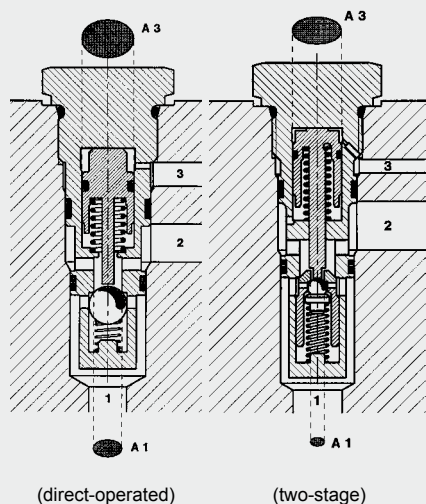


Up to 300 l/min
Up to 350 bar

FUNCTION



The pilot-to-open check valve ERVE 08021 is a direct-acting poppet valve. Its function is to hold the consumer in position leak-free (5 drops per minute). The valve allows flow from port 2 to port 1. In the opposite direction, the ball is pressed onto the seat by the closing spring and the pressure at port 1, and blocks flow from 1 to 2. If a sufficiently high control pressure is introduced at port 3, the ball is pressed against the closing spring and oil flows from 1 to 2. In this case port 2 must not be pressurized.

The check valves ERVE 16021 and ERVE 20021 function according to the same principle but with first stage decompression. The first stage only opens when the control pressure is introduced providing damped relief of the pressurized fluid. A further stroke of the control piston then causes the main stage to open, permitting flow from 1 to 2.

Check valve Poppet Type, Pilot-to-Open Cartridge – 350 bar ERVE 08021, ERVE 16021 and ERVE 20021

FEATURES

- To prevent creeping of loaded cylinders which are controlled by spool valves
- To prevent uncontrolled movement of loaded consumers
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Consumer is held in position leak-free
- External surfaces zinc-plated and corrosion-proof

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	ERVE 08021	max. 30 l/min
	ERVE 16021	max. 150 l/min
	ERVE 20021	max. 300 l/min
Cracking pressure:	1 bar (from port 2 to port 1)	
Leakage:	Leakage-free (max. 5 drops $\hat{=}$ 0,25 cm ³ /min at 350 bar)	
Control volume:	ERVE 08021	0.3 cm ³
	ERVE 16021	1.55 cm ³
	ERVE 20021	3.3 cm ³
Pilot ratio φ :	$\varphi = \frac{A3}{A1}$	
	ERVE 08021-01X	$\varphi = 3.4$
	ERVE 16021-01X	$\varphi = 13.0$
	ERVE 20021-01X	$\varphi = 13.4$
Control pressure p_{ctrl} :	Pressure required to cancel shut-off function of the valve across port 3 (flow from 1 to 2) p_2 = pressure across port 2 p_1 = pressure across port 1 Δp = pressure differential from performance curves	

	Cancellation main stage	Cancellation first stage	Keep open
ERVE 08021-01X	$p_{ctrl} = 0.3 \times p_1 + 2.5 \text{ bar}$	not available	$p_{ctrl} = p_2 + \Delta p + 4.5 \text{ bar}$
ERVE 16021-01X	$p_{ctrl} = 0.55 \times p_1 + 2.5 \text{ bar}$	$p_{ctrl} = 0.08 \times p_1 + 3 \text{ bar}$	$p_{ctrl} = p_2 + \Delta p + 5.0 \text{ bar}$
ERVE 20021 01X	$p_{ctrl} = p_1 + 3.5 \text{ bar}$	$p_{ctrl} = 0.08 \times p_1 + 4 \text{ bar}$	$p_{ctrl} = p_2 + \Delta p + 6.0 \text{ bar}$

Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm ² /s to max. 380 mm ² /s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
MTTF _d :	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Cavity:	08021, 16021, 20021	
Weight:	ERVE 08021	0.1 kg
	ERVE 16021	0.45 kg
	ERVE 20021	1.4 kg

MODEL CODE

ERVE - R $\frac{1}{2}$ - 01 X

Basic model _____
Pilot-to-open check valve

Size _____
R $\frac{1}{2}$, R1 and R1 $\frac{1}{2}$

Type _____
01 = standard pilot ratio ϕ 3.4 (08021) and 13.0 (16021) and 13.4 (20021) - phosphated
06 = pilot ratio ϕ 2.7 for (08021), hardened seat, zinc-plated
11 = pilot ratio ϕ 6 for (08021), phosphated
18 = pilot ratio ϕ 3.4 for (08021), nickel-plated, cracking pressure $p_o = 11$ bar

Series _____
(determined by manufacturer)

Standard models

Model code	Part No.
ERVE 08021-01X	710000
ERVE 16021-01X	710001
ERVE 20021-01X	710002

Other models on request

Standard in-line bodies

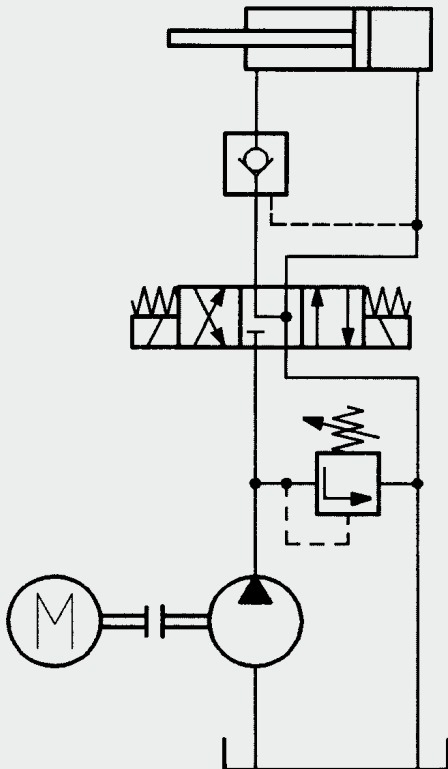
Code	Part No.	Material	Ports	Pressure
R08021-01X-01	275033	Steel, zinc-plated	G3/8, G1/4	420 bar
R08021-10X-01	283841	Steel, zinc-plated	G3/8, G1/4	420 bar
R16021-01X-01	277051	Steel, zinc-plated	G1, G1/4	420 bar

Other line bodies on request

Seal kits

Code	Part No.
SEAL KIT ERVE 08021...FKM	715394
SEAL KIT ERVE 16021...FKM	715932
SEAL KIT ERVE 20021...FKM	715885

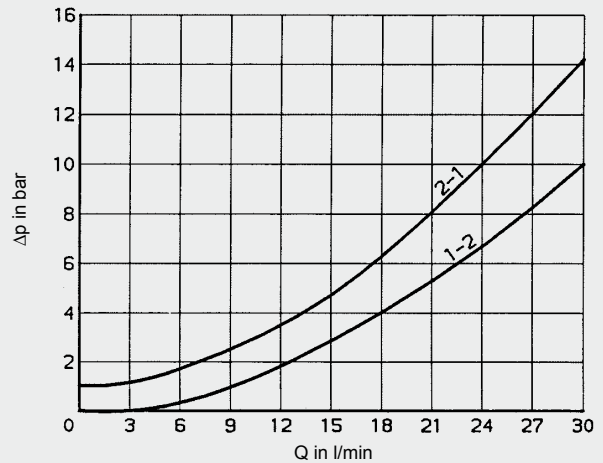
CIRCUIT DIAGRAM EXAMPLE



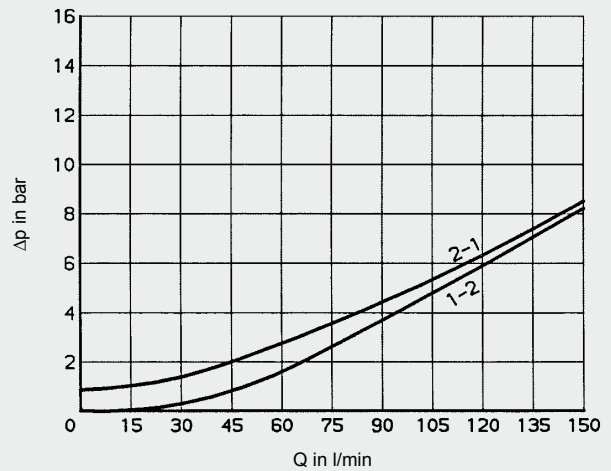
PERFORMANCE

Measured at $v = 36$ mm²/s, $T_{oil} = 50$ °C

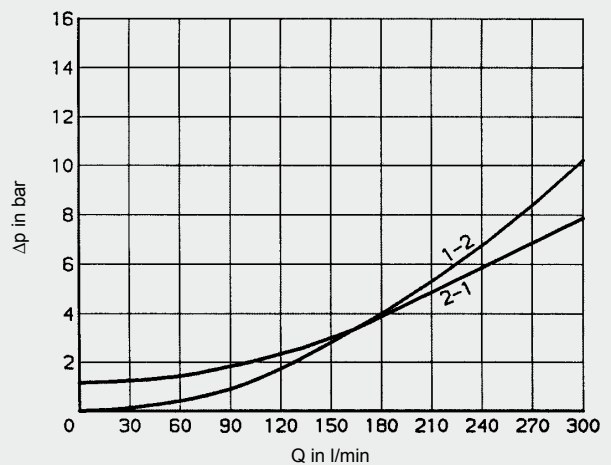
ERVE 08021



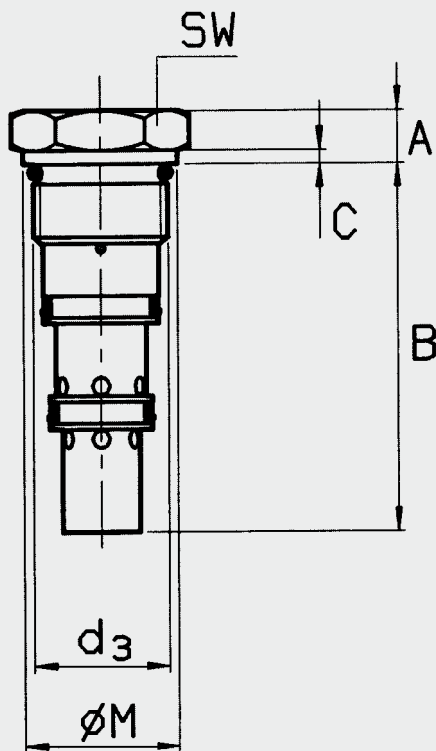
ERVE 16021



ERVE 20021



DIMENSIONS

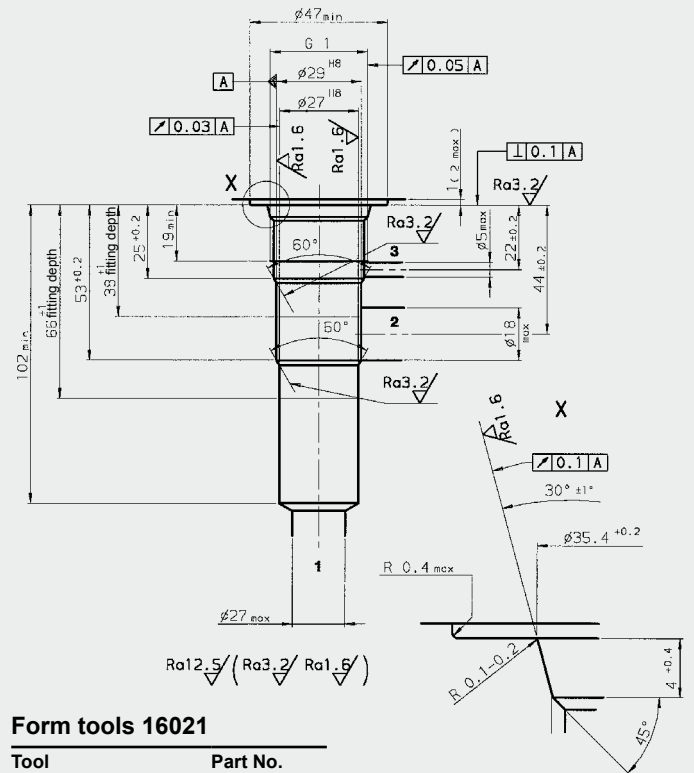


Millimeter
Subject to technical modifications

Nom. size	d3	A	B	C	ØM	SW	Torque
ERVE 08021	G 1/2	8	56	2	24	24	25 ⁺⁵ Nm
ERVE 16021	G 1	16	100	3	40	41	150 ⁺¹⁰ Nm
ERVE 20021	G 1 1/2	20	125	3	54	55	150 ⁺¹⁰ Nm

CAVITY

16021 (ERVE 16021)



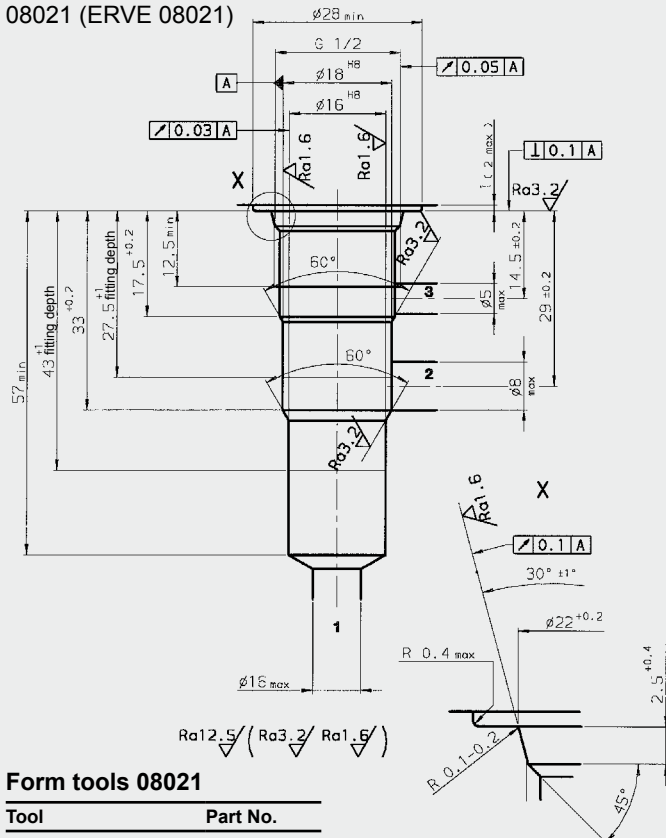
Form tools 16021

Tool	Part No.
Countersink	170035
Reamer	169965
Tap	1002661
Plug gauge	174879

Millimeter
Subject to technical modifications

CAVITY

08021 (ERVE 08021)



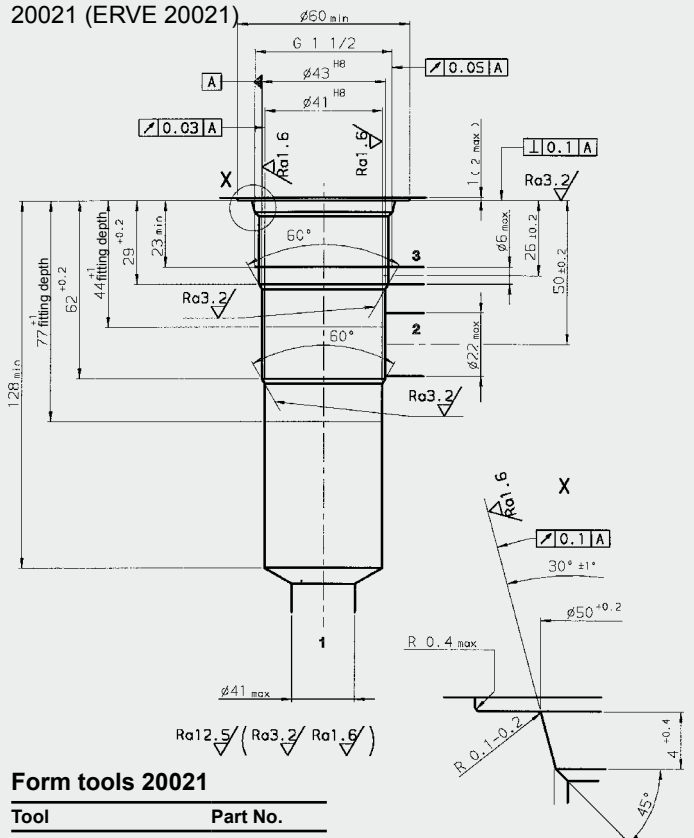
Form tools 08021

Tool	Part No.
Countersink	170031
Reamer	169962
Tap	1002667
Plug gauge	169939

Millimeter
Subject to technical modifications

CAVITY

20021 (ERVE 20021)



Form tools 20021

Tool	Part No.
Countersink	170034
Reamer	169966
Tap	1002524
Plug gauge	174880

Millimeter
Subject to technical modifications

NOTE

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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