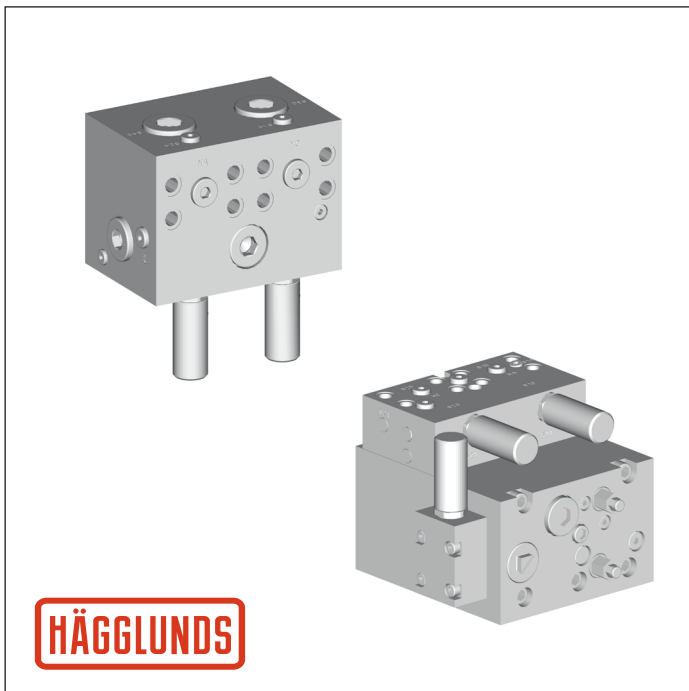


Cross-over valve Häggglunds COCB 500, COCB 1000 Includes valves for ATEX environment



- ▶ Valid for : Häggglunds motor CA, CB, CBm
- ▶ Maximum flow 500 / 1000 l/min (132 / 264 gpm)
- ▶ Maximum pressure 350 bar (5076 psi)
- ▶ Open and closed loop hydraulic system

Features

- ▶ Compact and robust design
- ▶ Mounted directly on Häggglunds motors
- ▶ Oil exchange system for closed loop (COCB 1000-3)
- ▶ Protects the motor from high pressure peaks
- ▶ Provides cavitation protection

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1 Preface

1.1 Safety messages




This documentation includes safety messages placed before sequential operating procedures that may involve the risk of personal or property damage. The described precautionary measures must be observed.

Safety messages are structured as shown below:

 SIGNAL WORD	
Type and source of risk	Consequences if disregarded
	▶ Precautionary measures
	▶ <listing>

Warning sign:	Draws attention to the risk
Signal word:	Identifies the hazard level
Type and source of risk:	Identifies the type and source of the hazard
Consequences:	Describes what occurs when the safety messages are not complied with
Precautions:	Indicates how the hazard can be avoided

The signal words have the following meaning:

Warning sign, signal word	Meaning
 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates potential property damage: the product or the environment may be damaged.

2 Ordering code

In order to identify Häggglunds equipment exactly, the following ordering code is used. These ordering codes should be stated in full in all correspondence e.g. when ordering spare parts.

Example:

COC	B	1000	300	1	0	00	00
01	02	03	04	05	06	07	08

01	Cross over valve	COC
02	Version	B
03	Maximum flow (l/min)	
	500 (132 gpm)	0500
	1000 (264 gpm)	1000
04	Main pressure relief settings	
	280 bar (4061 psi)	280
	300 bar (4351 psi)	300
	330 bar (4786 psi)	330
	350 bar (5076 psi)	350
05	Type of valve	
	Cross-over valve	1
	Cross-over valve with Oil exchange system (only for 1000 l/min, charge pressure 15 bar (264 gpm, 218 psi))	3
06	Explosive environment	
	Non explosive environment	0
	Explosive environment	1
07	Modification	00
08	Design	
	Standard	00
	Special index	01-99

Note! Mounting the valve on CBm, an adapter must be ordered separately, see 7.2.2 *Fitting the valve on Häggglunds CBm page 14*

3 Functional description

General

The cross over valve COCB is designed for use with Hägglunds CA, CB and CBm motors and provides cross line relief and cavitation protection. The valve is suitable for open and closed hydraulic loop system and is normally mounted on the opposite side to the main flow.

The pressure relief cartridge ensures protection of the motor from pressure shock. These relief valves have a standard setting of 350 bar (5076 psi) but can be delivered with preset level 280 bar (4061 psi), 300 bar (4351 psi) and 330 bar (4786 psi) .

Full flow anti-cavitation check valves protect the motor and also allow the application of external charge pressure.

For use in closed loop application a oil exchange system is available. Oil exchange of the closed loop system during operation is achieved via the main cartridge and charge pressure relief valve in the oil exchange system.

The charge pressure relief valve has a standard setting of 15 bar (218 psi) but is adjustable down to 3 bar (44 psi).

Two main valve configurations

COCB 500-1, COCB 1000-1	Cross- over valve
COCB 1000-3	Cross-over valve with oil exchange system



The pressure settings of the cross over valves are dependent of the back pressure, possible charge pressure in S-line. The charge pressure in S-line will be added to the pressure setting of the pilot valves means that the opening pressure will be additional higher than the main pressure relief settings.

Function

The cartridges within the cross-over valve are mounted in a manifold block and retained by screws on covers with all connections to create the valve function within the block.

The main cartridges (610) and (620) are controlled by the pilot valves (611) and (621). If the pressure in either motor line, (Am) or (Cm) rises to the pilot valve setting the corresponding main cartridge (610) or (620) will open and flow will pass through the check valve (630) or (640) and into the other motor line thus relieving the over pressure.

There is no flow through this valve except when relieving.

When there is back pressure in the system it has to be added to the settings of the main relief valve setting.

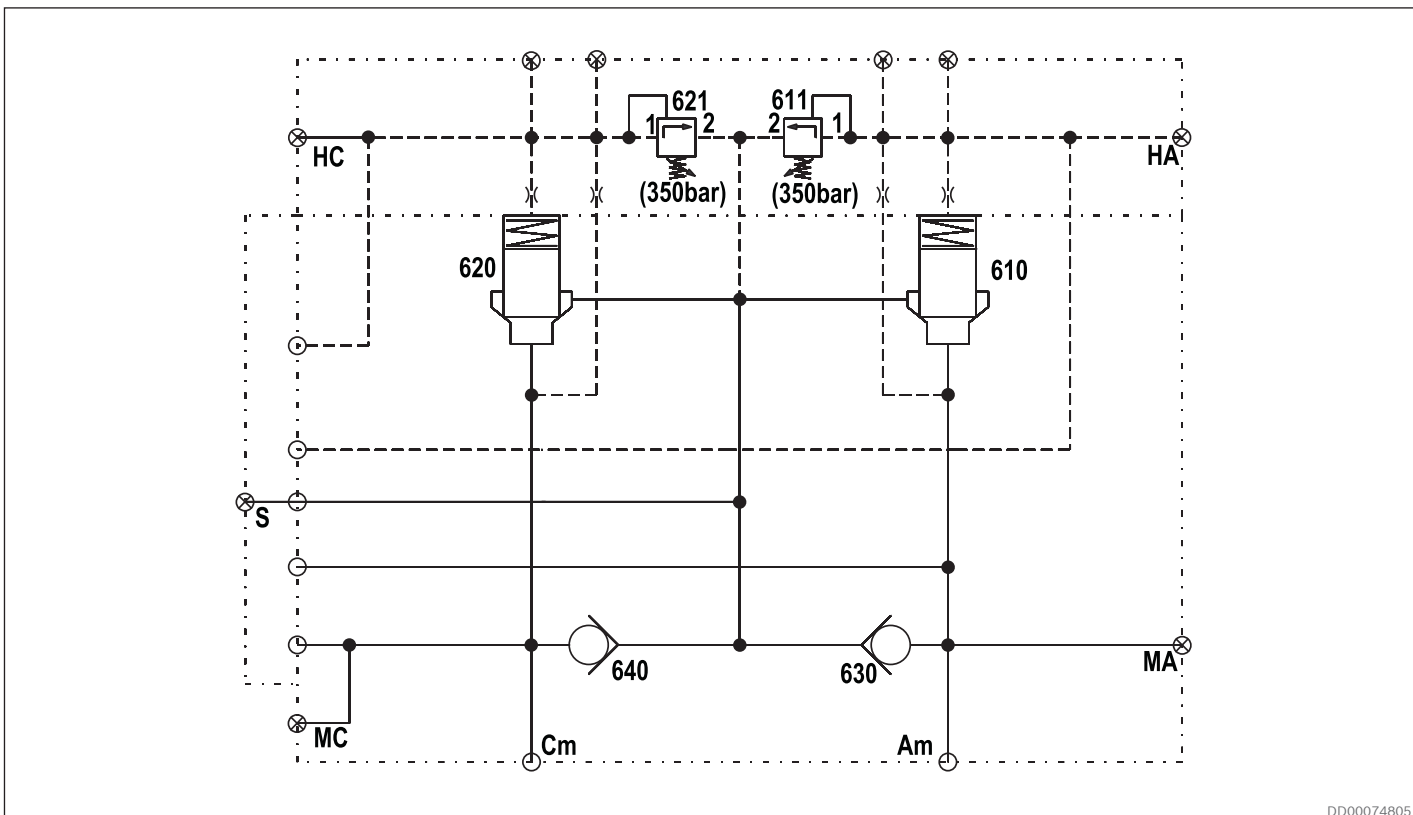
The pressure setting of the main relief cartridges should always be higher than the pump relief valve setting.

On the basic valve COCB 500-1, 1000-1, an external charge pressure can be applied to port S. The charge pressure will appear in both motor lines through the anti-cavitation check valves (630) and (640).

The pressure settings of the cross over valves are dependent of the back pressure, possible charge pressure in S-line. The charge pressure in S-line will be added to the pressure setting of the pilot valves means that the opening pressure will be additional higher than the main pressure relief settings.

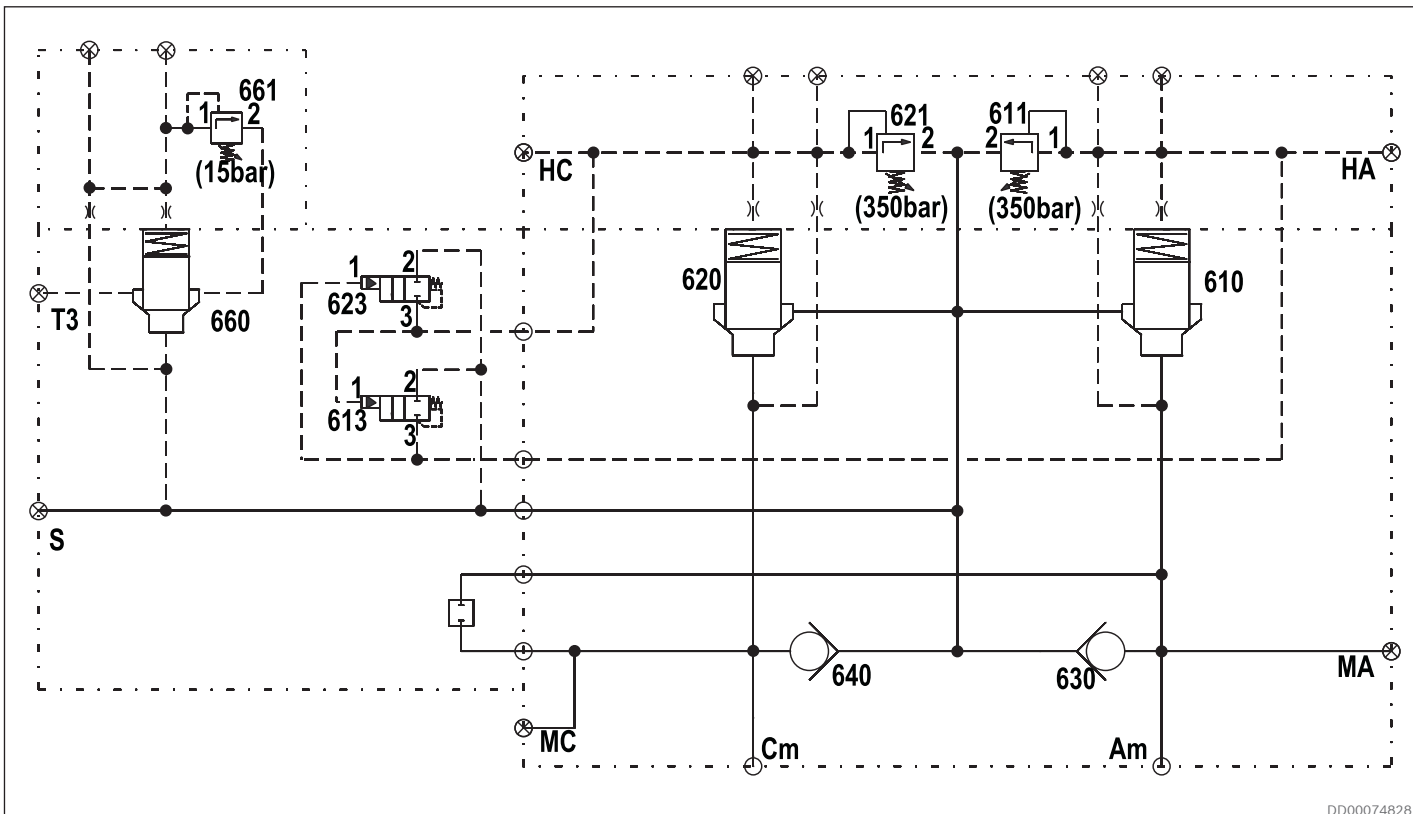
The valve can also be supplied with a screw-on block which carries the oil exchange system, COCB 1000-3. This function is particularly suitable for closed loop systems.

The charge pressure is applied to the motor lines at the pump and the selector valves (613) and (623) select to flush the oil in the low pressure line through the corresponding main cartridge (610) or (620) to the charge pressure relief valve (660) and to port T3. This function requires S to be plugged. The charge pressure relief valve (660) has a standard setting of 15 bar (218 psi)but can be reduced down to 3 bar , ¼ turn on the adjustment screw change the setting with 3 bar(44 psi)



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Fig. 1: Hydraulic circuit COCB 500-1, COCB 1000-1



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Fig. 2: Hydraulic circuit COCB 1000-3

4 Technical data

Table 1: General data

		Metric	US
Maximum operating pressure		350 bar	5 076 psi
Default charge pressure setting		15 bar	218 psi
Adjustment range for charge pressure relief valve 660 / 661			44 min to 218 max
¼ turn counter clockwise decreases pressure by 3 bar (44 psi)		3 min to 15 max bar	psi
Maximum flow	COCB 500-1 (see Fig. 3 and Fig. 4)	500 l/min	132 gpm
	COCB 1000-1, COCB 1000-3 (see Fig. 5, Fig. 6, and Fig. 7)	1 000 l/min	264 gpm
Hydraulic fluid (see data sheet RE 15414 Hydraulic fluid quick reference)			
Maximum fluid temperature		+70 °C	+158 °F
Minimum fluid temperature		-25 °C	-13 °F
Maximum viscosity range		380 cSt	1760 SSU
Minimum viscosity range		20 cSt	98 SSU
Recommended operating viscosity		40 cSt	187 SSU
Weights			
Cross-over valve	COCB 500-1	25 kg	55 lb
Cross-over valve	COCB 1000-1	30 kg	66 lb
Cross-over valve with oil exchange system	COCB 1000-3	35 kg	77 lb
Surface protection			
Standard Painting System		SS-EN ISO 12944 C3, durability range M (Std colour RAL 2002)	

Table 2: Explosion protection information, ATEX

Area of application according to ATEX directive 2014/34/EU	IM2, II2G, II2D, II3G, II3D
Protection of the valve by liquid immersion and constructional safety according to	EX h (EN ISO 80079-37:2016)
Maximum surface temperature	+ 135 °C (+275 °F)
Temperature class	T4
Conforms to "Equipment and components intended for use in potentially explosive atmospheres and in underground mines"	EN ISO/IEC 80079-38:2016
ATEX Classification of valve	II 2G Ex h IIC T4 Gb II 2G Ex h IIIC T135 °C Db I M2 Ex h I Mb
Ambient temperature range	-20.....+40 °C (-4.....+104 °F)

5 Pressure loss diagram

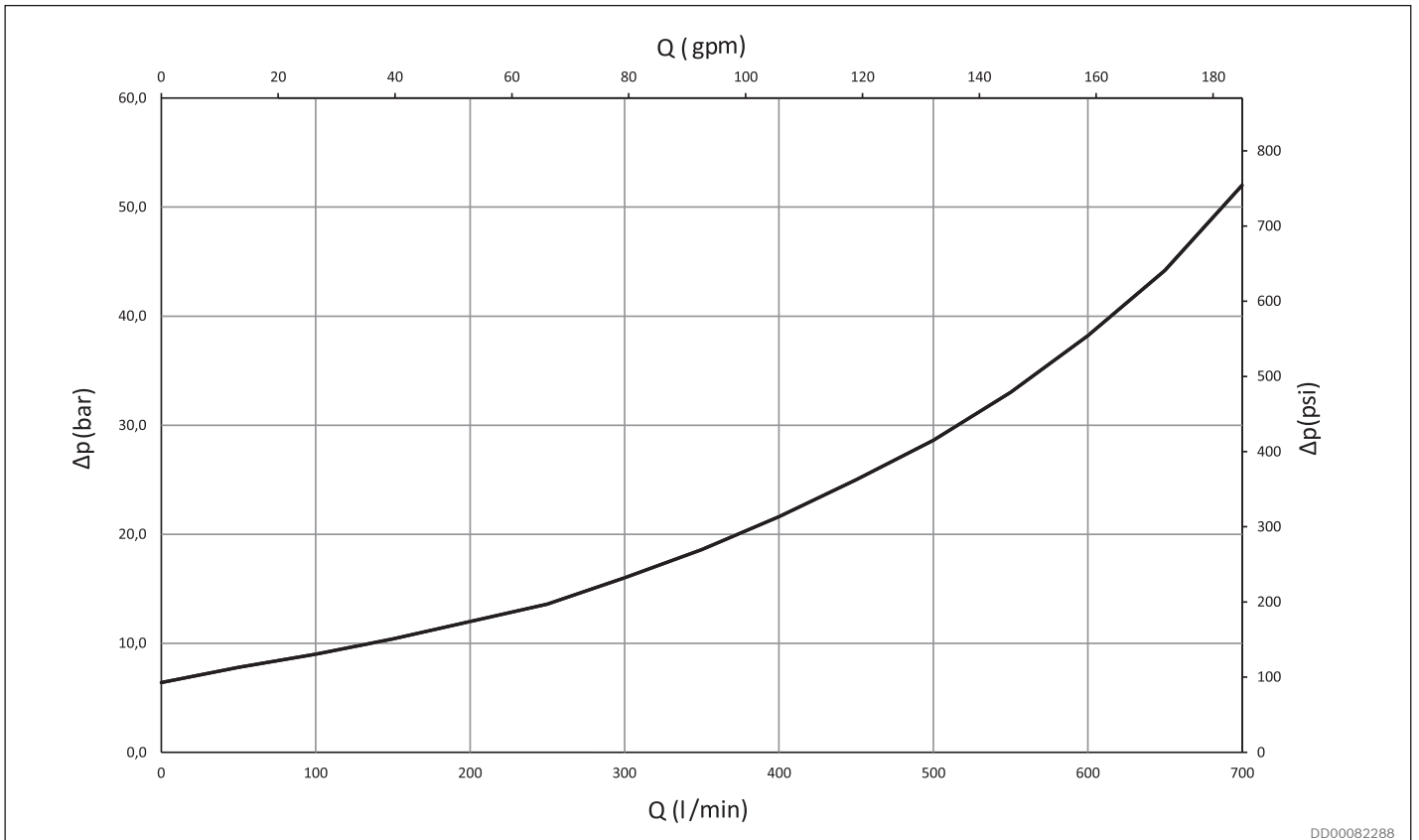


Fig. 3: Pressure loss Diagram COCB 500, Am to Cm, Cm to Am (additive to pressure setting of valve) Viscosity 40cSt/187 SSU

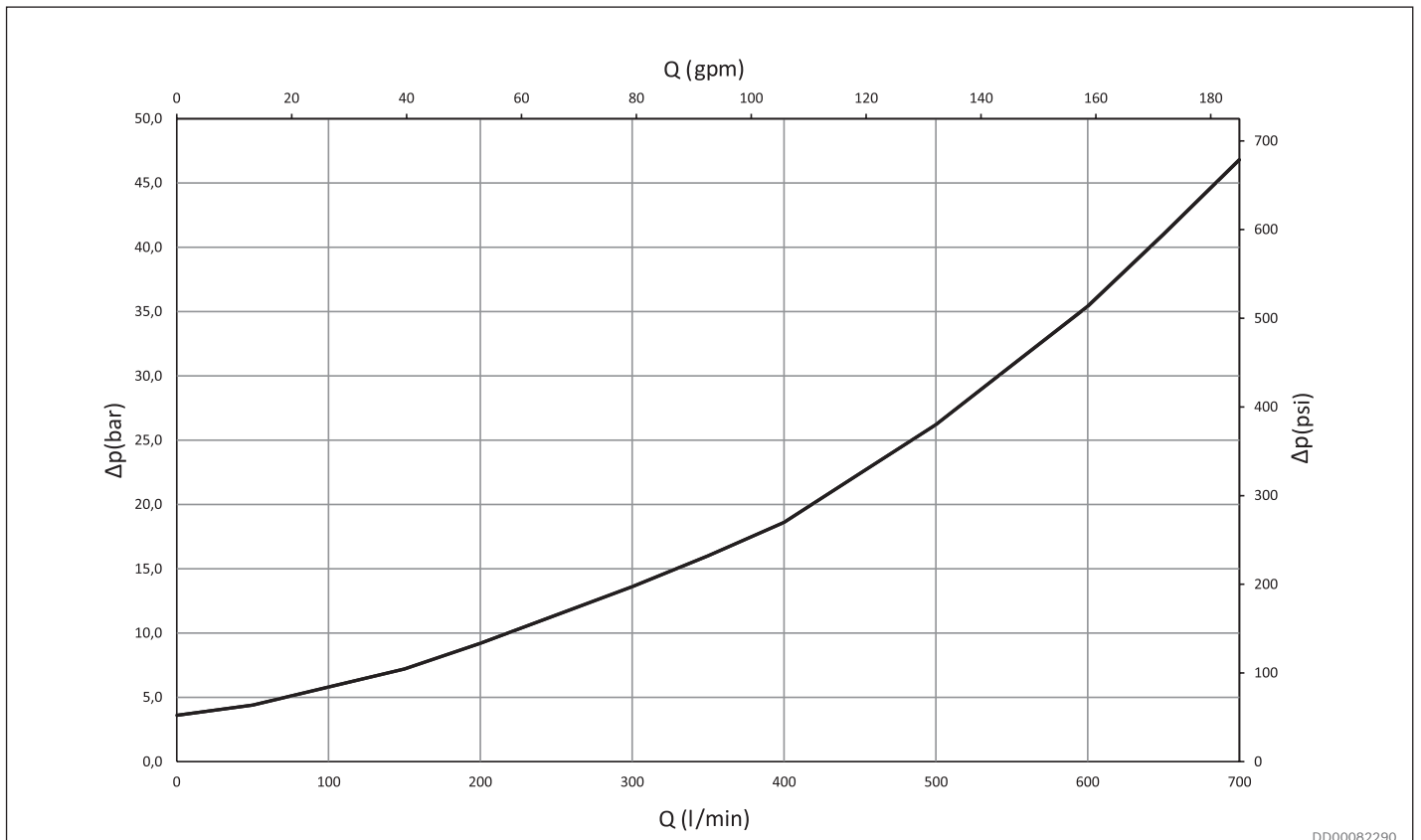


Fig. 4: Pressure loss Diagram COCB 500, S to Am, S to Cm (over check valves) Viscosity 40cSt/187 SSU

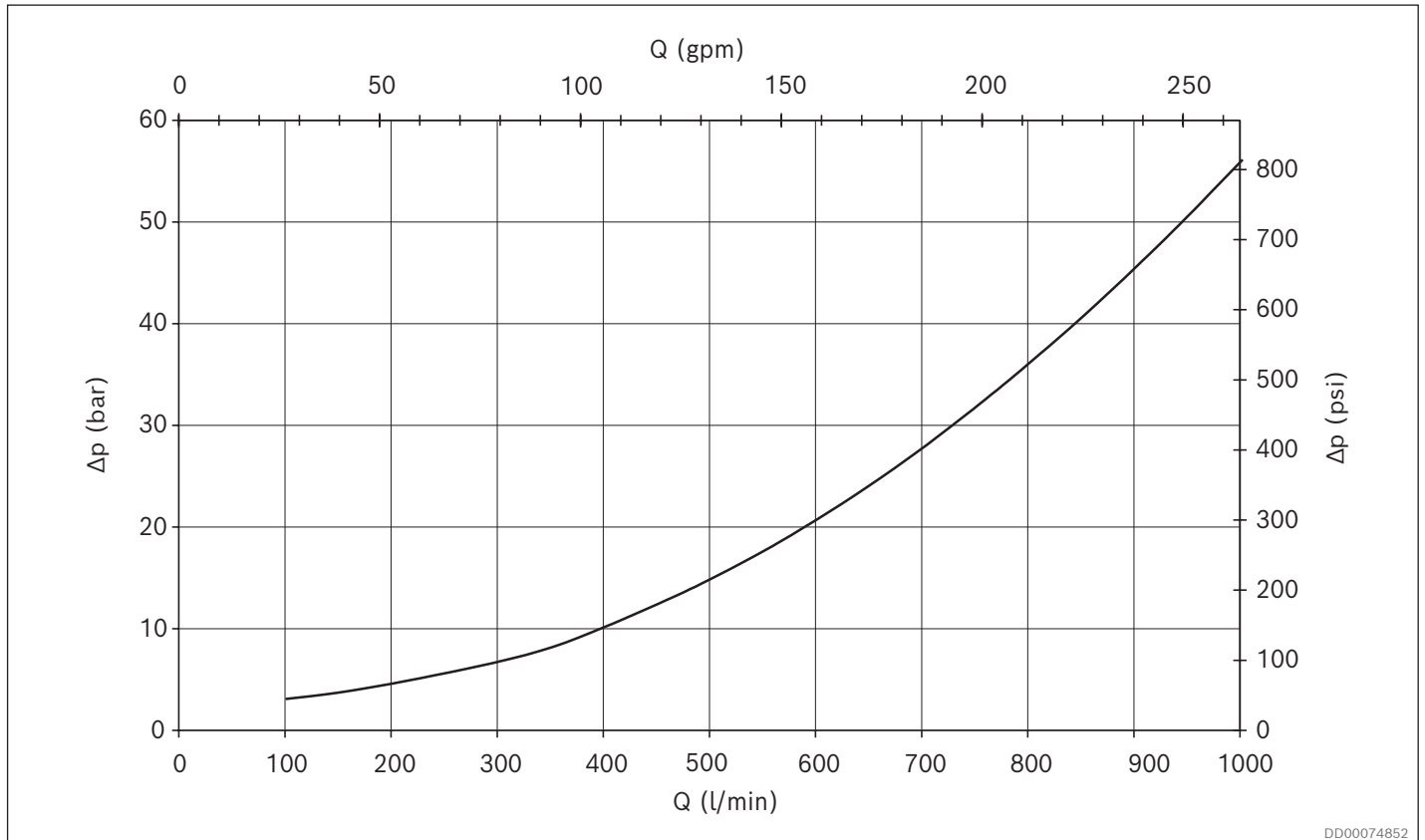


Fig. 5: Pressure loss Diagram COCB 1000-1, Am to Cm, Cm to Am (additive to pressure setting of valve) Viscosity 40cSt/187 SSU

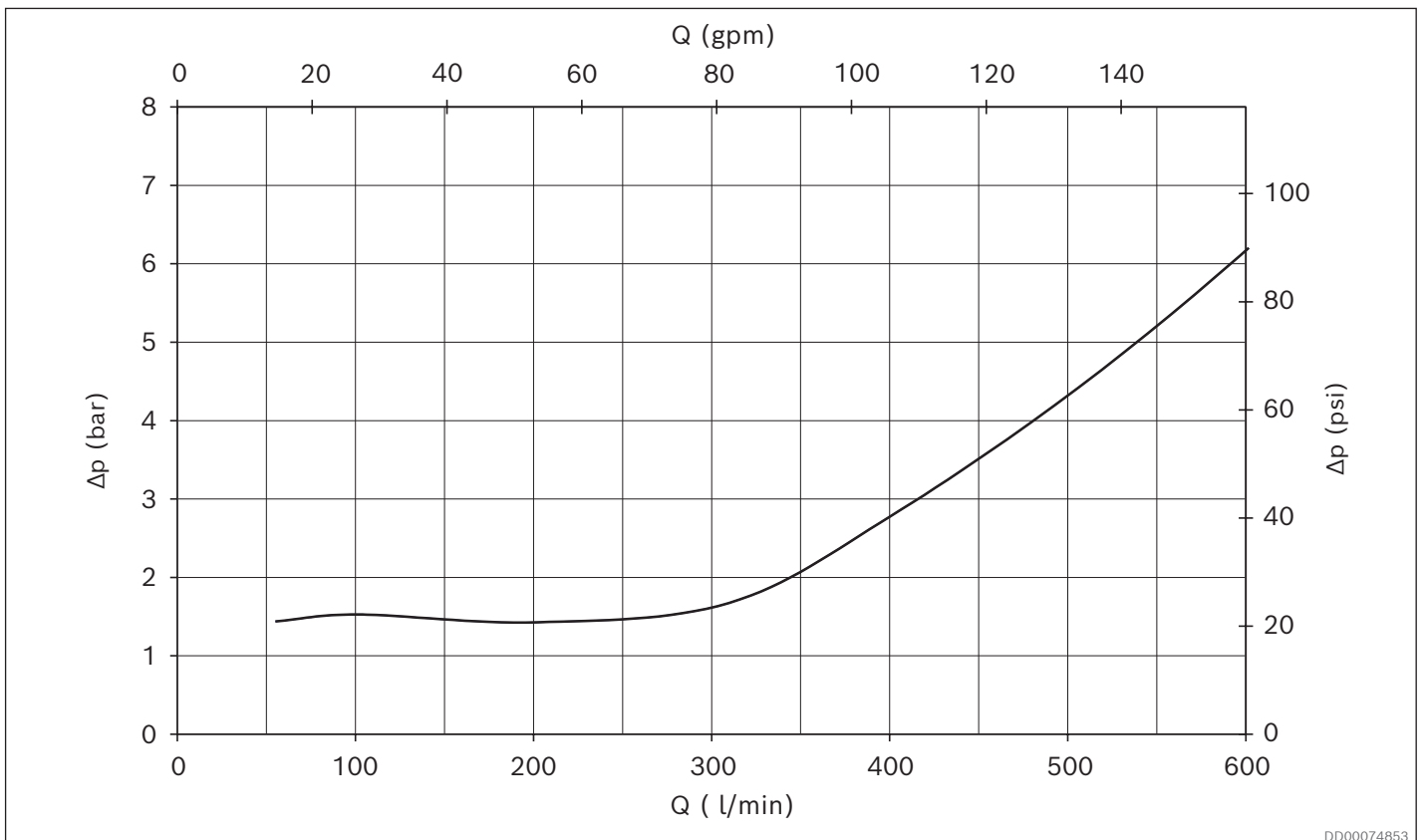


Fig. 6: Pressure loss Diagram COCB 1000-1, S to Am, S to Cm (over check valves) Viscosity 40cSt/187 SSU

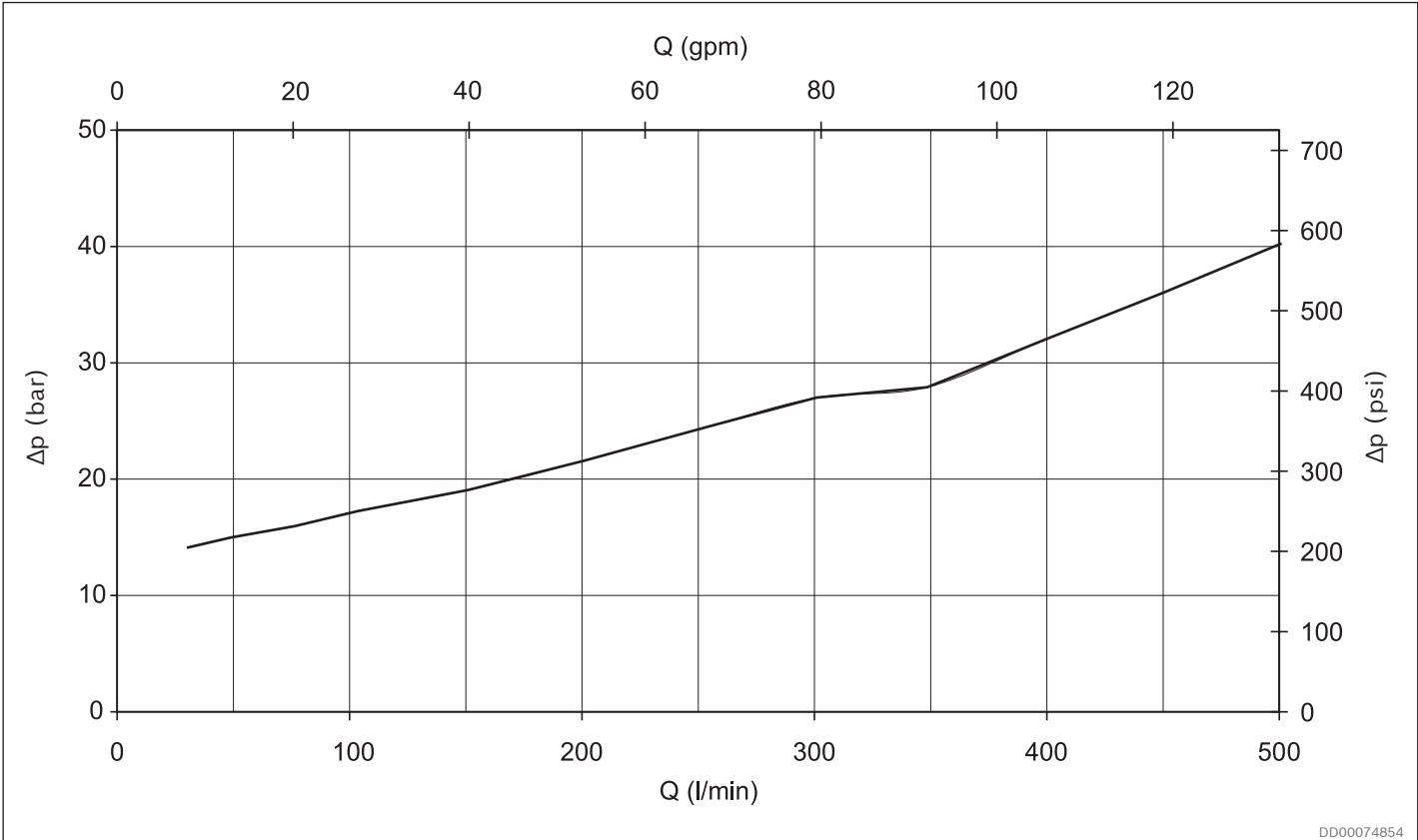
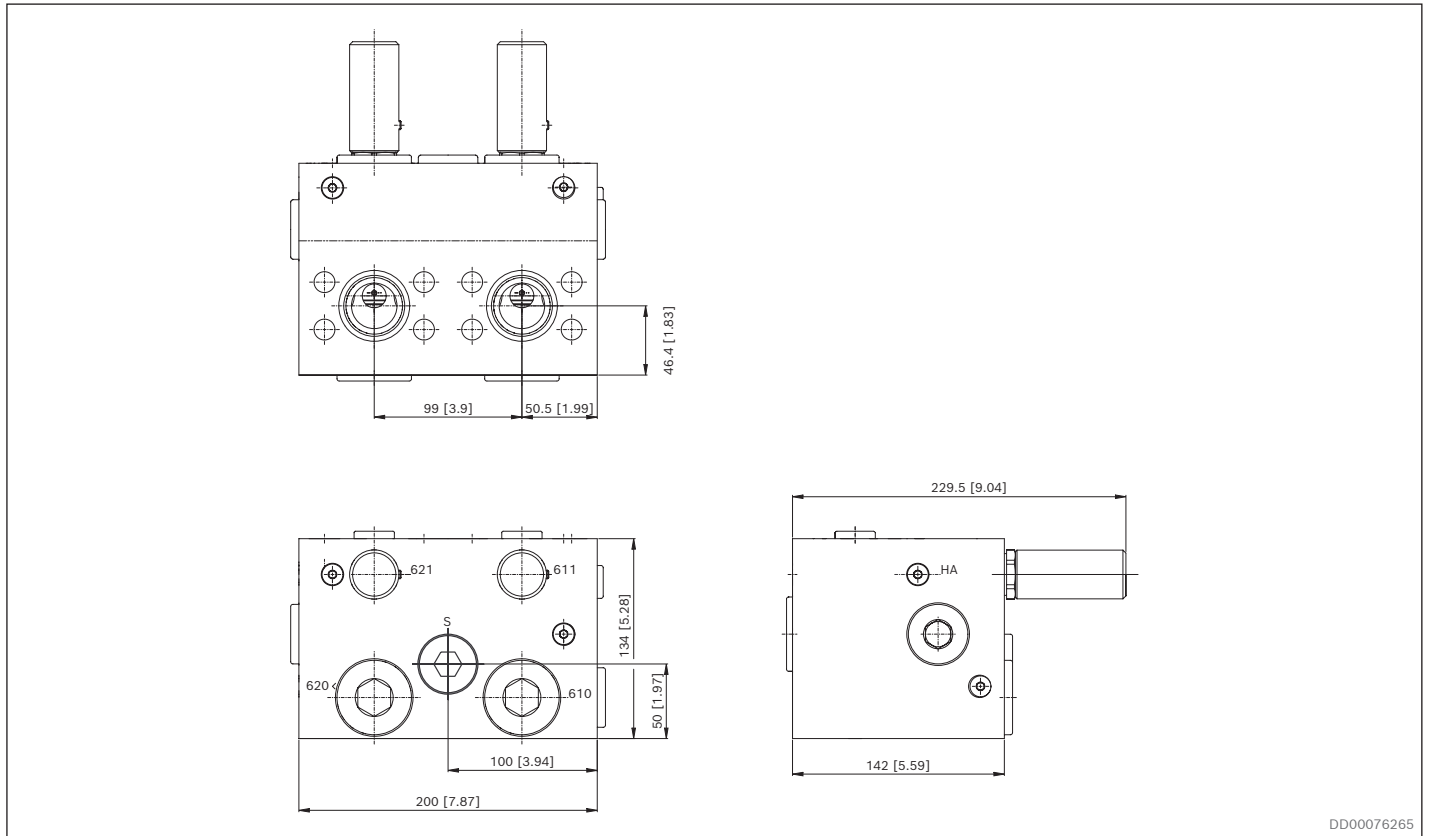


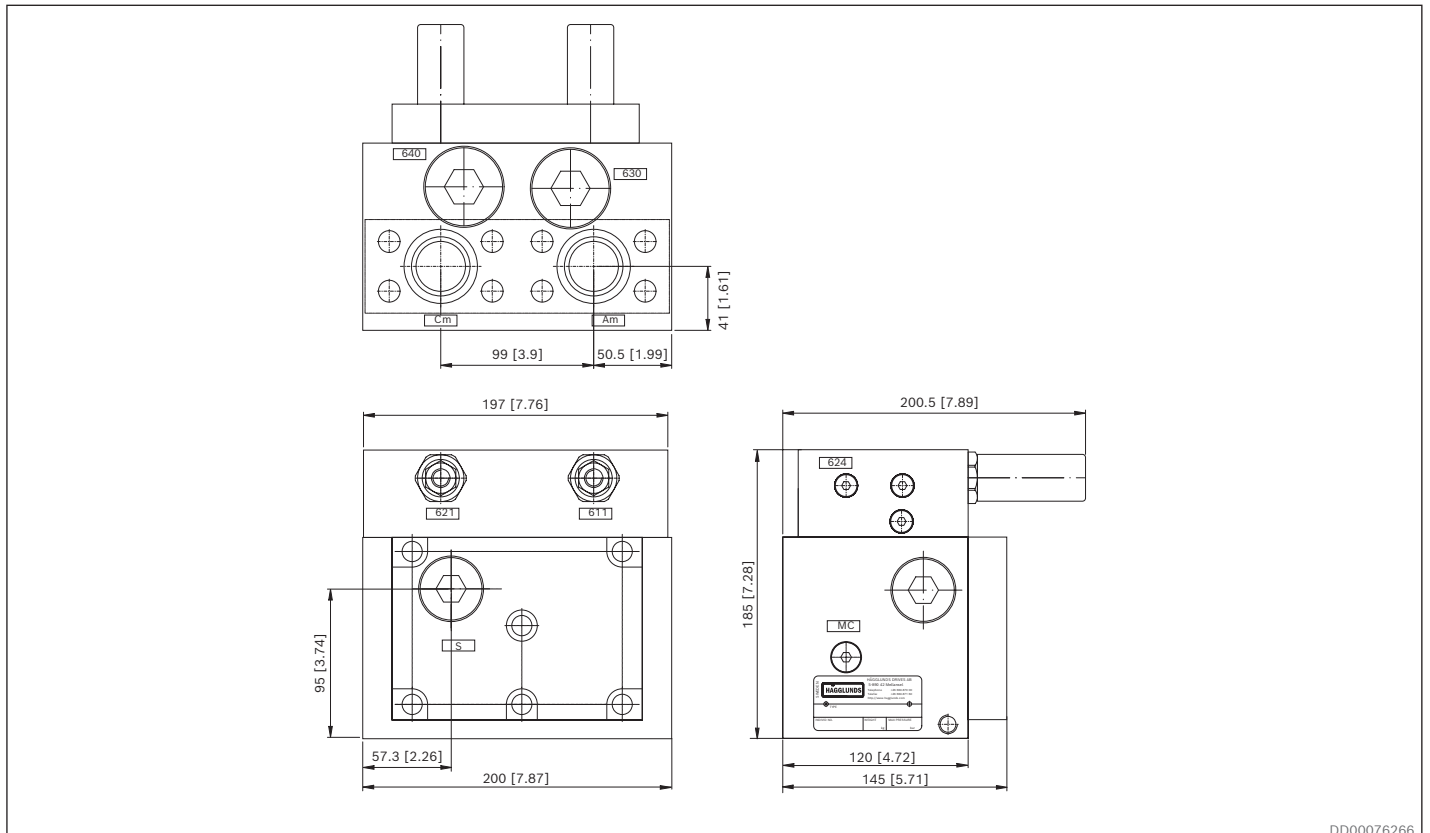
Fig. 7: Pressure loss Diagram COCB 1000-3, Am and Cm to T3 (shown with charge pressure relief valve set to 15 bar) Viscosity 40cSt/187 SSU.

6 Dimensions / Interface



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Fig. 8: Dimensions COCB 500



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Fig. 9: Dimensions COCB 1000-1

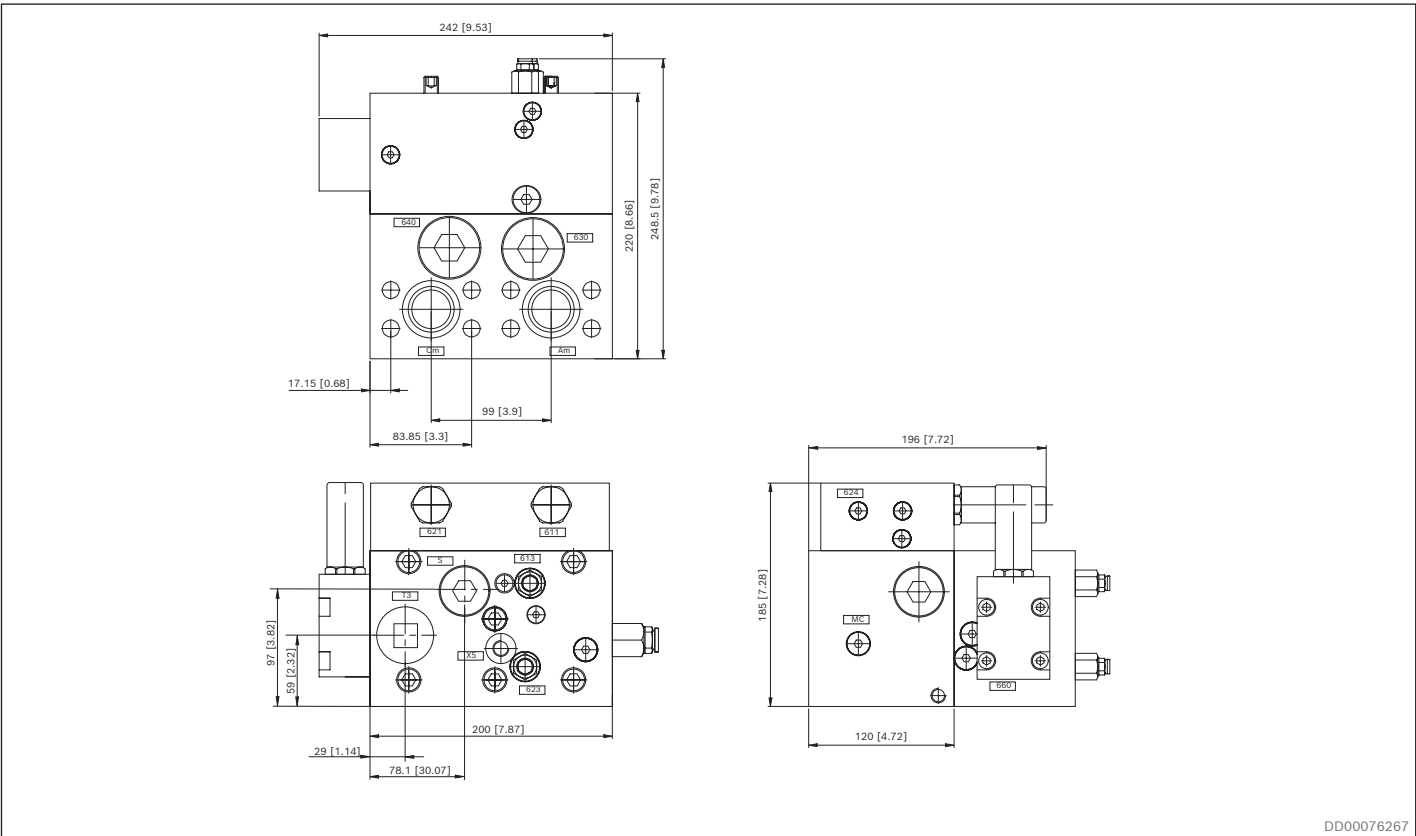


Fig. 10: Dimensions COCB 1000-3

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7 Safety and installation instructions

7.1 Safety instructions

7.1.1 General safety instructions

DANGER

Danger from excessively high pressure!

Danger to life or risk of injury, damage to equipment!

Using the valve above the permissible maximum pressure can cause valve burst and hydraulic fluid to escape under high pressure.

- ▶ Use the valve within the permissible maximum pressure

Pressurized valve

Danger to life risk of injuries when working on valve in system not being depressurized

- ▶ Protect the system against being energized.
- ▶ Make sure that the system is depressurized.
- ▶ Do not disconnect any line connection, ports and components when the system is pressurized

Unsafe work on the valve

Danger to life or risk of injury, damage to equipment!

- ▶ Before carrying any work on the valve, firstly make sure that a potentially explosive atmosphere cannot occur during the period of the work

7.1.2 Safety instructions for ATEX environment

DANGER

Unsafe work on the valve

Danger to life or risk of injury, damage to equipment!

- ▶ Before carrying any work on the valve, firstly make sure that a potentially explosive atmosphere cannot occur during the period of the work

WARNING

Escaping oil mist!

Risk of explosion, fire health hazard, environmental pollution.

- ▶ Depressurize the system including valve and repair the leak.
- ▶ Keep open flames and ignition sources from the Hägglunds valve

Static discharge

Cleaning the valve with a dry rug may lead to explosions through electrostatic discharge that may cause severe injuries and even death

- ▶ Do not use a dry rug for cleaning

Lack of grounding

Risk of explosion that may cause severe injuries and even death

- ▶ The valve must always be fitted to the motor or via adapter fitted to the motor. The valve must be electrically conductive and equipotential bonded with the motor which must be grounded to the system.
- ▶ The valve are not allowed to be fitted to any separate bracket without grounding of the valve.

Painting

Risk of explosion that may cause severe injuries and even death

- ▶ The valve must not be painted or otherwise coated with non-conductive substances!
- ▶ Any change at the surface protection will lead to loss of explosion protection!

7.2 Installation

7.2.1 Fitting the valve on Hägglands CA and CB

Refer also to the Installation and Maintenance Manual for actual motor.

NOTICE

Contamination of the system!

Risk of damage components.

► Clean all mounting surfaces before assembly!.

- Remove the SAE flanges from motor mounting surface and the plastic plugs from the valve mounting surface
- Place the O-rings (included in delivery) in their proper position on the valve mounting surface. Use clean grease to keep O-rings fixed during assembly.
- Mount the valve against the motor with the ports in their correct position.
- Re-instate paint finish and protect exposed surfaces

Pos	Description
1	8 pcs Screws 1/2 UNC x 203 (8") (included in delivery) Tightening torque: 131 Nm (97 lbf-ft)
2	Valve COCB 500/1000
3	2 pcs O-rings \varnothing 40.87 x 3.53 NBR 90 (included in delivery)

Note!

For CA motors:

To facilitate tandem motor mounting, brake mounting or where 4 ports are required for the flow, an adapter is available (see [Data sheet RE 15383 Hägglands valve adapters](#))

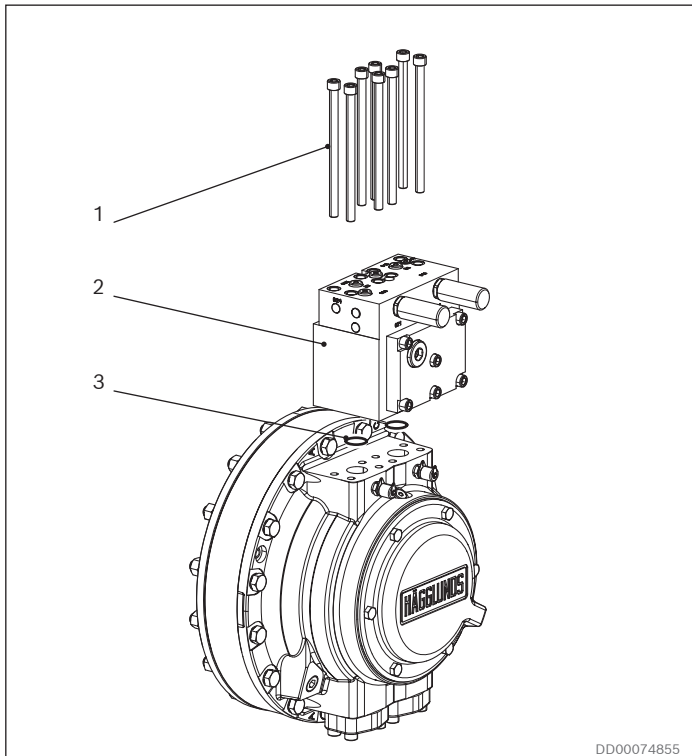


Fig. 11: Hägglands CA, COCB 1000

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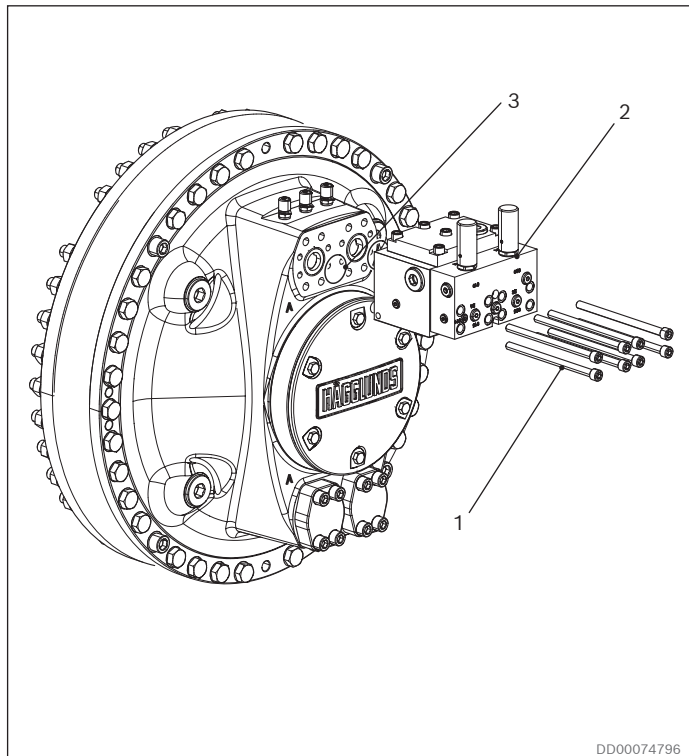


Fig. 12: Hägglands CB, COCB 1000

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7.2.2 Fitting the valve on Hägglunds CBm

Refer also to the Installation and Maintenance Manual for actual motor.

NOTICE

Contamination of the system!

Risk of damage components.

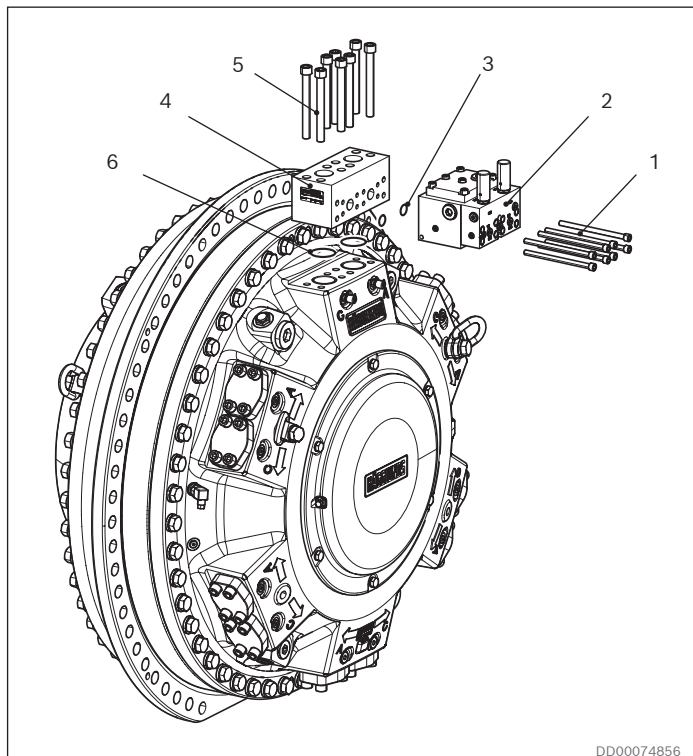
- ▶ Clean all mounting surfaces before assembly!.

- Place the O-rings (included in delivery) in their proper position on the valve(2) mounting surface.
- Use clean grease to keep O-rings fixed during assembly.
- Mount valve (2) against the adapter with the ports in their correct position.
- Re-instate paint finish and protect exposed surfaces.

Note!

Mounting the valve on Hägglunds CBm , adapter R939011952, VA 1000 15 must be ordered separately!

- Remove the SAE flanges from motor mounting surface and the plastic plugs from the adapter/valve mounting surfaces .
- Place the O-rings (included in delivery) in their proper position on the adapter (4) mounting surface.
- Use clean grease to keep O-rings fixed during assembly.
- Mount the adapter (4) onto the motor with the ports in their correct position.



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Fig. 13: Hägglunds CBm, COCB 1000

Pos	Description
1	8 pcs Screws 1/2 UNC x 203 (8") (included in delivery) Tightening torque: 131 Nm (97 lbf-ft)
2	Valve COCB 500/1000
3	2 pcs O-rings \varnothing 40.87 x 3.53 NBR 90 (included in delivery)
4	Adapter VA 1000 15 not included in delivery (see Data sheet RE 15383 Hägglunds valve adapters)
5	8 pcs 3/4-UNC x 178 (7") (Included in VA 1000 15) Tightening torque 568 Nm (419 lbf ft)
6	2 pcs O-ring 56,74x3,53 NBR 90 (Included in VA 1000 15)

7.3 Installation drawings

Installation drawing – COCB 500-1

Refer to dimensional drawing: 041 0355

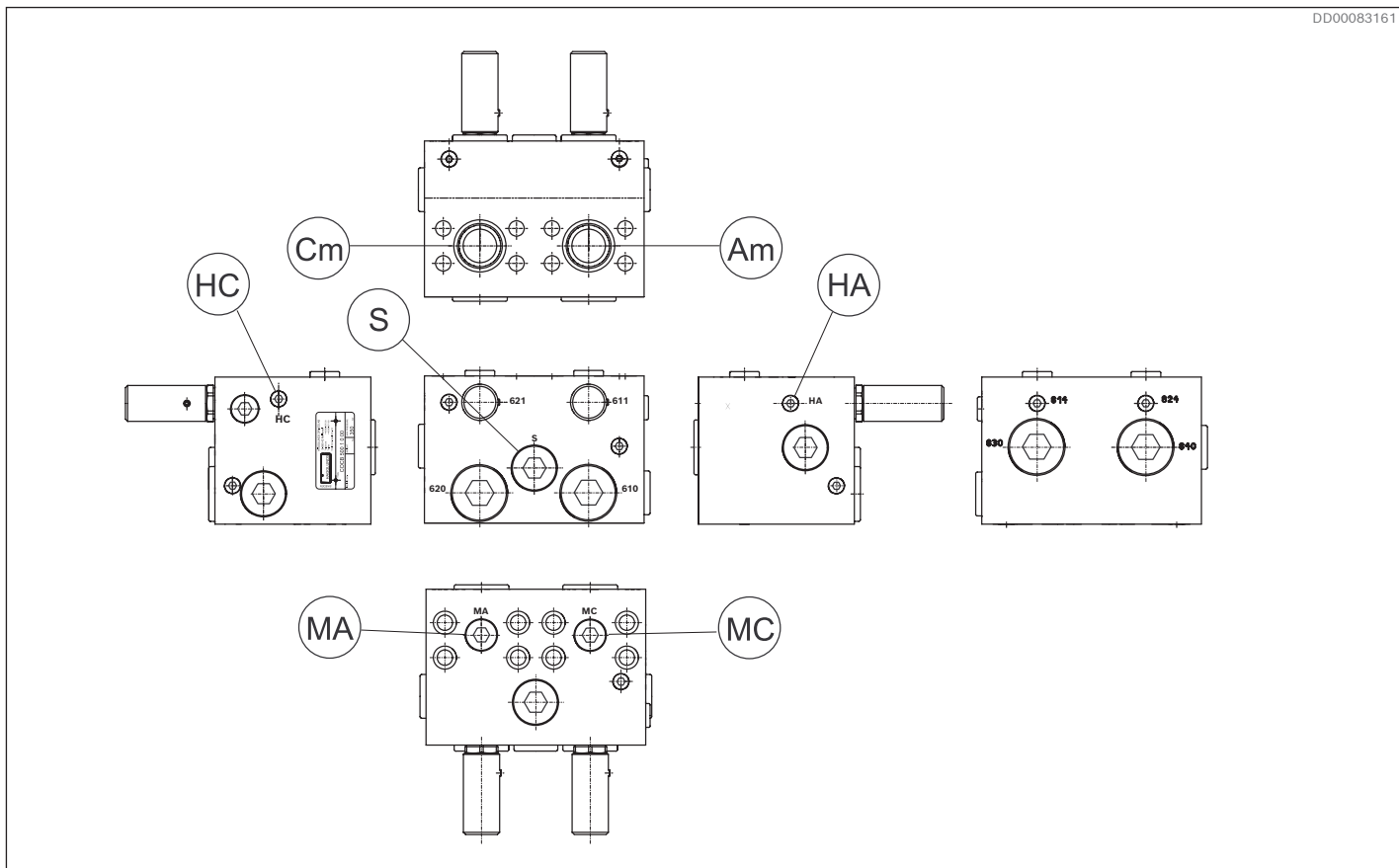


Fig. 14: Installation drawing COCB 500-1

Connection	Description	Port Connection
Am	Main Connection	SAE 1 1/4 ¹⁾
Cm	Main Connection	SAE 1 1/4 ¹⁾
S ²⁾	Charge pressure Connection	G 1
MA, MC	Test Connection	G 1/2
HA, HC	External Pilot	G 1/4

1) J518C, Code 62, 414 Bar (6000 psi)

2) Former T2 connection. S valid for valves with serial number from 1319.

Installation drawing – COCB 1000-1

Refer to dimensional drawing: 141 0415

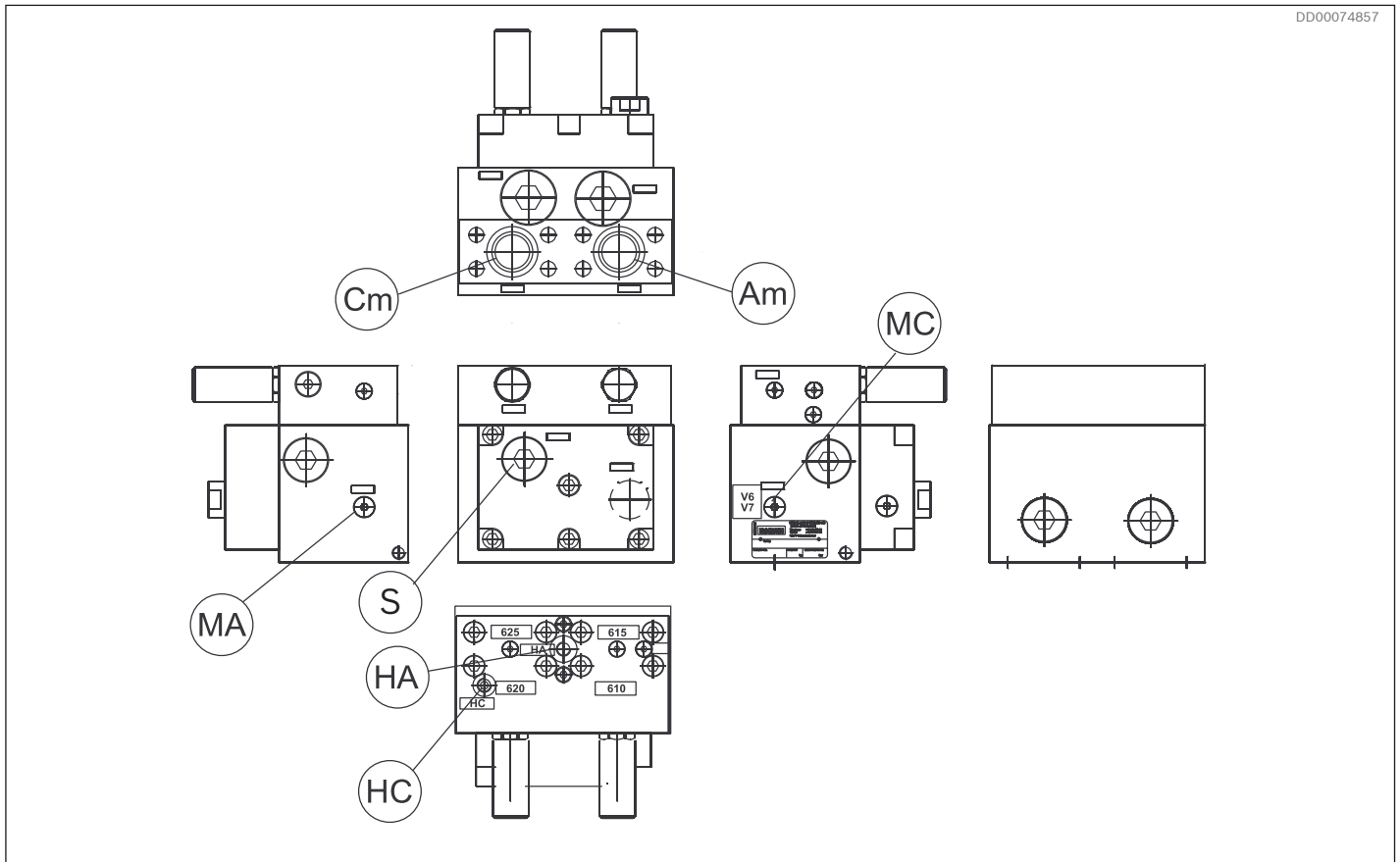


Fig. 15: Installation drawing COCB 1000-1

Connection	Description	Port Connection
Am	Main Connection	SAE 1 1/4 ¹⁾
Cm	Main Connection	SAE 1 1/4 ¹⁾
S ²⁾	Charge pressure Connection	G 1
MA, MC	Test Connection	G 1/8
HA, HC	External Pilot	G 1/4

1) J518C, Code 62, 414 Bar (6000 psi)

2) Former T2 connection. S valid for valves with serial number from 1319.

Installation Drawing - COCB 1000-3

Refer to dimensional drawing: 141 0413

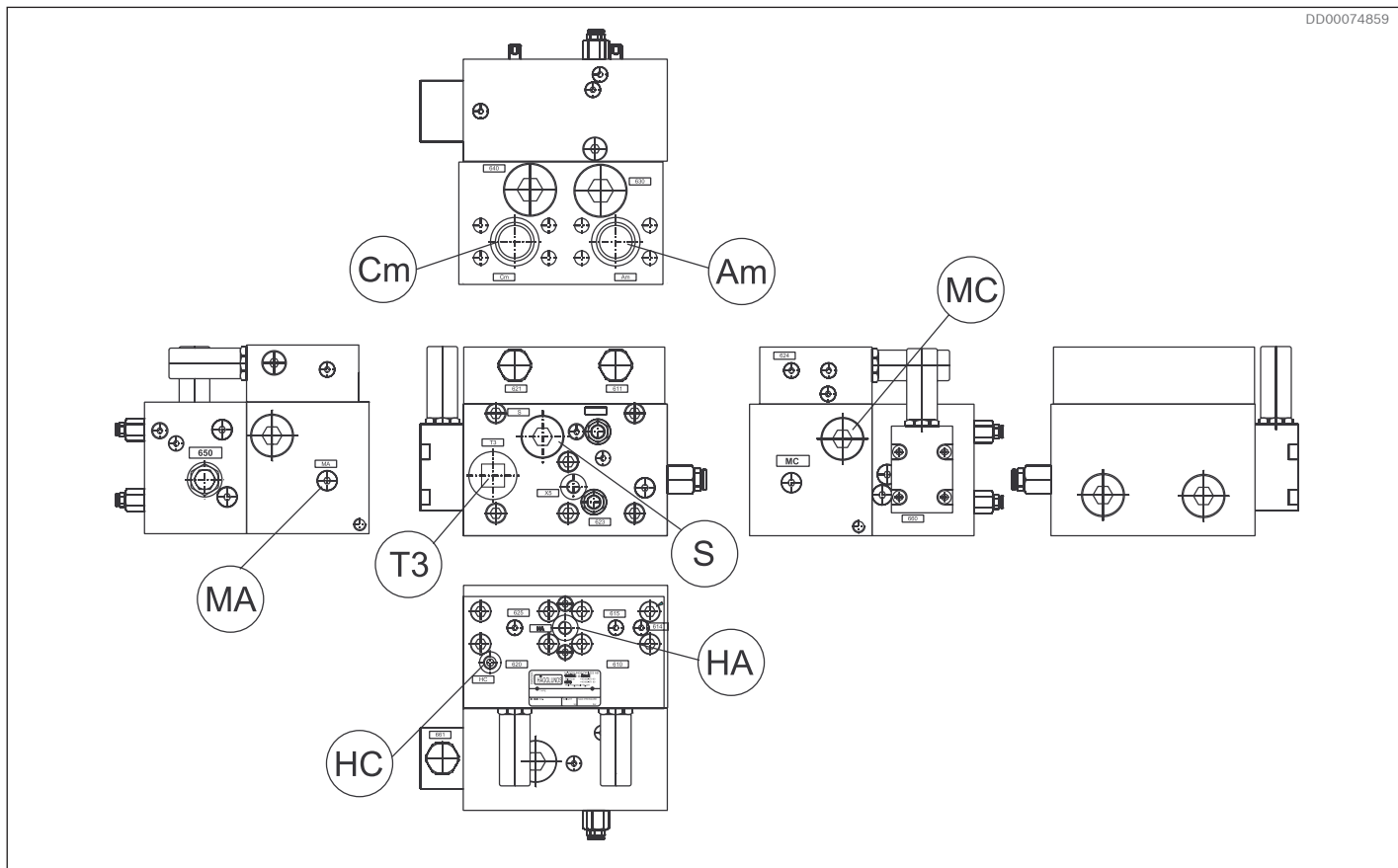








Fig. 16: Installation drawing COCB 1000-3

Connection	Description	Port Connection
Am	Main Connection	SAE 1 1/4 ¹⁾
Cm	Main Connection	SAE 1 1/4 ¹⁾
S ²⁾	Charge pressure Connection	G 1
T3	Oil exchange outlet	G 1
MA, MC	Test Connection	G 1/8
HA, HC	External Pilot	G 1/4

1) J518C, Code 62, 414 Bar (6000 psi)

2) Former T2 connection. S valid for valves with serial number from 1319.

8 Required and additional documents

 Title	Document no	Document type
 Hydraulic fluid quick reference	RE 15414	Data sheet
 Hägglunds valve adapters	RE 15383	Data sheet
 COCB 500	041 0355*)	Dimension drawing
 COCB 1000-1	141 0415*)	Dimension drawing
 COCB 1000-3	141 0413*)	Dimension drawing

Documents at Bosch Rexroth Media Directory

*) Documents only available for Bosch Rexroth employees on MyRexroth. Contact your Bosch Rexroth representative for information.

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