systems (KV): flow on ports A and B as function of spool stroke, pilot pressure, control current
Inlet flow: 300 l/min - Pump inlet compensator at 16 bar Δp



Combined valves (antishock function) Pressure characteristic as function of flow



Combined valves (anticavitation function) Opening and pressure characteristic as function of flow



EX54 Series

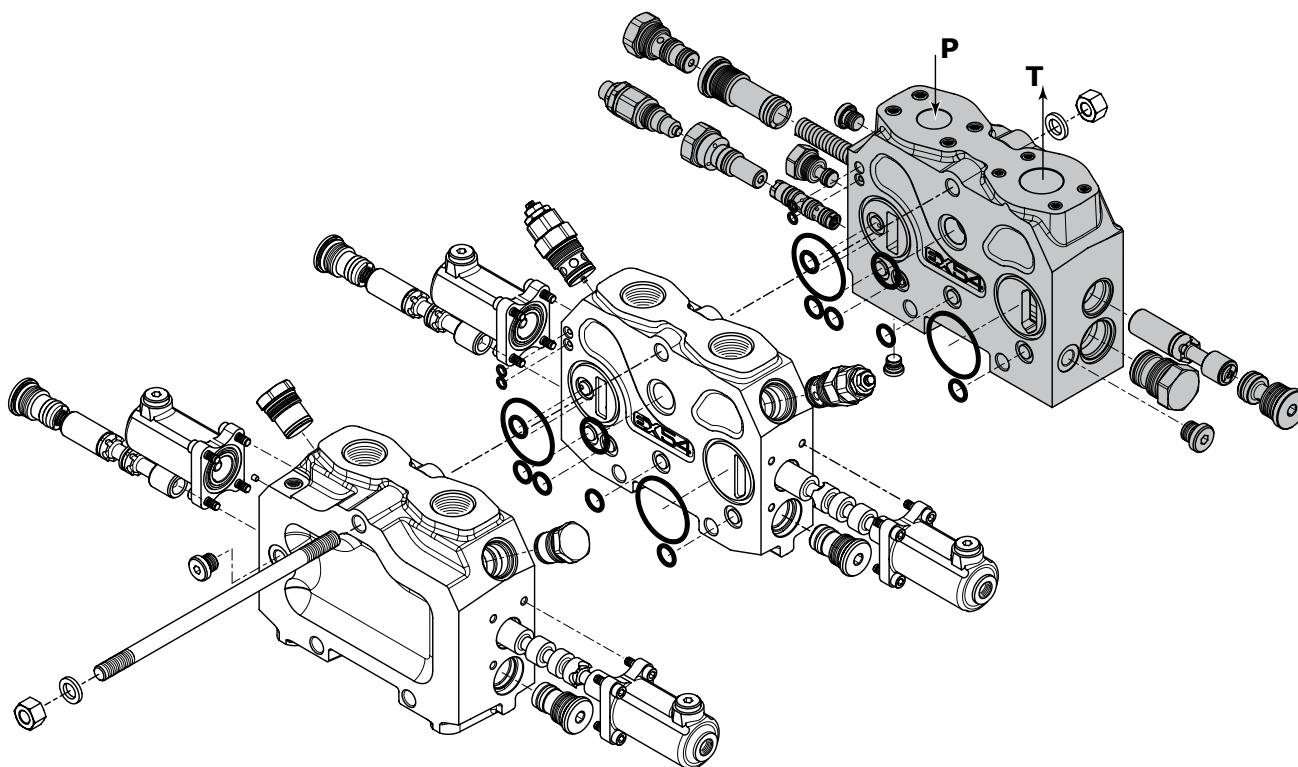
Flow Sharing Valves



INLET SECTION

Order example

	MR	inlet side	_____	MR 701 200 KV S35
1.	701	valve arrangement	_____	
	200	setting (bar)	_____	
2.	KV S35	inlet position and available thread type	_____	



INLET SIDE:

MR	Flow sharing valve with right inlet section
ML	Flow sharing valve with left inlet section

1. VALVE ARRANGEMENT: (standard combinations)

701	Inlet section with LS pressure relief valve
702	Inlet section with LS pressure relief valve and LS electric dump valve 12 Vdc
703	Inlet section with LS pressure relief valve and LS electric dump valve 24 Vdc
704	Inlet section with LS pressure relief valve and full flow electric dump valve 12 Vdc
705	Inlet section with LS pressure relief valve and full flow electric dump valve 24 Vdc

2. INLET CLASSIFICATION:

KV S35	Open centre inlet section for fixed displacement pumps (SAE 6000 1"MA)
JV S35	Closed centre inlet section for variable displacement pumps (SAE 6000 1"MA)

NOTE: when ordering a relief valve it is necessary to specify factory setting (example 200 bar).

EX54 Series

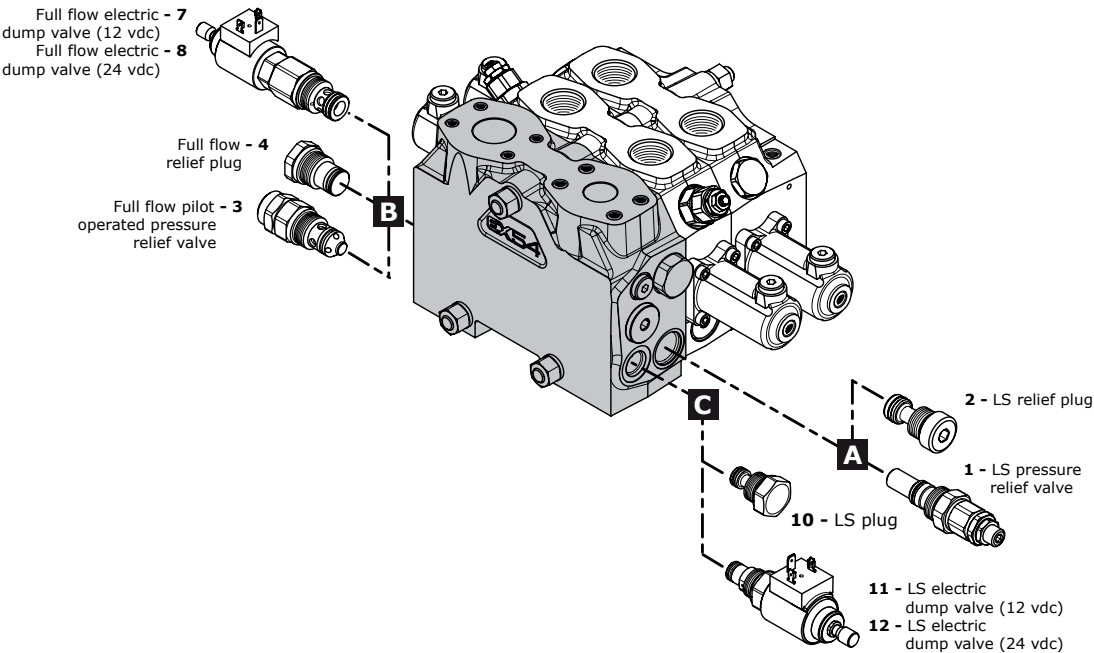
Flow Sharing Valves



Inlet side classification

Flow sharing valve with right inlet section		Flow sharing valve with left inlet section	
MR		ML	

Valve identification



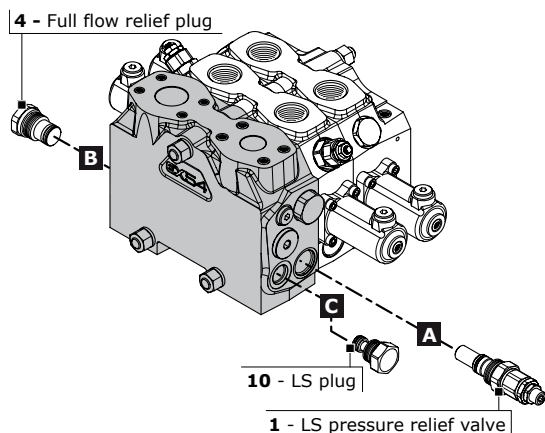
type	scheme	layout	description	type	scheme	layout	description
1			LS pressure relief valve	7			Full flow electric dump valve (12 vdc)
				8			Full flow electric dump valve (24 vdc)
2			LS relief plug	10			LS plug
3			Full flow pilot operated pressure relief valve	11			LS electric dump valve (12 vdc)
4			Full flow relief plug	12			LS electric dump valve (24 vdc)

EX54 Series

Flow Sharing Valves



Valve arrangement



Valve combination example: 701 = 1A - 4B - 10C

- 701** Valve combination _____
1A LS pressure relief valve in port A _____
4B Full flow relief plug in port B _____
10C LS plug in port C _____

The code identifies:

with a number, the type of valve; with a letter its position on the inlet section.

NOTE: when ordering a combination type 701, 702, 703, 704 and 705 it is necessary to specify pressure setting.

VALVE COMBINATION INLET SECTION	Port - A		Port - B				Port - C		
	1	2	3	4	7	8	10	11	12
700	•		•				•		
701	•			•			•		
702	•			•				•	
703	•			•					•
704	•				•		•		
705	•					•	•		
706		•		•			•		
707		•		•				•	
708		•		•					•
709		•			•		•		
710		•				•	•		

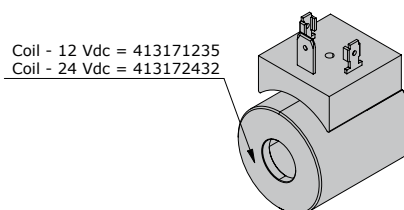
NOTE: Valve combination 700 requires minimum 40 bar difference in setting of full flow and LS relief valves (see example).

MR **700 200*240** KV G05

- 700** valve combination _____
200 setting (bar); LS pressure relief valve _____
240 setting (bar); Full flow pilot operated pressure relief valve _____

Dump valve coil specifications

GENERAL AND TECHNICAL SPECIFICATIONS		
Ordering code	413171235	413172432
Supply voltage (Vdc)	12	24
Coil resistance R ₂₀ (Ω)	7	28
Connector	DIN 43650 / ISO 4400	
Connector material	Nylon	
Coil Body	Zinc plated steel	
	ED 100%	
	Class H coil as from IEC 85 standard	
	Class H wire (200°C)	



NOTE: mating connector for DIN 43650 can be ordered separately with code 413000313.
Different connector available on request.

EX54 Series

Flow Sharing Valves



Inlet classification

Inlet combination and thread available			
KV g07			Open centre inlet section for fixed displacement pumps
KV U07			
KV S35			
KV S36			
The inlet section with KV configuration enables control valve usage with fixed displacement pumps. With this configuration the presence of LS relief valve (valve type 1) is suitable to adjust the system maximum pressure. Full flow electric dump valve (valve type 7, 8) can also be added as safety device.			
JV G07			Closed centre inlet section for variable displacement pumps
JV U07			
JV S35			
JV S36			
The inlet section with JV configuration enables control valve usage with variable displacement pumps. With this configuration the presence of LS relief valve (valve type 1) is suitable to adjust the system maximum pressure. LS electric dump valve (valve type 11, 12) can also be added as safety device. An additional full flow relief valve (valve type 3) can be added to protect the system from pump regulator failures. Additional solution for variable displacement pumps is available on request to allow a constant reduced free flow in stand by condition through the system: this is sometime required to guarantee a stand by flow for oil cooling.			

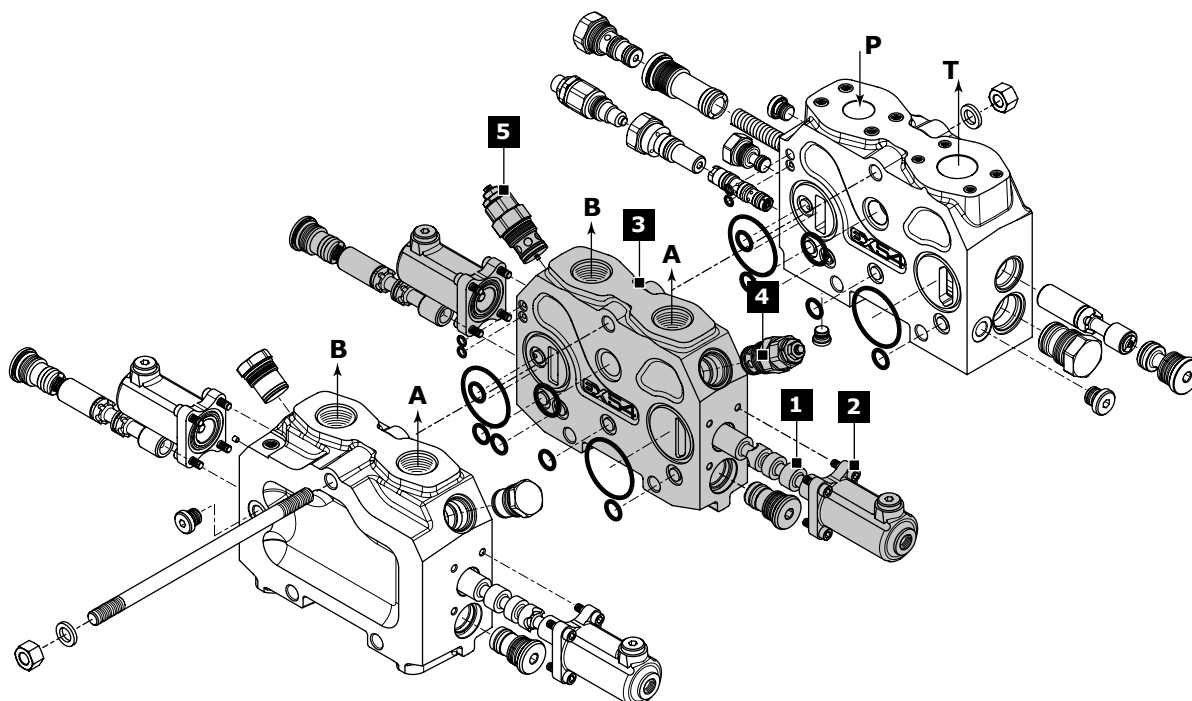
NOTE: transformation of the inlet section from closed center to open center and vice versa is possible by ordering the appropriate kit 320098006 or 320098007.

Flow Sharing Valves



W001C 5050 H005C RC1 G06 04 PA 350 04 PB 350

- | | | | |
|----|------------------|--|-------|
| 1. | W001C | spool type | _____ |
| | 5050 | spool flow | _____ |
| 2. | H005C | spool actuation type | _____ |
| 3. | RC1 | section type | _____ |
| | G06 | thread type | _____ |
| 4. | 04 PA 350 | auxiliary valve type (port A - handle side) | _____ |
| 5. | 04 PB 350 | auxiliary valve type (port B - end cap side) | _____ |



01 PA (120) - 01 PB (120) - 04 PA (180) - 04 PB (180)

EX54 Series

Flow Sharing Valves



Spool identification

W001C		W102C	
3 positions double-acting		3 positions double-acting A and B to tank (motor spool)	

Spool flow

Flow rates delivered to the A and B ports are identified in following table. Rated flows refer to simmetrical spools.

Spool type	flow rates (l/min)				
	50	100	150	200	250
W001C	•	•	•	•	•
W102C	•	•	•	•	•

Classification spool example

		W001C - 5050
W001C	3 positions double-acting	
50	Flow on port A	
50	Flow on port B	

NOTE:

- not simmetric spools (such as 50100, 150200...) are available on request; for availability we suggest to contact our Sales department.
- rated flows are defined for 16 bar ΔP (as per KV inlet arrangement); for different ΔP values on variable pump systems, refer to diagram (Post compensated spool flow with variable displacement pumps).

Spool actuation classification for hydraulic control

code	description	dimensions	configuration
H005A	Hydraulic actuation (pilot ports on the top) (only with hydraulic section body)		
		Port pilot: 1/4" BSP - 9/16" UNF	
H005C	Hydraulic actuation (pilot ports on the sides) (only with hydraulic section body)		
		Port pilot: 1/4" BSP - 9/16" UNF	
H005L	Hydraulic actuation with stroke limiter (only with hydraulic section body)		
		Port pilot: 1/4" BSP - 9/16" UNF	

NOTE:

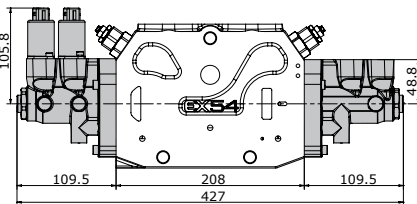
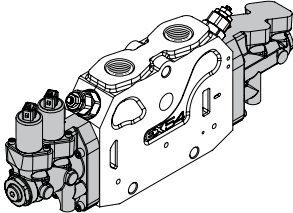
Recommended control curve for HC Remote Control: A01 for standard spool.

EX54 Series

Flow Sharing Valves



Spool actuation classification for Electrohydraulic control

code	description	dimensions	configuration
H407	Without lever + electrohydraulic actuation (12 vdc)		
H408	Without lever + electrohydraulic actuation (24 vdc)		
H407L	Without lever + electrohydraulic actuation with stroke limiter (12 vdc)		
H408L	Without lever + electrohydraulic actuation with stroke limiter (24 vdc)		

PROPORTIONAL ELECTROHYDRAULIC SPECIFICATIONS		
Feeding reducing pressure (bar)	35	
Supply voltage (Vdc)	12	24
Coil resistance R ₂₀ (Ω)	4,7	20,8
ON-OFF control current (mA)	2500	1150
Proportional control current (mA)	600 - 1300	300 - 650
PWM frequency suggested (Hz)	70 - 90	
Connector	AMP Junior Power Timer	

NOTE: mating connector for AMP Junior Power Timer can be ordered separately with code 413000223 (including 2 m wire).

Different connector available on request.

EX54 Series

Flow Sharing Valves



Work section arrangement

Following pages are showing ordering code for post compensated section in their standard version and in combination with some specific applicable devices.

POST-COMPENSATED section standard

code	scheme	configuration	description
RC1 G06			POST COMPENSATED section Arranged for auxiliary valves
RC1 U06			
RC1 S03			
RC1 S04			

POST-COMPENSATED section with local LS relief valve

Another feature not commonly found in flow sharing systems is the possibility to have a Load Sensing relief valve on individual sections. The purpose to use a local LS relief instead of a standard port shock relief is to improve the efficiency of the system. When a standard port shock relief is used, the full flow across the relief will be directed to tank, if the pressure system exceeds the setting.

By using a local LS relief, only a very minimal part of oil will be directed to tank in the same condition, with great advantage for the system efficiency. Furthermore, by saving oil from going to tank, more oil will be available for simultaneous operations and this will improve the performance of the machine.

The pressure limitation generated by the local LS relief applies to both section ports, A and B.

The local pressure limitation works properly if the section is actuated alone or if the section is the most charged.

The local LS relief can be easily installed as a retrofit too.

code	scheme	configuration	description
RCD1 G06			POST COMPENSATED section with local Load Sensing relief valve Arranged for auxiliary valves
RCD1 U06			
RCD1 S03			
RCD1 S04			

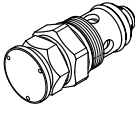
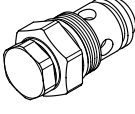
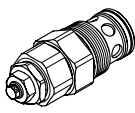
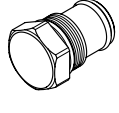
NOTE:
LS relief valve works on both ports; setting for A and B ports is the same.
LS relief valve setting must be specified as follow: RCD1 g 06 (120)

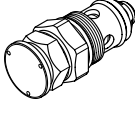
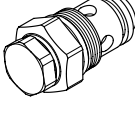
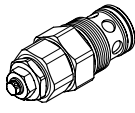
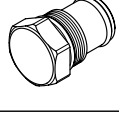
EX54 Series

Flow Sharing Valves



Auxiliary valve identification

code	description	scheme	configuration	setting range (bar)			
				type	at full flow	type	at min. flow
01 PA	Antishock valve (port A)			A	70 / 150	A	70-A / 120-A
				B	155 / 230	B	125-A / 200-A
				C	235 / 280	C	205-A / 250-A
				D	285 / 350	D	255-A / 350-A
02 PA	Anticavitation valve (port A)						
04 PA	Pilot combined valve (port A)			A	50 / 420	A	50-A / 420-A
05 PA	Prearrangement for auxiliary valve (port A)						

code	description	scheme	configuration	setting range (bar)			
				type	at full flow	type	at min. flow
01 PB	Antishock valve (port B)			A	70 / 150	A	70-A / 120-A
				B	155 / 230	B	125-A / 200-A
				C	235 / 280	C	205-A / 250-A
				D	285 / 350	D	255-A / 350-A
02 PB	Anticavitation valve (port B)						
04 PB	Pilot combined valve (port B)			A	50 / 420	A	50-A / 420-A
05 PB	Prearrangement for auxiliary valve (port B)						

Auxiliary valve - Setting range

Sections designed to house auxiliary valve option require double choice on work ports A and B.
Always indicate setting value when using antishock valve or pilot combined valve:

01 PA (120) = setting at full flow / 01 PA (120-A) = setting at min. flow

04 PA (120) = setting at full flow / 04 PA (120-A) = setting at min. flow

EX54 Series

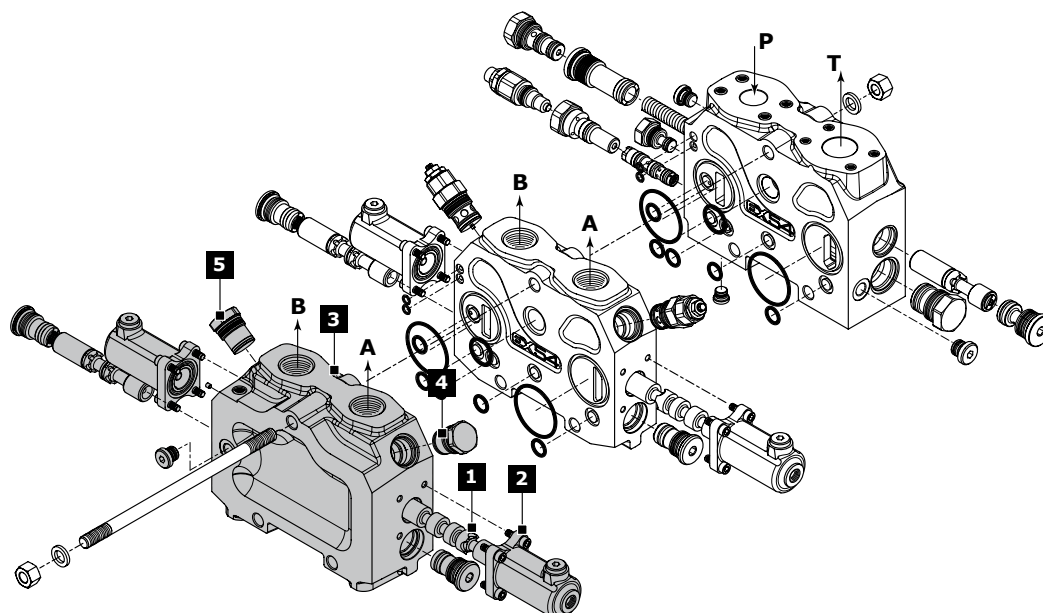
Flow Sharing Valves



Order example:

W001C 5050 H005C RCK1A G06 05 PA 05 PB

- | | | | |
|----|--------------|--|-------|
| 1. | W001C | spool type | _____ |
| | 5050 | spool flow | _____ |
| 2. | H005C | spool actuation type | _____ |
| 3. | RCK1A | integrated outlet section type | _____ |
| | G06 | thread type | _____ |
| 4. | 05 PA | auxiliary valve type (port A - handle side) | _____ |
| 5. | 05 PB | auxiliary valve type (port B - end cap side) | _____ |



1. SPOOL TYPE:

- W001C** 3 positions double-acting
W102C 3 positions double-acting A-B to tank (motor spool)

A 4 digit code identify the flow required on port A/B.

These flows are available: 50 - 100 - 150 - 200 - 250 l/min

Example : W001C - 100100

2. SPOOL ACTUATION TYPE:

- H005A** hydraulic actuation (pilot ports on the top)
H005C hydraulic actuation (pilot ports on the side)
H407 Without lever + electrohydraulic actuation 12 vdc
H408 Without lever + electrohydraulic actuation 24 vdc

3. SECTION TYPE:

- RCK1A G06** Integrated outlet section arranged for aux. valve (G 1)
RCK1A U06 Integrated outlet section arranged for aux. valve (1"5/16-12 UNF)
RCK1A S07 Integrated outlet section arranged for aux. valve (1"1/4 MA)
RCK1A S08 Integrated outlet section arranged for aux. valve (1"1/4 UNC)

4. AUXILIARY VALVE TYPE (PORT A)

- 01 PA** Antishock valve (port A)
02 PA Anticavitation valve (port A)
04 PA Pilot Combined valve (port A)
05 PA Prearrangement for auxiliary valve (port A)

5. AUXILIARY VALVE TYPE (PORT B)

- 01 PB** Antishock valve (port B)
02 PB Anticavitation valve (port B)
04 PB Pilot Combined valve (port B)
05 PB Prearrangement for auxiliary valve (port B)

NOTE: Sections designed to house auxiliary valve option require double choice on work ports A and B.
 Always indicate setting value when using setting auxiliary valve and pilot combined valve:

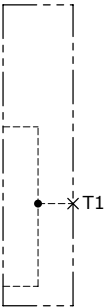
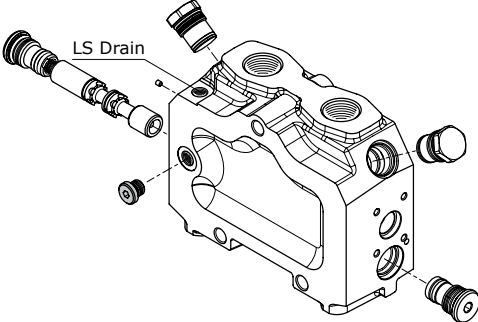
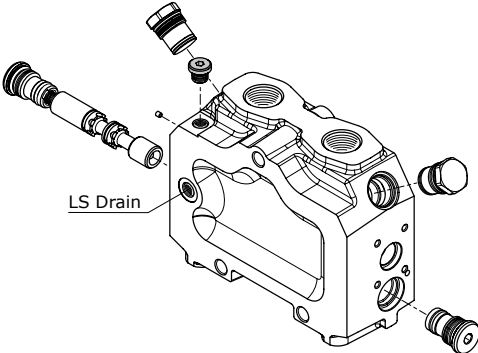
01 PA (120) - 01 PB (120) - 04 PA (180) - 04 PB (180)

EX54 Series

Flow Sharing Valves



Integrated outlet section arrangement

code	scheme	configuration	description
RCK1A G06			INTEGRATED OUTLET SECTION with LS drain - upper Arranged for auxiliary valves
RCK1A U06			
RCK1A S07			
RCK1A S08			
RCK1C G06			INTEGRATED OUTLET SECTION with LS drain - side Arranged for auxiliary valves
RCK1C U06			
RCK1C S07			
RCK1C S08			

EX54 Series

Flow Sharing Valves



Guidelines

- Mount the control valve securely to a flat surface (recommended 3 point fixing); at the time do not use a hammer to positioning by hitting.
- When handling the control valve, be careful not hold the pilot cover or return spring cap of the spool or accessory valves such as main relief valves and anti-shock relief valves.
- Clean piping materials sufficiently before use.
- Make sure to prevent the port openings from being entered with dust or foreign matters.
- Tighten the port connectors surely with the recommended fastening torques.
- Do not direct the jet of a pressure washing unit directly to the valve.

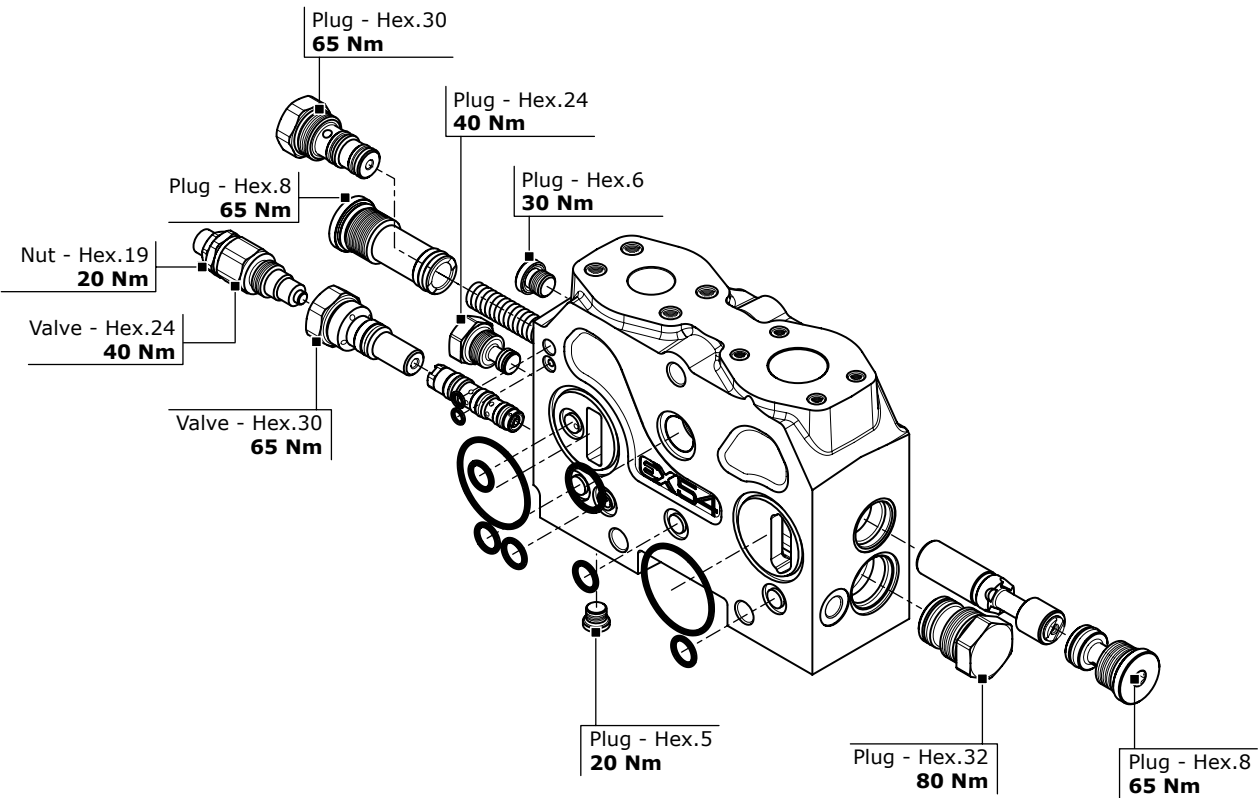
Fittings tightening torque (Nm)

thread type	port P	Port A - B	Port T
BSP (ISO - 228)	g 1"1/4	g 1	g 1"1/4
with rubber sealing (DIN 3869)	120	120	120
with copper or steel and rubber washer	120	120	120
UN-UNF (ISO - 725)	1"5/8 - 12 UNF	1"5/16 - 12 UNF	1"5/8 - 12 UNF
with O.R.	120	120	120

General clamping torque

The following table provides the main tightening torques of the distributor HC-EX54; are highlighted in 3 separate drawings depicting the inlet section, the working section and the integrated outlet section.

Inlet Section

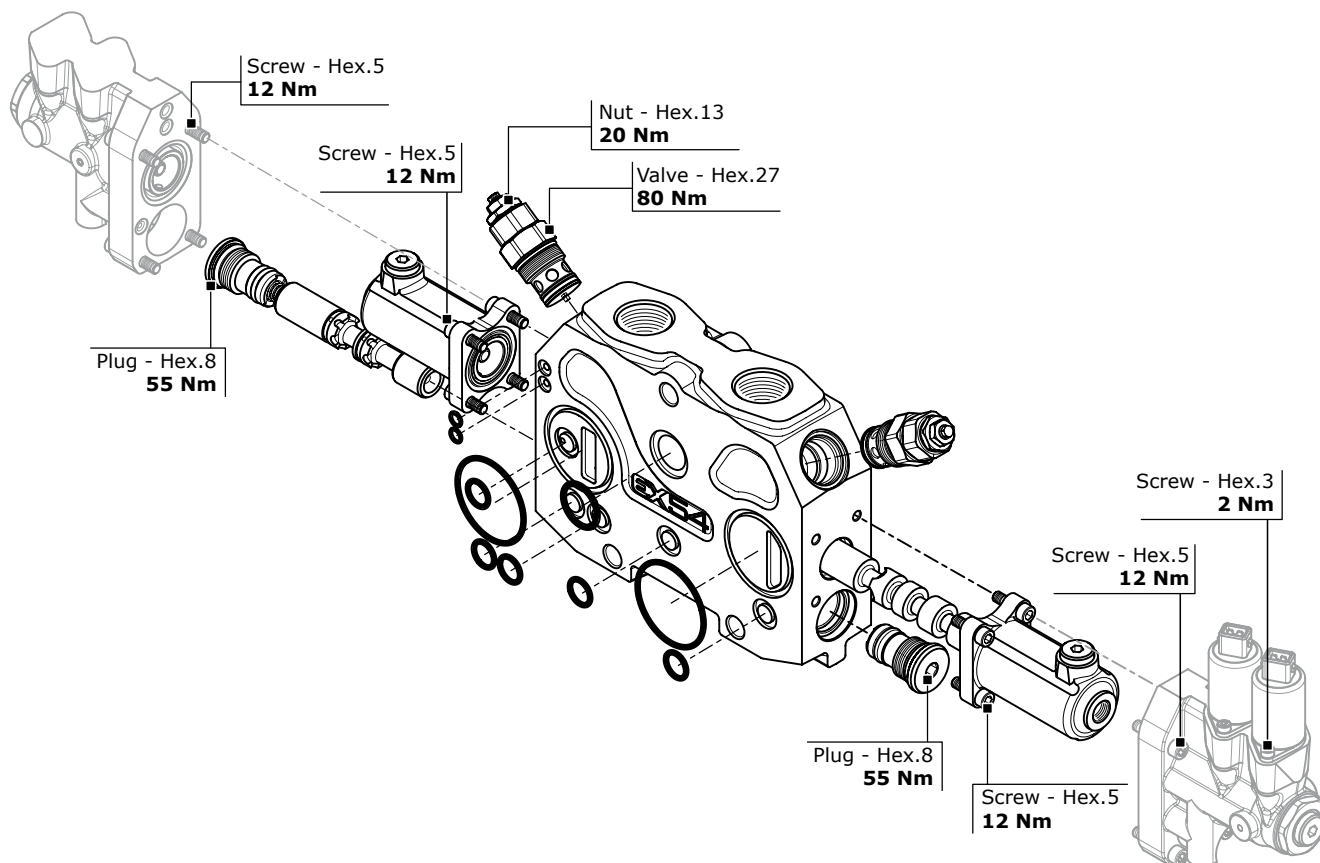


EX54 Series

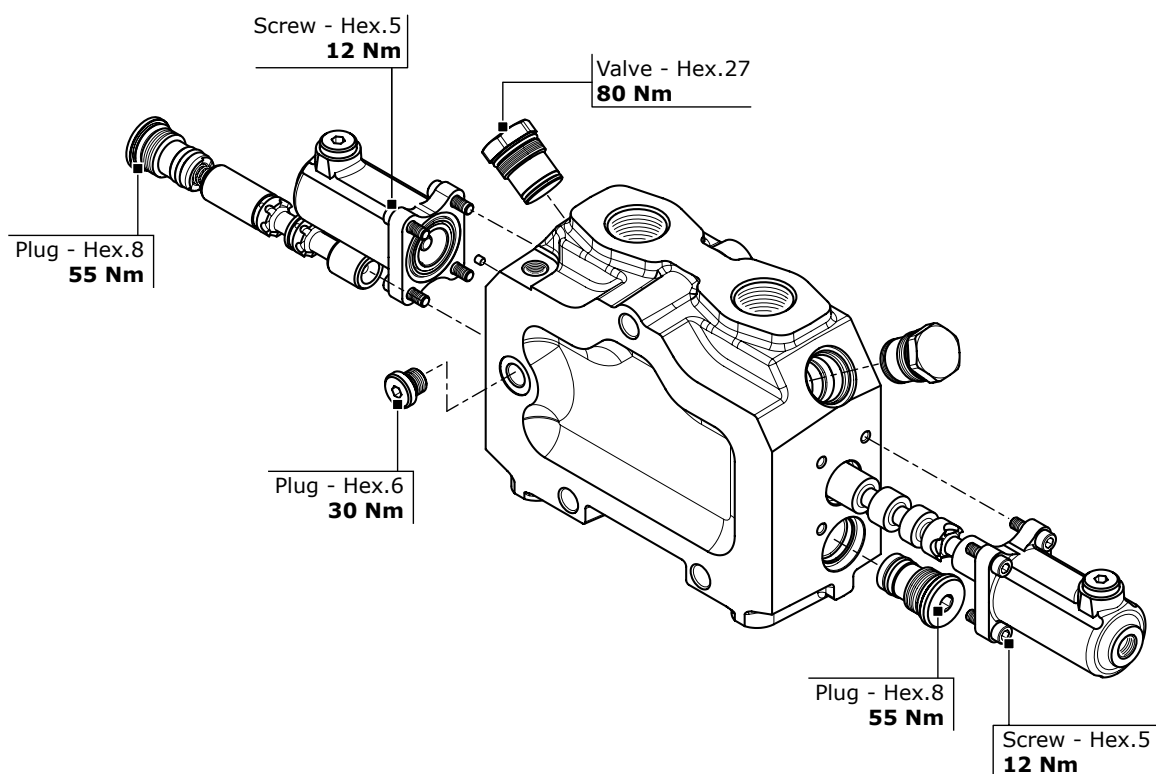
Flow Sharing Valves



Work Section



Integrated Outlet Section



EX54 Series

Flow Sharing Valves



Dimensions - Thread codes

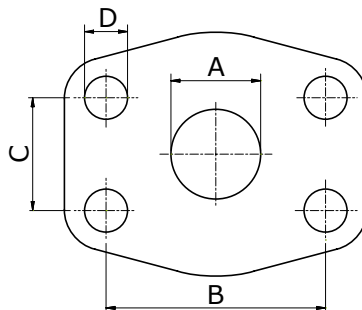
The connection ports size is indicated by an ordering code common for all Hydrocontrol products. Following table shows all available connections.

METRIC THREAD (ISO 9974-1)												
Type	M18x1,5	M22x1,5	M27x2									
Code	M01	M02	M03									

BSP THREAD (ISO 1179-1)												
Type	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"				
Code	G02	G03	G04	G05	G06	G07	G08	G09				

UN / UNF THREAD (ISO 11926-1)							
Type	9/16" 18 UNF SAE6	3/4" 16 UNF SAE8	7/8" 14 UNF SAE10	1 1/16 12 UNF SAE12	1 5/16 12 UNF SAE16	1 5/8 12 UNF SAE20	
Code	U02	U03	U04	U05	U06	U07	

Dimensions - SAE Flange codes



SAE / 3000 FLANGE (ISO 6162-1)												
Type	3/4" (MA)	3/4" (UNC)	1" (MA)	1" (UNC)	1 1/4" (MA)	1 1/4" (UNC)	1 1/2" (MA)	1 1/2" (UNC)	2" (MA)	2" (UNC)	3" (MA)	3" (UNC)
Code	S03	S04	S05	S06	S07	S08	S09	S10	S11	S12	S15	S16
A	19	19	25	25	32	32	38	38	51	51	76	76
B	47,6	47,6	52,4	52,4	58,7	58,7	69,9	69,9	77,8	77,8	106,4	106,4
C	22,3	22,3	26,2	26,2	30,2	30,2	35,7	35,7	42,9	42,9	61,9	61,9
D	M10	3/8-16	M10	3/8-16	M10	7/16-14	M12	1/2-13	M12	1/2-13	M16	5/8-11

SAE / 6000 FLANGE (ISO 6162-2)												
Type	3/4" (MA)	3/4" (UNC)	1" (MA)	1" (UNC)	1 1/4" (MA)	1 1/4" (UNC)	1 1/2" (MA)	1 1/2" (UNC)				
Code	S33	S34	S35	S36	S37	S38	S39	S40				
A	19	19	25	25	32	32	38	38				
B	50,8	50,8	57,2	57,2	66,6	66,6	79,3	79,3				
C	23,8	23,8	27,8	27,8	31,8	31,8	36,5	36,5				
D	M10	3/8-16	M12	7/16-14	M14	1/2-13	M16	5/8-11				