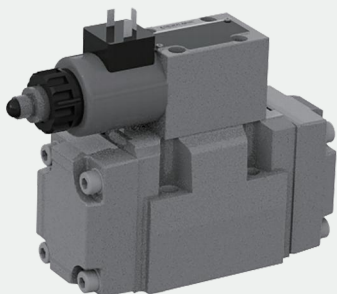


3-Way Proportional Pressure Reducing Valve

Model: 3DRE(M) and 3DRE(M)E... 7X



БЕЛИМПОРТНАБ

- ◆ Size 16
- ◆ Maximum working pressure 350bar
- ◆ Maximum working flow 125 L/min (size 10)
300 L/min (size 16)

Contents

Function description, sectional drawing	02
Models and specifications	03
Functional symbols	03
Technical parameters	04-05
Electrical connections	05-06
Characteristic curve	07
Component size	08-09
Control oil supply	10

Features

- 3 ways valve
- Operated by proportional solenoid with rotatable coil
- For subplate mounting
- Porting pattern to ISO4401
- Maximum pressure limitation, optional

Function description, sectional drawing

The 3DRE (M) and 3DRE (M) E type valves are solenoid operated pilot 3-way pressure reducing valves with pressure protective function for the actuator. They are used to reduce (P to A) and limit (A to T) the pressure of the system.

Structure:

The valve mainly consists of:

- Pilot valve (1) with proportional solenoid (2), and optional maximum pressure limitation (15)
- Main valve (3) with main spool (4)

Function:

- The reduced pressure is set through the pilot valve (1) in port A according to the set value.
- When pressure reducing in port P, the main spool (4) is hold in the central position by springs (5) and (6) to prevent a start-up jump during valve working.
- The control fluid flows from orifice (7) via the flow controller (8) and chamber (11) to the throttle gap (9), and via channel (10) to the port Y. This connection is to be led into the tank at zero pressure.

Pressure reducing:

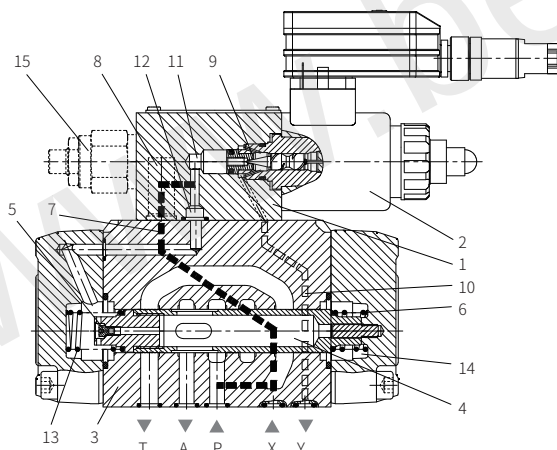
- Build-up of the pilot pressure in the chamber (11) as a function of the command value.
- The pressure is formed by nozzle (12) in the spring chamber (13) and move the main spool (4) to the right, then the fluid flows from P to A.
- The actuator pressure in port A is available in the spring chamber (14).
- Increase the pressure in port A to the set pressure of the pilot valve (1) to move the main spool (4) to the left. The pressure in port A is almost same with the set pressure at the pilot valve (1).

Pressure limitation:

- If the pressure in port A exceeds the set value pressure of the pilot valve (1), then the main spool (4) continue moves to the left.
- The connection from A to T is open and the pressure in port A is limited to the set command value.

Model 3DREM:

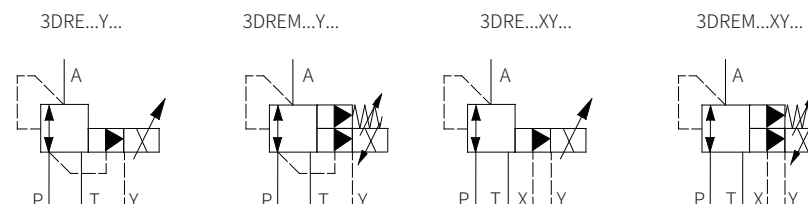
In order to prevent an impermissible high control current on the proportional solenoid by means of hydraulic restraint, which will inevitably cause excessive pressure in port A, then you can optional install a spring-loaded pressure limiting valve as a maximum pressure limitation (15). The maximum pressure limitation can be pre-set according to the corresponding pressure rating (see "Technical Data").



Models and specifications

3DRE		P	7X	G24	*
pilot proportional pressure reducing 3-way valve					more information in text
without max. pressure limitation	=no code				sealing material
with max. pressure limitation	=M				No code= NBR seals
					V= FKM seals
					(consult for other seals)
with external amplifier	=no code				for 3DRE(M)E
with internal amplifier	=E				A1= command value 0 to 10V
					F1= command value 4 to 20mA
size 10	=10				electrical connection:
size 16	=16				for model 3DRE(M)
subplate mounting	=P				K4= without plug in connector
					for model 3DRE(M)E
					K31S= with 1.5 meter cable and tin on the end
					K31C= with M12×1 aviation plug, 5-pin
					no code= 1600mA
					-8= 800mA
					G24= voltage 24V DC
					Y= pilot oil internal supply and external drain
					XY= pilot oil external supply and drain

Functional symbols



Technical parameters

Overview				
Model			3DRE(M)	
Size			10	16
Installation position			Optional, firstly horizontal	
Weight	Kg		7.5	10.3
Storage temperature range	°C		-20...+80	
Environment temperature range	°C		-20...+70	
Hydraulic				
Maximum working pressure	Oil port P	bar	350	315
	Oil port A	bar	315	250
	Oil port T	bar	315	250
	Oil port X	bar	350	315
	Oil port Y	bar	Separate and at zero pressure to tank	
Maximum setting pressure in port A	Pressure stage 50	bar	50	50
	Pressure stage 100	bar	100	100
	Pressure stage 200	bar	200	200
	Pressure stage 315	bar	315	-
Minimum setting pressure ¹⁾		bar	<5	<4
Maximum pressure limitation ²⁾	Pressure stage 50	bar	70	
	Pressure stage 100	bar	130	
	Pressure stage 200	bar	230	
	Pressure stage 315	bar	350	-
Maximum flow	L/min		125	300
Pilot flow	L/min		1.1	
Fluid			Mineral oil (HL,HLP) to DIN 51524, consult for other oils	
Fluid temperature range		°C	-20...+80	
Viscosity range		mm²/s	15...380	
Max.allowable pollution degree of oil to			ISO 4406 (c) Class 20/18/15 ³⁾	
Hysteresis		%	±3 of maximum setting pressure	
Repeatability		%	< ±2 of maximum setting pressure	
Linearity		%	±3.5 of maximum setting pressure	
Manufacturing tolerance of command value pressure characteristic curve	Command value 20%	%	< ±1.5 of maximum setting pressure	
	Command value 100%	%	< ±5 of maximum setting pressure	
Step response Tu+Tg	10...90%	ms	< 140	

1) In condition of no flow and command value is 0 in port A (see characteristic curve).

2) Unlimited adjustable, factory set.

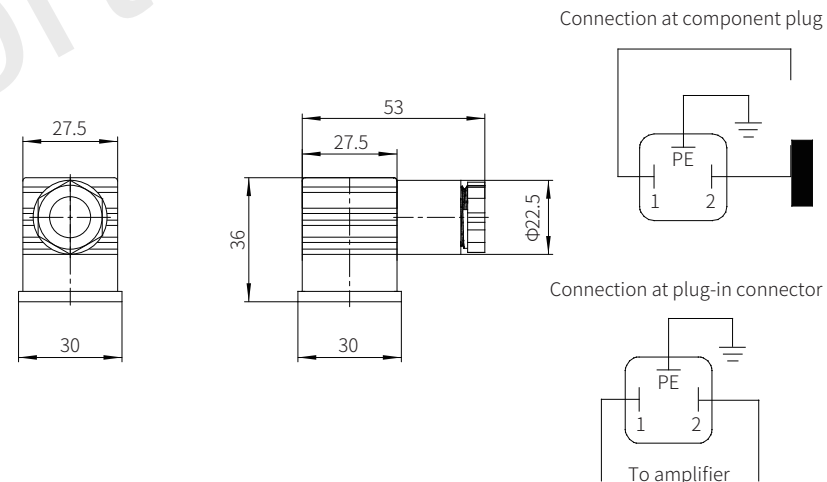
3) The oil must meet the cleanliness degree requested by the components in the hydraulic system.
Effective oil filtration can prevent failure and increase the service life of the components.

Technical parameters

Electrical				
Model		“G24”		“G24-8”
Minimum control current		mA	≤100	
Maximum control current		mA	1600±10%	800±10%
Coil resistance	Cold value 20 °C	Ω	5.5	20.6
	Maximum hot value	Ω	8.05	33
Duty		%	100	

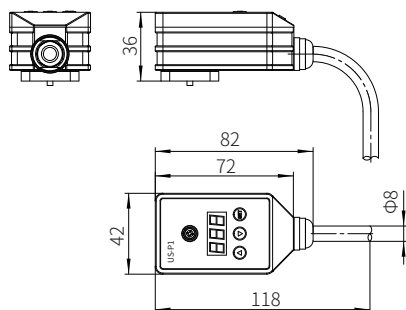
Electrical connections

For model 3DRE/3DREM (with external amplifier)
The plug-in connector to DIN EN 175301-803

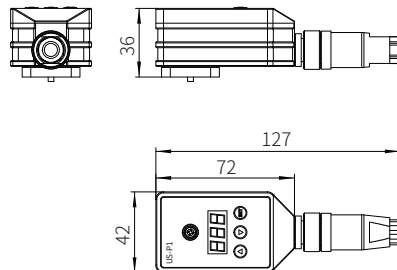


Electrical connections

Model 3DRE(M)E...7XJ/...K31S



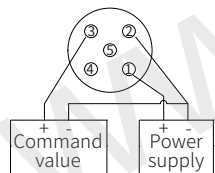
Model 3DRE(M)E...7XJ/...K31C



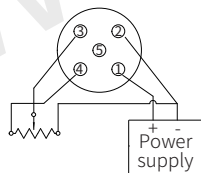
Terminal identification

M12 plug terminal number (K31C type)	Cable color (K31S type)	Terminal identification
1	Red	Power supply+
2	Black	Power supply -/ command value -
3	Yellow	Command value+
4	Blue	Reference voltage 5V
5	Green	-

Connection example:
PLC example input
command

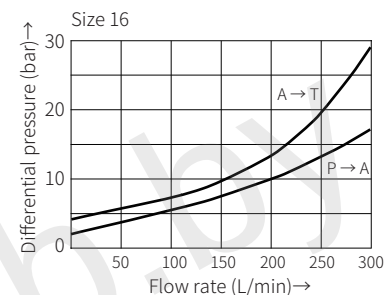
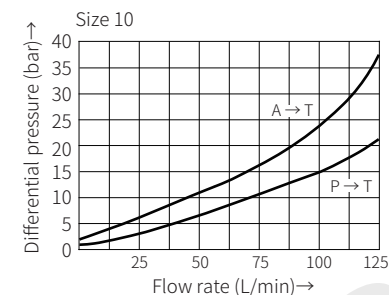


Connection example:
Potentiometer input
command

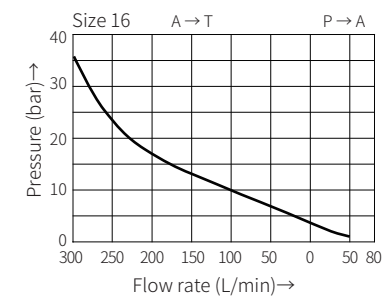
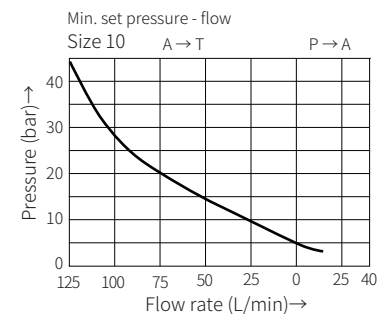
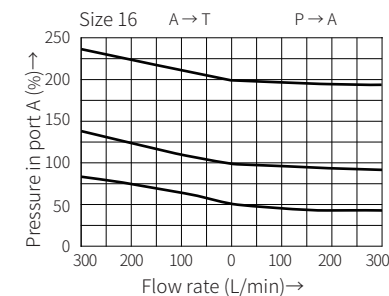
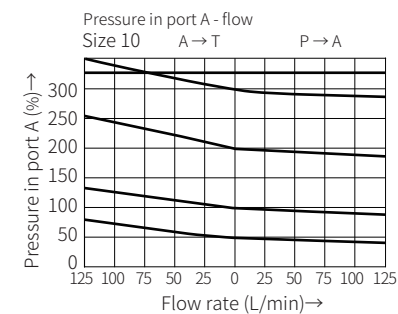
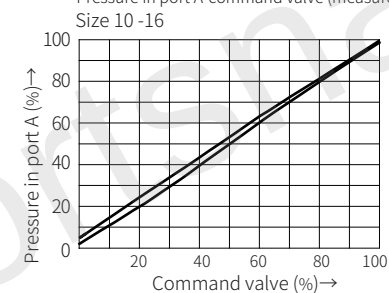


Characteristic curve

(Measured when using HLP46, $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$)

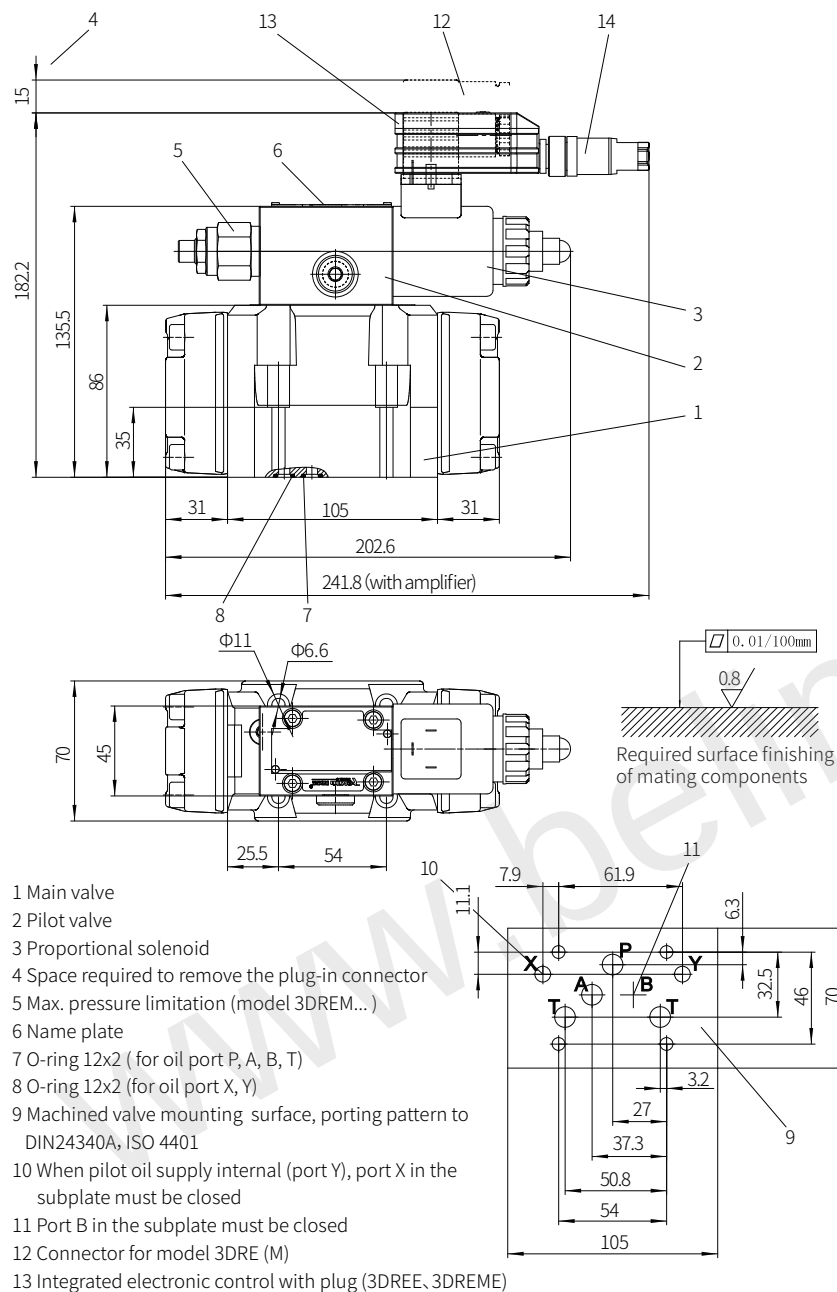


Pressure in port A-command valve (measured at flow 0L/min)



Component size

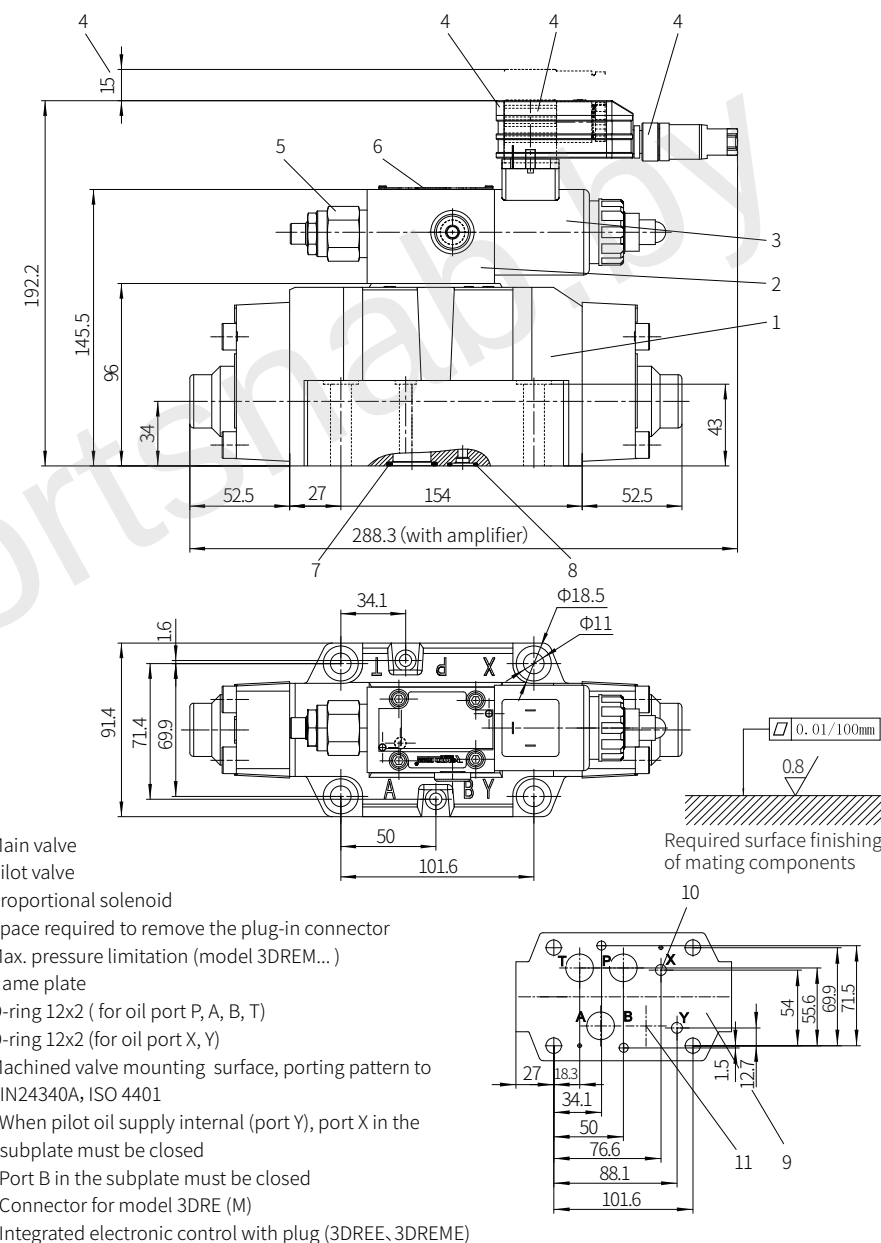
Size unit: mm



0798

Component size

Size unit: mm



0799

Control oil supply

Model 3DRE...-.../...XY Pilot oil external supply
Pilot oil external drain

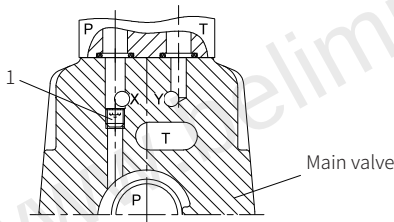
In this version, the pilot oil is supplied from a separate control circuit (external).
The pilot oil drain is not directed to the port T of the main valve, but return to the tank via port Y (external).

Model 3DRE...-.../...Y... Pilot oil external supply
Pilot oil external drain

In this version, the pilot oil is supplied from port P of the main valve (internal).
The pilot oil drain is not directed to the port T of the main valve, but return to the tank via port Y (external).
Port X in the subplate must be closed.

04

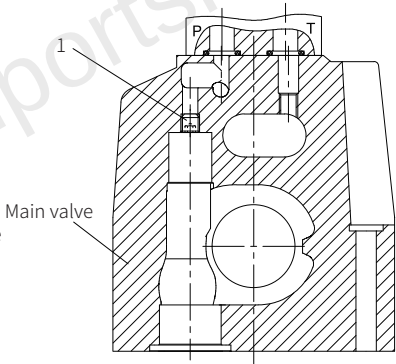
Size 10:



Pilot oil supply external: 1 Closed
 internal: 1 Open

Pilot oil drain external

Size 16:



Pilot oil supply external: 1 Closed
 internal: 1 Open

Pilot oil drain external