

Proportional Solenoid for Hydraulic Application with Inductive Transducer

4

Product group

G RF ... B61, B62

Proportional solenoid

- According to DIN VDE 0580
- Armature space pressure-proof up to MSM W0120-01, test pressure static 350 bar, also suitable for dry operation
- To a large extent proportional behaviour between force and current
- Minimum hysteresis due to special precision armature bearings
- Quick response times
- Insulation materials of the excitation winding correspond to thermal class F
- Electrical connection and protection class when properly installed:
 - Plug connection by spade connectors according to DIN 46247
Protection class according to DIN VDE 0470 / DIN EN 60529 – IP 00
 - Plug connection via plug connector type Z KB according to DIN EN 175301-803
Cable gland (4 times 90° rotatable)
Protection class according to DIN VDE 0470 / DIN EN 60529 – IP 65



Fig. 1: G RF Y 035 F20 B61

Inductive transducer

- Integrated demodulation stage with carrier frequency oscillator and calibrated output sensitivity
- Two designs with limiting frequency 20 Hz and 500 Hz
- Suitable for dry and pressure-tight applications
- Pressure-tight tube, designed for 350 bar static pressure
- Mounting via square flange
- Electrical connection and protection class when properly installed:
 - Connection via surface-mounted plug Messrs. Binder M12 x 1 series 713
 - Protection to DIN VDE 0470/DIN EN 60529 – IP 65 with sealed read-out potentiometer
- EMC: EMC directive

Application examples

In particular proportional actuator in hydraulic control chains and control loops

Technical data inductive transducer

G RF Y 035, 045, 060	F20	B61	B62
Linear stroke	(mm)	± 4	
Supply voltage	(= V)	24 ± 10 %	
Input current	(mA)	< 50	
Sensitivity	(= V / mm)	0,5 ± 1 %	
Output voltage	(= V)	5,5 ... 9,5	
Linearity tolerance	(%)	± 1	
Top limiting frequency (-3 dB)	(Hz)	typ. 20	typ. 500
Reference temper. range	(°C)	0 ... + 50	
Temperature drift	(% / °C)	typ. 0,05	
Load resistance	(kΩ)	> 5	

Technical data for proportional solenoids see pamphlet G RF ... B01.

The rated Voltage of the proportional solenoids is = 24 V DC. If power is e. g. supplied via an electronic automatic volume control amplifier, the rated voltage has to be adjusted accordingly.

Sensitivity

Sensitivity is the change in the output signal (ΔU) with reference to the change in the measuring path (Δs indicated in V/mm).

$$\text{Sensitivity} = \frac{\Delta U}{\Delta s}$$

Linearity error

The linearity error indicates the deviation of the output signal from the ideal graph in per cent.

$$\text{deviationLin} = \frac{(U_{\text{actual}} - U_{\text{nominal}})}{U_{\text{voltage stroke}}} \times 100 \%$$

Temperature drift

Temperature drift indicates in per cent the deviation of the output signal per degree of temperature change (shown in % / °C).

$$\text{deviation temp.} = \frac{(U_{\text{temp}} - U_{20^\circ \text{C}})}{U_{\text{voltage stroke}} \times \Delta T} \times 100 \%$$

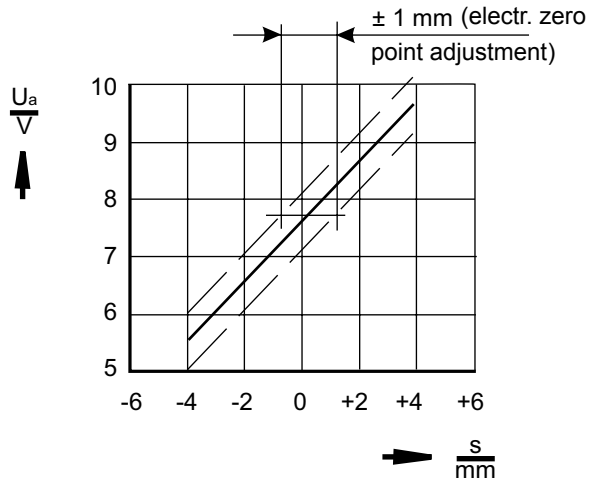


Fig. 2: Voltage vs stroke diagram for transducer with integrated electronic

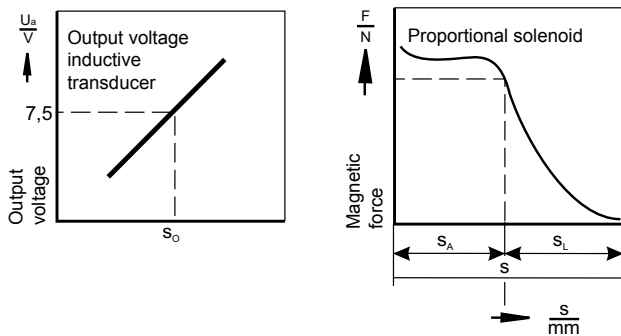


Fig. 3: Output voltage U_A depending on S, S_A, S_O

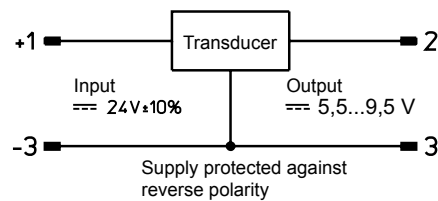
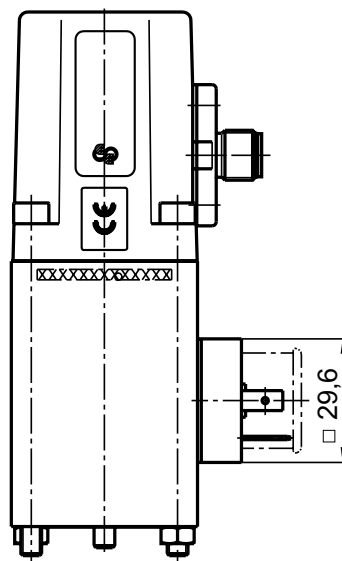
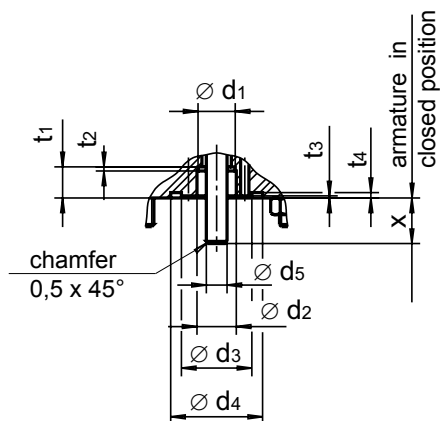
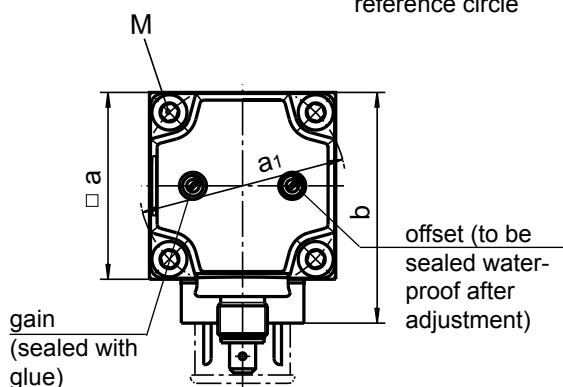
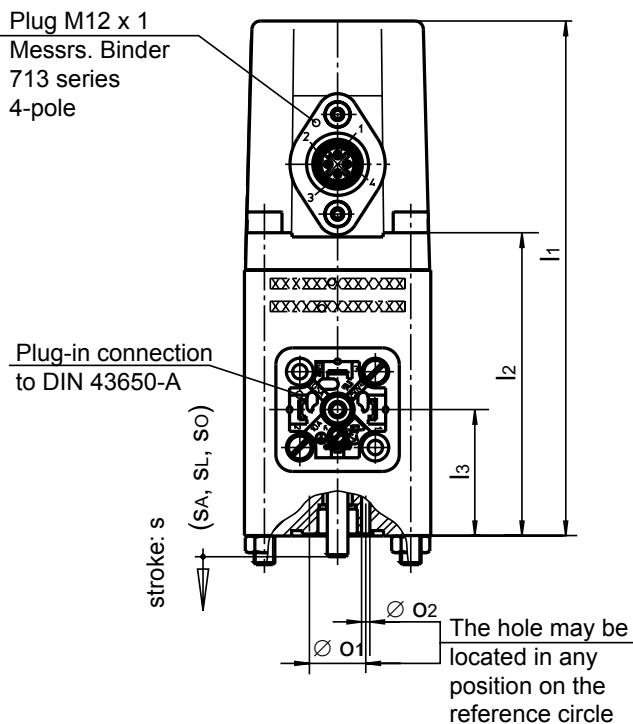


Fig. 4: Block diagram
Built-in electronics protected against wrong configuration at 1 + 3

Dimensions sheet




G RF Y ... F20 B61, B62			
Dimensions in mm	035	045	060
□ a	35	45	60
□ a1	28	35,35	48,1
b	45	55	70
l1	117	124	142
l2	66	73	91
l3	28,75	30,25	41,2
M	M4	M5	M6
∅ o1	1,8	2	3
∅ o2	1,2	13,6	189
t1	6,5	7,5	10
t2	1	1	2
t3	0,5 ^{+0,2}	0,5 ^{+0,2}	0,5 ^{+0,2}
t4	1,3 ^{+0,1}	1,3 ^{+0,1}	1,3 ^{+0,1}
x	7,5 ^{±0,15}	11 ^{±0,2}	12 ^{±0,2}
∅ d1	7,5	9	12
∅ d2	8	9,5	12,5
∅ d3	17	17	23,3
∅ d4	22,2 ^{±0,2}	22,2 ^{±0,2}	29,7 ^{±0,2}
∅ d5	4	5	6
S (overall stroke)	4 ^{±0,3}	6 ^{±0,3}	8 ^{±0,4}
S _W (working stroke)	2	3	4
S _L (idle stroke)	2	3	4
S _O transducer O-position	2	3	4
(= 7,5 V) at stroke s _a			

Fig. 5: Types G RF Y 035 F20 B61, B62
G RF Y 045 F20 B61, B62
G RF Y 060 F20 B61, B62

Information and remarks concerning European directives can be taken from the correspondent information sheet which is available under *Produktinfo.Magnet-Schultz.com*.

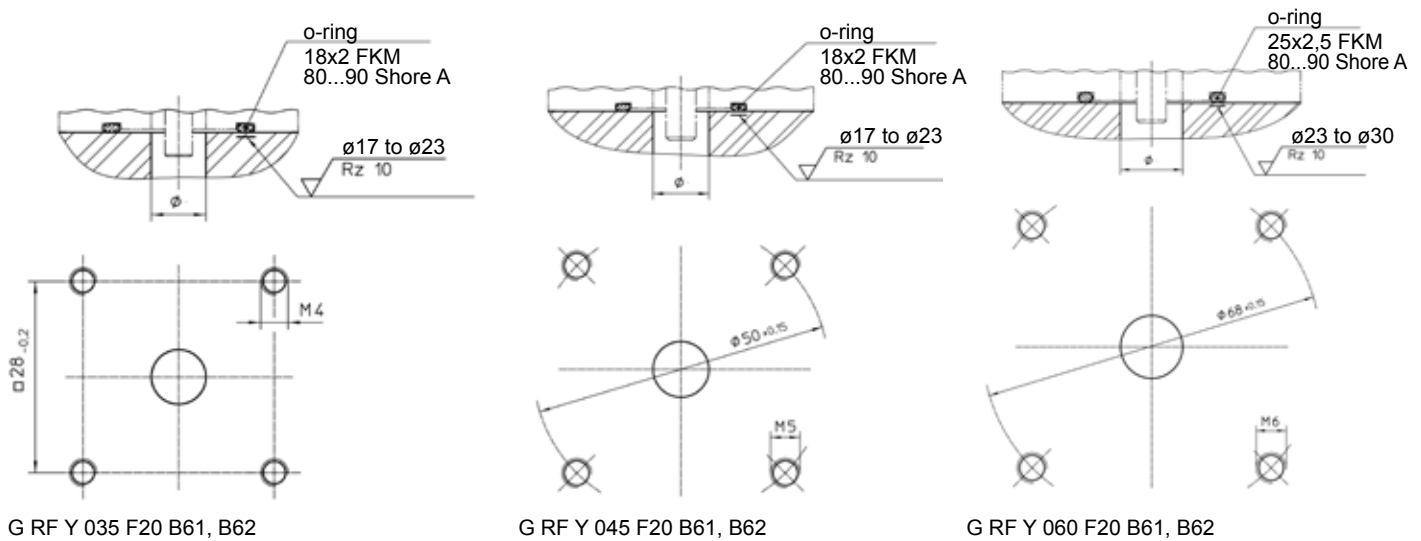
Note on the RoHS Directive

According to our current state of knowledge the devices pictured in this document do not contain any substances in concentration values or applications for which putting into circulation with products manufactured from them is prohibited in accordance to RoHS.

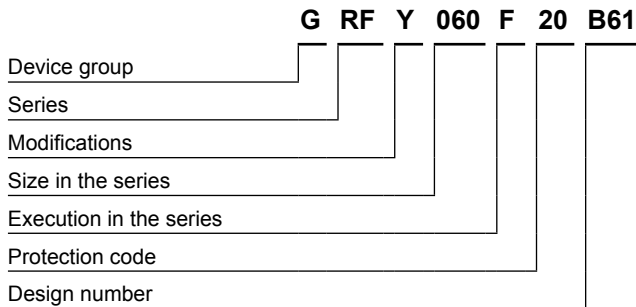
Please make sure that the described devices are suitable for your application. Supplementary information concerning its proper installation can be taken also from the  -Technical Explanation, the effective DIN VDE0580 as well as the relevant specifications.

This part list is a document for technically qualified personnel. The present publication is for informational purposes only and shall not be construed as mandatory illustration of the products unless otherwise confirmed expressively.


Connection geometry




Type code



Example

Type G RF Y 060 F20 B61
 Voltage  24 V DC
 Operating mode S1 (100 %)

Specials designs

Please do not hesitate to ask us for application-oriented problem solutions. In order to find rapidly a reliable solution we need complete details about your application conditions. The details should be specified as precisely as possible in accordance with the relevant  -Technical Explanations.

If necessary, please request the support of our corresponding technical office.