Electrohydraulic fan drive for fixed pump systems HICFD

RE 18305-05
Edition: 01.2018

- Series 1X
- Maximum working pressure 250 bar
- Maximum flow 40 l/min

Features

- Space-saving, efficient fan drive
- Infinitely variable fan speed independent of the combustion engine speed
- High fan power at low combustion engine speed
- Reversing and fan standstill optional
- To comply with the exhaust emission guidelines (Euro 4/5/6, TIER 4, US10, Stage IV)
- Extension of noxious and noise emissions

Contents

Type code

01	02	03		04		05		06		07	08		09	10	11
HIC	**FD**	**06**	**–**	**AL**	**–**	**1X**	**/**		**–**		**1**	**–**			*****

Valve type

01	Hydraulic Integrated Circuit	**HIC**
02	Fan Drive	**FD**

Size

03	Size 6	**06**

Block material

04	Aluminum	**AL**

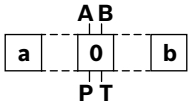
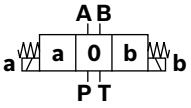
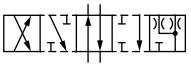
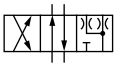
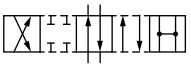
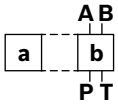
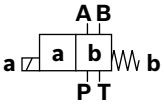
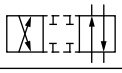
Series

05	Series 10 to 19 (10 to 19, unchanged installation and connection dimensions)	**1X**

Pressure stage

06	up to 50 bar	**C**
	up to 100 bar	**F**
	up to 150 bar	**H**
	up to 210 bar	**L**
	up to 250 bar	**N**

Reversing (spool symbol)[1)]

07	Without reversing (with end plate)				**TC**
	Symbol with transitional position	**Schematic diagram symbol**	**Symbol with transitional position**	**Schematic diagram symbol**	
				 = J201	**J2**
				 = V201	**V2**
				 = X301	**X3**
				 = Y301	**Y3**

Line connection consumer[1)]

08	G 1/2 (Standard), pipe thread in accordance with ISO 228/1	**1**

Supply voltage

09	Electronic controls 12 V DC	**G12**
	Electronic controls 24 V DC	**G24**

Electrical connection[2)]

10	Device connector 3-pin (2 + PE) according to DIN EN 175301-803 (German)	**K4**
	Device connector 2-pin DT 04-2P (German)	**K40**
	Device connector 2-pin, Junior Timer (AMP)	**C4**

11	Further details in plain text	*****

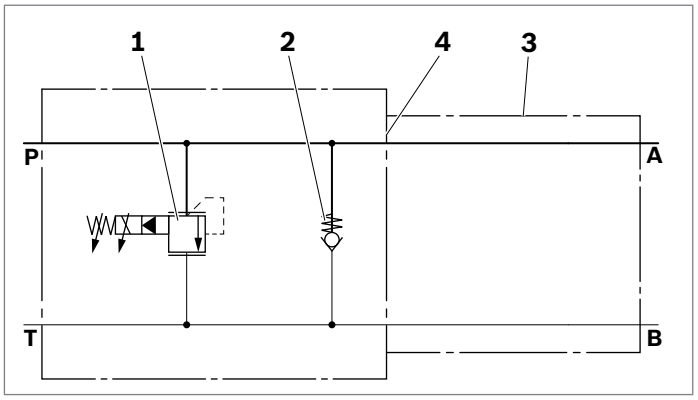
1) Further on request
2) Plug-in connectors are not included in the scope of delivery and must be ordered separately, see Data Sheet 08006.

Functional description

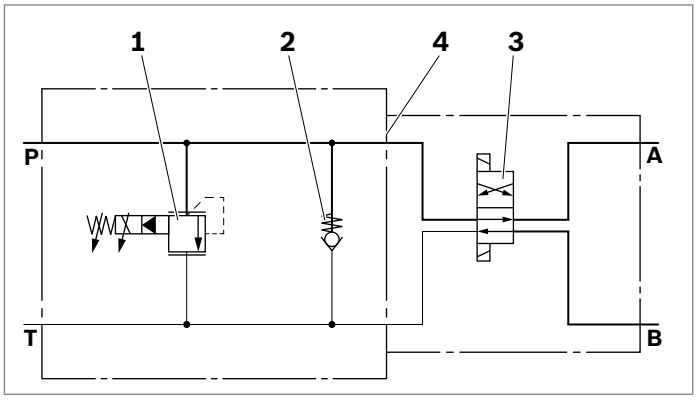
The electrohydraulic fan drive HICFD regulates the pressure of the diesel-engine-driven hydraulic fixed pump, using the integrated proportional pressure relief valve (**1**) depending on the electrical setpoint specification of the control unit. The fan speed is proportional to the pressure or setpoint setting. The check valve (**2**), which is also included in the delivery, enables anti cavitation feeding from the reservoir and prevents possible cavitation caused by abrupt switching off of the fan.
Various reversing functions (**3**) such as Fail-Safe, reversing or fan stand still are available as an option. Alternatively, different hydraulic connection designs can be realized using an adapter via the flange surface (**4**).
These configuration options provide a high degree of freedom for designing the fan system and ensure optimum integration of the HICFD control block into the application.

Notice
Bosch Rexroth does not assume any system responsibility for the entire unit with the delivery of the HICFD control block.

▼ **Example: HICFD...TC – without reversing**



▼ **Example: HICFD...X3 – with reversing**



1 Proportional pressure relief valve (for further information see data sheet 18152)
2 Check valve (for further information, see data sheet 20380)
3 Reversing valve / end plate (for further information see data sheet 18301-02 and 18301-63)
4 Flange surface

Preferred types

Type	Material no.
HICFD06-AL-1X/N-TC1-G24K40	R901311572
HICFD06-AL-1X/N-X31-G24K40	R901311569

Technical data

General				
Weight (approx.)			kg	3
Installation position				Preferably upright on mounting flange, name plate easy to read for users
Ambient temperature range	Without reversing		°C	–30 to +110
	With reversing with 100% ED		°C	–20 to +50

Hydraulic				
Maximum[1] working pressure on the port	P, A, B	p	bar	250
	T	p_T	bar	50
Maximum flow		q_V	l/min	40
Hydraulic fluid				Mineral oil (HL, HLP) according to DIN 51524, see data sheet 90220, other hydraulic fluids on request
Hydraulic fluid temperature range		ϑ	°C	–20 to +80
Viscosity range		ν	mm²/s	12 to 400
Maximum admissible degree of contamination of hydraulic fluid (cleanliness level) according to ISO 4406 (c)				Class 20/18/15[2]

Electric				
Voltage type				DC voltage
Supply voltage			V	12; 24
Current, power consumption, coil resistance and further valve parameters				Data sheets 18152 and 18301-02
Electronic controls (separate order)				Valve amplifier type VT-SSPA1 (data sheet 30116)
				Type RC BODAS controller (data sheets 95204, 95205, 95206)

Notice

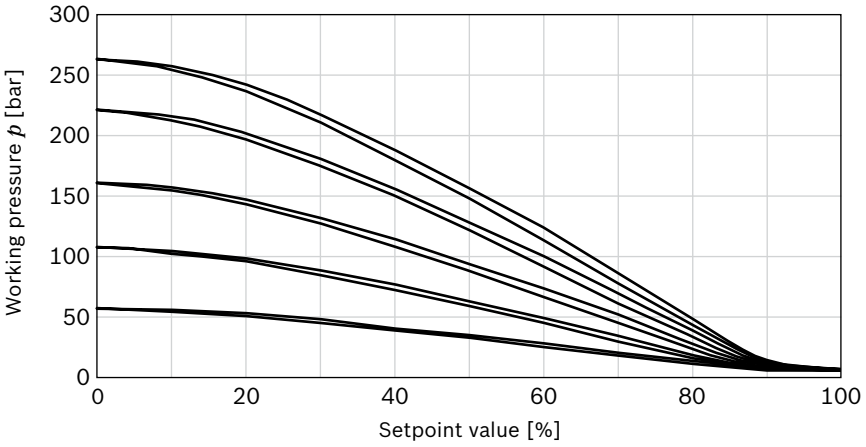
- The technical data was determined at a viscosity of ν = 46 mm²/s (HLP32; ϑ_{oil} = 40 °C).
- Please contact us if the unit will be used outside the specified range of values.
- For the electrical connection, a protective earth (PE ⏚) connection is mandatory based on the specification.

1) The maximum working pressure is the aggregate of set pressure and return flow pressure.

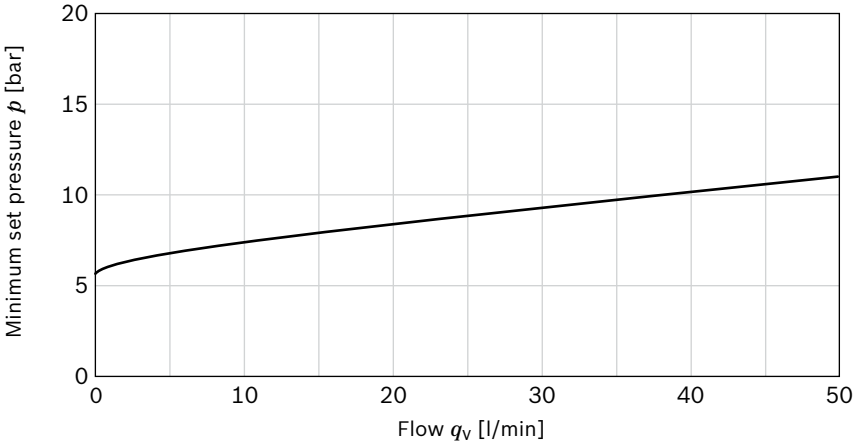
2) Cleanliness levels specified for the components must be maintained in the hydraulic systems. Effective filtration prevents malfunctions and simultaneously extends the service life of the components.
When selecting filters, see data sheets 50070, 50076, 50081.

Characteristic curves

▼ **Pressure at port P depending on setpoint value; q_V = 10 l/min**



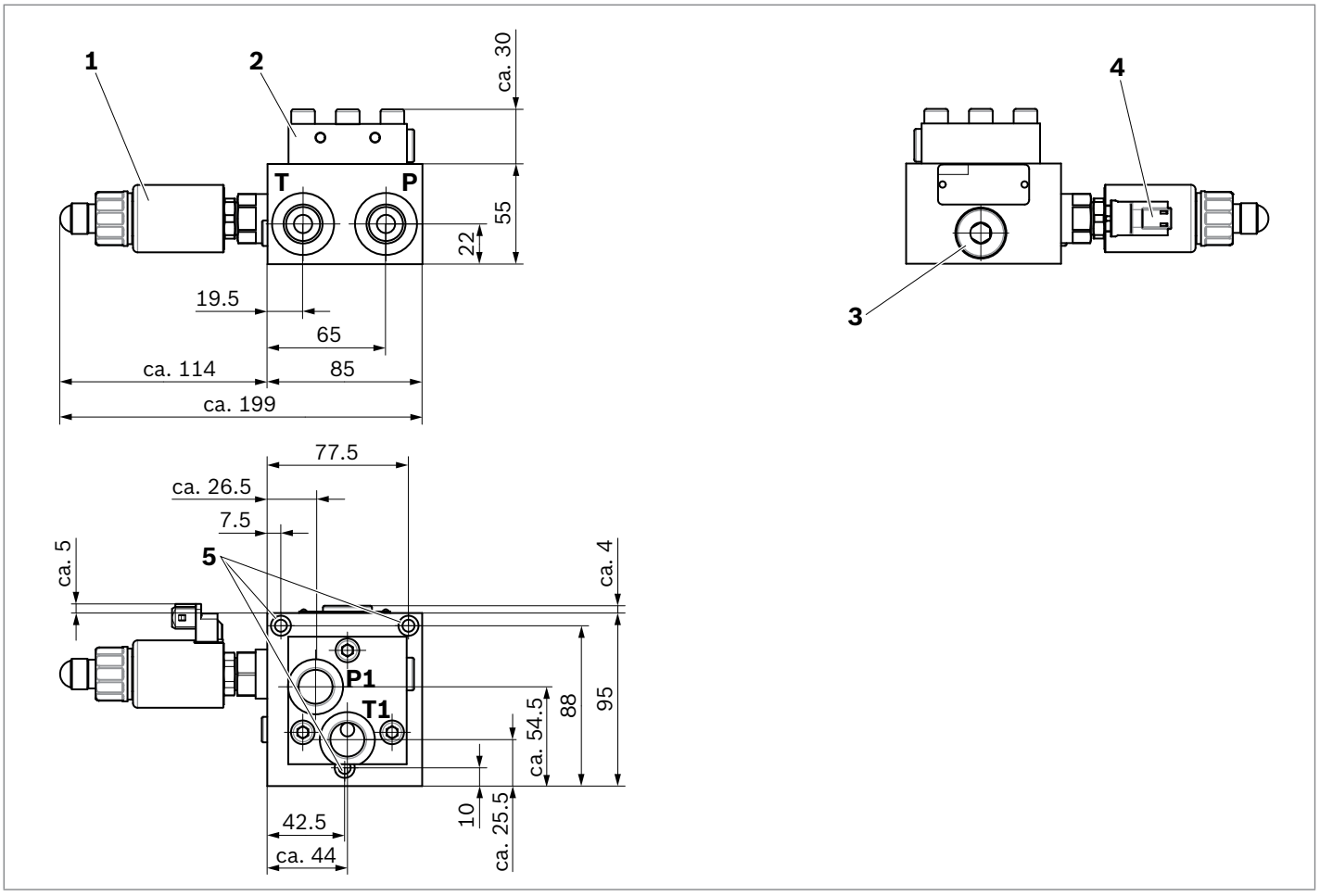
▼ **Minimal set pressure at port P depending on flow**
(The characteristic curves were measured without back-pressure at port **T**)



Notice
Characteristic curves measured with HLP46,
ϑ_{oil} = 40$^{\pm 5}$ °C, U = 24 V.

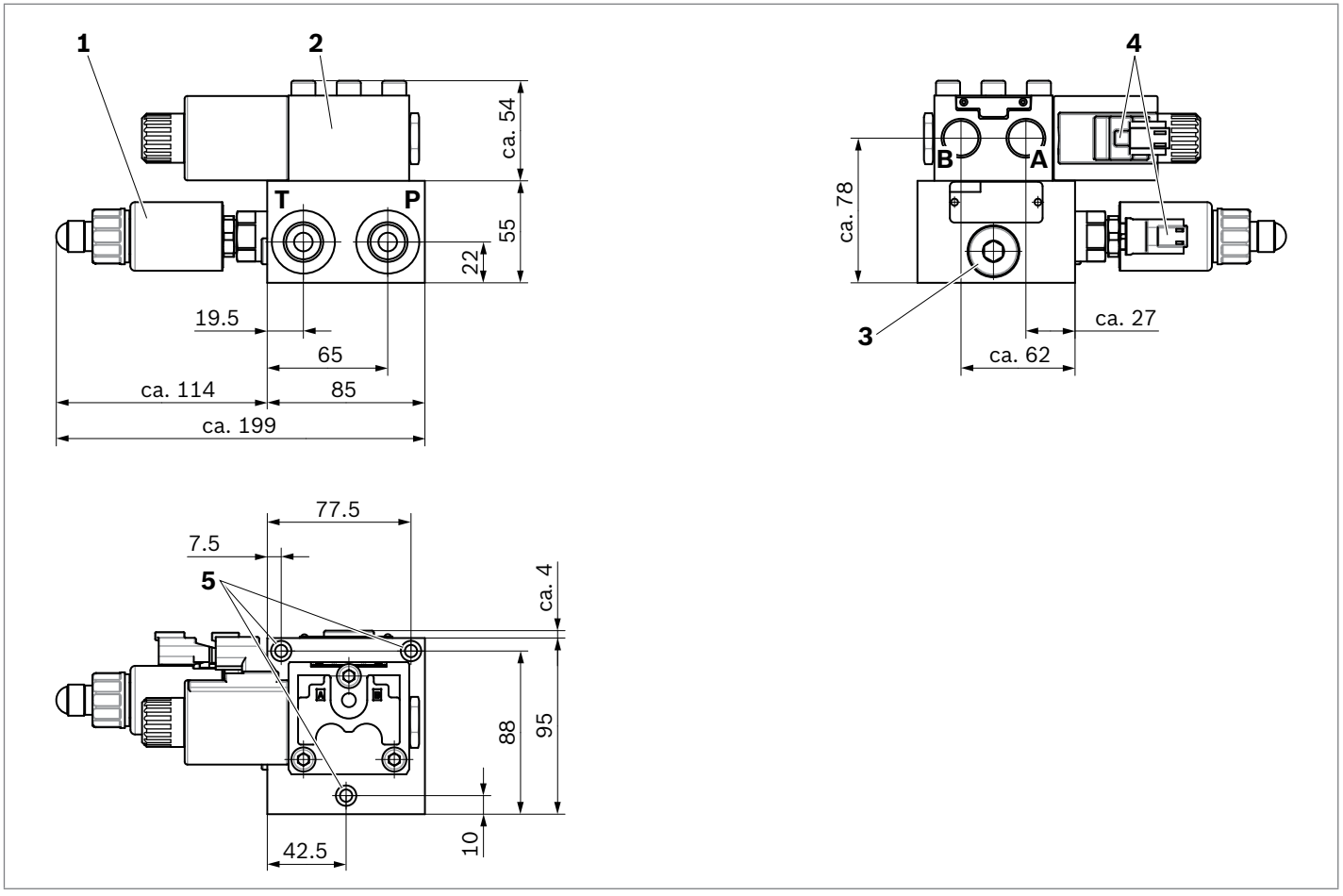
Dimensions

▼ **HICFD...TC – without reversing**



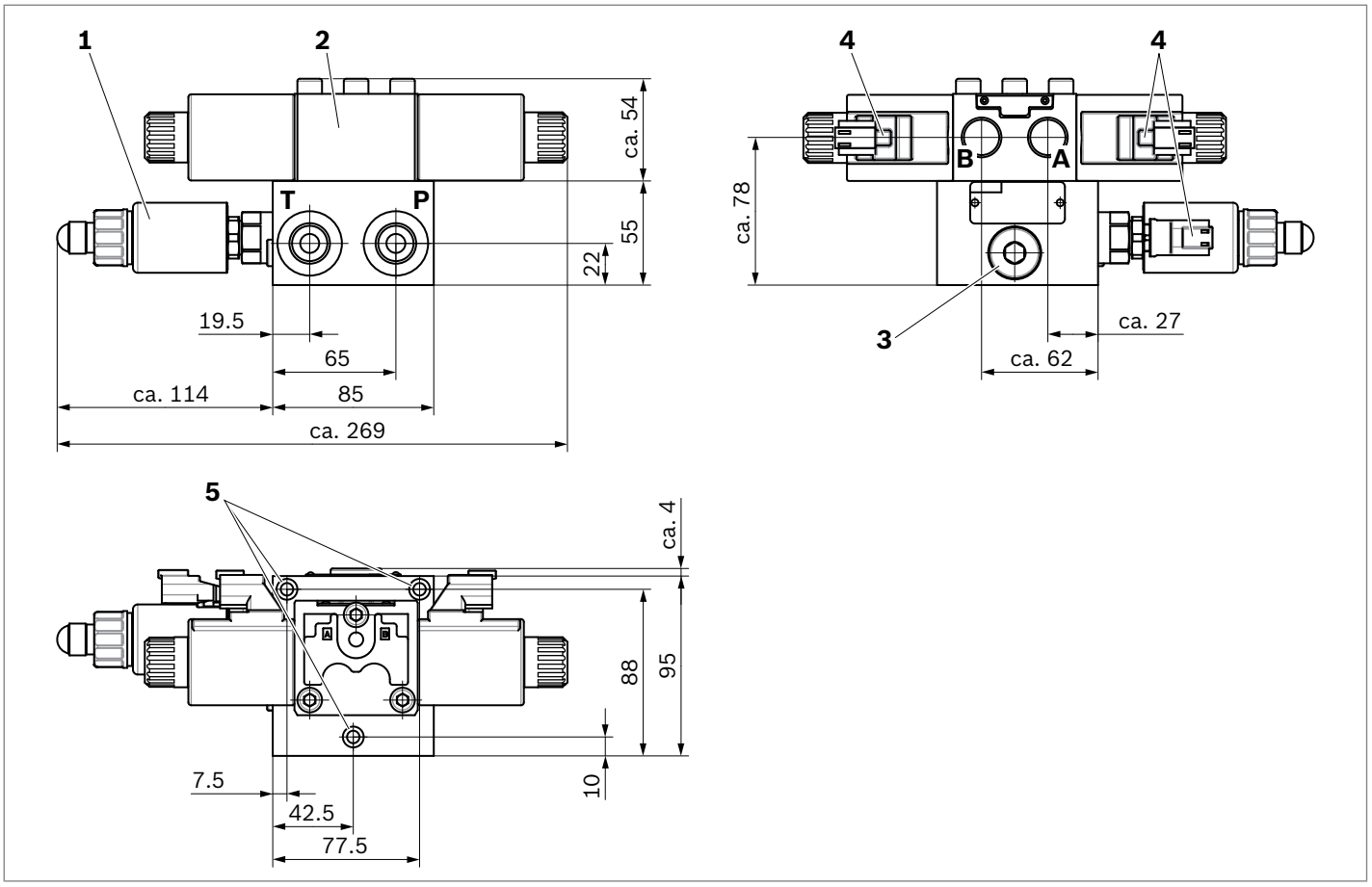
1 Proportional pressure relief valve
2 End plate (without reversing)
3 Check valve
4 Device connector “C4”
(plug-in connectors are not included in the scope of delivery and must be ordered separately, see data sheet 08006.)
5 Three mounting holes:
Through bore Ø6.6; countersink Ø11.7, 6.4 deep

▼ **HICFD...X3 / HICFD...Y3 – with reversing**



1 Proportional pressure relief valve
2 Reversing valve
3 Check valve
4 Device connector “K40”
(plug-in connectors are not included in the scope of delivery and must be ordered separately, see data sheet 08006.)
5 Three mounting holes:
Through bore Ø6.6; countersink Ø11.7, 6.4 deep

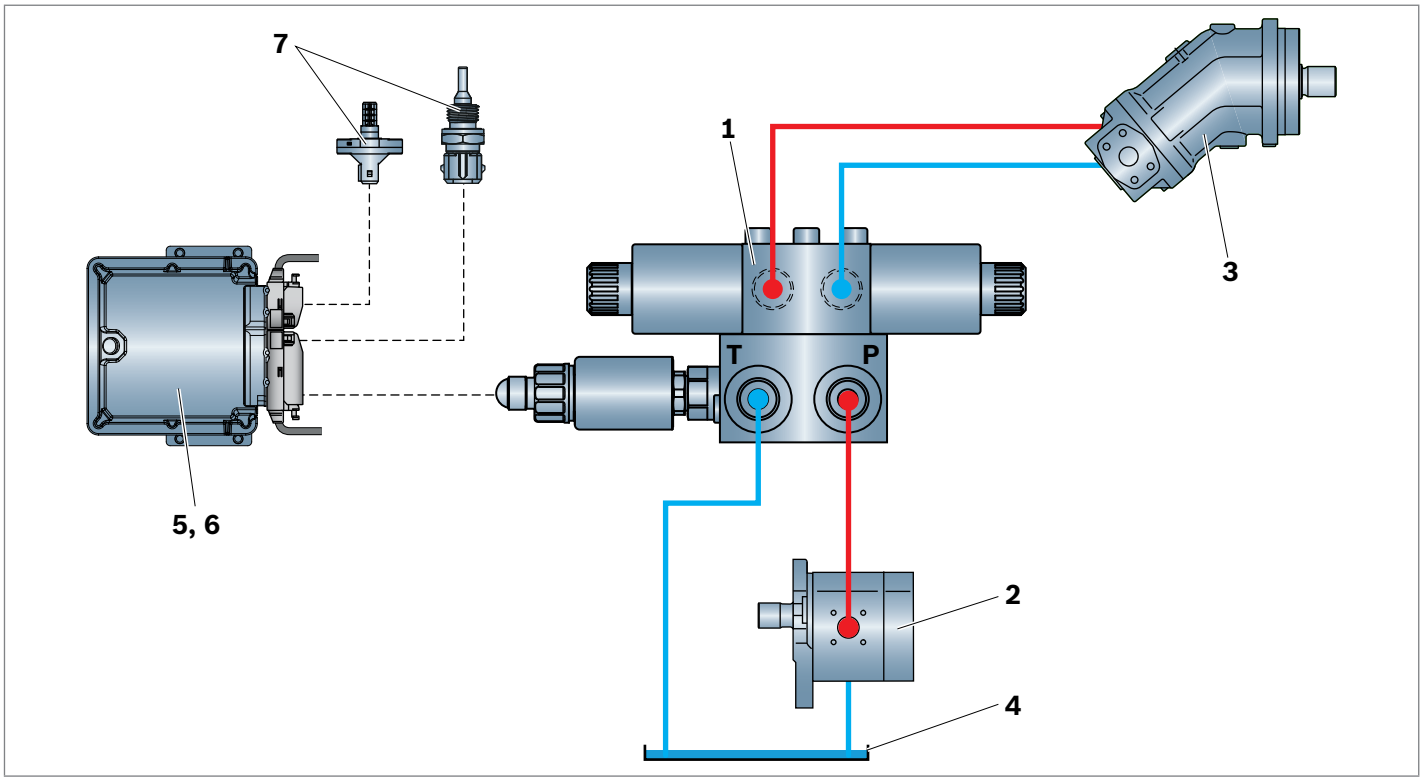
▼ **HICFD...J2 / HICFD...V2 – with reversing**



1 Proportional pressure relief valve
2 Reversing valve
3 Check valve
4 Device connector “K40”
(plug-in connectors are not included in the scope of delivery and must be ordered separately, see data sheet 08006.)
5 Three mounting holes:
Through bore Ø6.6; countersink Ø11.7, 6.4 deep

Circuit example

▼ **Layout of an electrohydraulic fan drive with HICFD and other necessary components**



1 Control block HICFD
2 Fixed pump, e.g. External gear pump according to data sheet 10089, 10091, 10093, 98243
3 Fixed motor, e.g. Axial piston motor according to data sheet 91172 and 91001, external gear motor according to data sheet 14026
4 Reservoir, e.g. plastic reservoir according to data sheet 95721
5 Control unit, e.g. BODAS controller according to data sheet 95205
6 Software, e.g. Application software according to data sheet 95362
7 Sensors, e.g. Temperature sensors according to data sheet 95180 (fluid) and 95181 (air)

Related documentation

- Electronic controls:
  - Valve amplifier type — Type VT-SSPA1 — Data sheet 30116
  - BODAS controller — Type RC — Data sheets 95204, 95205, 95206
- Mineral oil-based hydraulic fluids — Data sheet 90220
- Hydrostatic fan drives — Brochure 98065

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