

## ON/OFF solenoid for hydraulic application

# 4

Product group

### F H M G + F H T S

Replacement for G HP Y 037, 045, 063

#### Function

- Armature space pressure tight, nominal operating pressure up to 250 bar
- Magnetic force vs. stroke characteristic increasing
- Quick response times
- Push type

#### Construction

- Electrical connection via various plugs
- Construction size: 35mm, 45mm, 60mm
- Protection class according to DIN VDE 470/DIN EN 60529, in case of proper assembly depending on plug type, from IP65 to IPX9K
- Mounting via central thread
- Simple exchange of the solenoid body without opening the hydraulic circuit
- Manual override

#### Application examples

- Actuation of hydraulic and special valves

#### Options and accessories

- Performance variants
- Deviant ambient and/or standard temperatures
- Other plug forms as well as variants with cable
- Variants according to ATEX/IECEX
- Integrated recovery diode
- In the framework of our platform for valve solenoids there is a variety of variation possibilities for customer specific requirements. We are pleased to work out your individual solution in a personal meeting.

#### Standards and approvals

- Design and testing according to DIN VDE 0580
- Quality management to ISO 9001



Fig. 1: Solenoid body type F H M G with complete tube F H T S

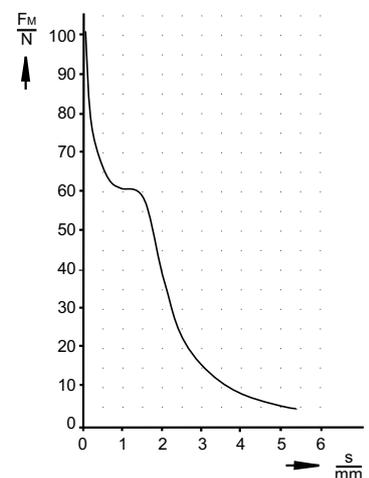


Fig. 2: Magnetic force-stroke characteristic

## Technical data standard

Size		037	045	063	
Operating mode		S1 (100 %)			
Reference temperature $\vartheta_{11}$	(°C)	50			
Rated voltage $U_N$	(V DC)	24			
Total stroke s	(mm)	<b>Magnetic force <math>F_M</math> (N)</b>			
		0	100	140	270
		0.5	65	105	215
		1	60	86	180
		1.5	57	79	160
		2	40	55	145
		3	15	22	128
		3.5	11	15	125
		4	8	11	100
		5		5	58
		6		3	37
		7			25
8			19		
9			14		
Working stroke $s_W$	(mm)	1.5	1.5	3.5	
Nennbetriebsdruck (dynamisch)	(bar)	250	210		
Rated work $W_N$ with working stroke $s_W$	(Ncm)	8.5	11.9	43.8	
Rated power $P_{20}$	(W)	25.4	29.1	47.2	
Operating frequency	(1/h)	3.600			
Armature weight $m_A$	(kg)	0.04	0.05	0.16	
Solenoid weight $m_M$	(kg)	0.41	0.57	1.57	
The heating test is based on the assembly on a hydraulic valve with base plate and the minimum dimensions	hydraulic valve	(mm)	46 x 46 x 66		
	material	(mm)	66 x 46 x 30		
			67 x 67 x 82		
			102 x 115 x 30		

Table 1

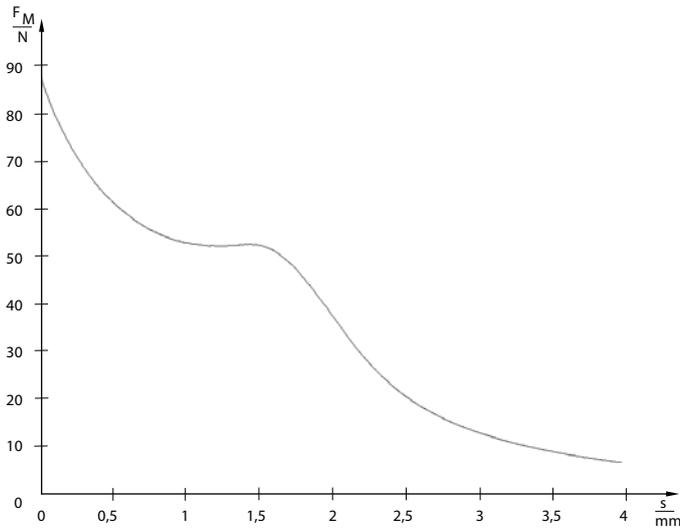
**Information and remarks concerning European directives** can be taken from the correspondent information sheet which is available under *Produktinfo.Magnet-Schultz.com*.

**Please make sure that the described devices are suitable for your application. Our offers for these devices are based on the assumption of maximal 8 in an FMEA severity table, i. e. in case of malfunction of the device model as offered, there is, amongst others, no jeopardy of life or limb. Supplementary information concerning its proper installation can be taken also from the  –Technical Explanation, the effective DIN VDE0580 as well as the relevant specifications.**

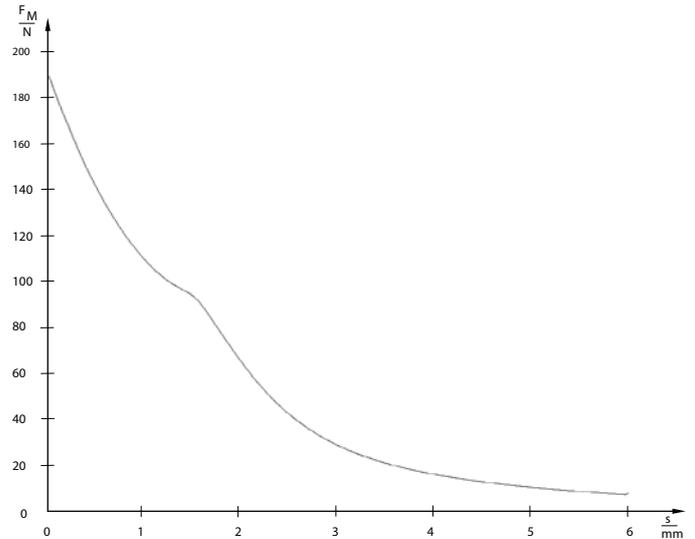
This part list is a document for technically qualified personnel.

The present publication is for informational purposes only and shall not be construed as mandatory illustration of the products unless otherwise confirmed expressively.

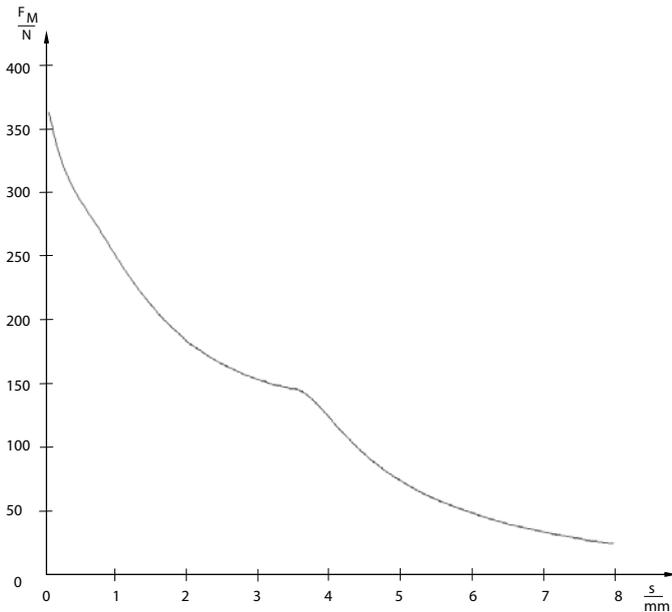
### Magnetic force-stroke characteristic standard



**Fig. 3:** Magnetic force-stroke characteristic size 035



**Fig. 4:** Magnetic force-stroke characteristic size 045



**Fig. 5:** Magnetic force-stroke characteristic size 063

Standard values for voltage and operating mode: 24V, S1 (100%). For deviations from the indicated operating conditions regarding reference temperature, operating mode, rated voltage and dimensions of hydraulic slide and base plate, adaptations of the exciter coil might be necessary which result in modifications of the magnetic force.

The indicated technical data refer to an A.C. power supply with bridge rectifier.

The coil winding can be adjusted to other current and resistance values on request.

Owing to natural dispersion magnetic-force values may deviate by  $\pm 5\%$  from the listed values.

On request, armature space can be deaerated and pushrod can be adjusted.

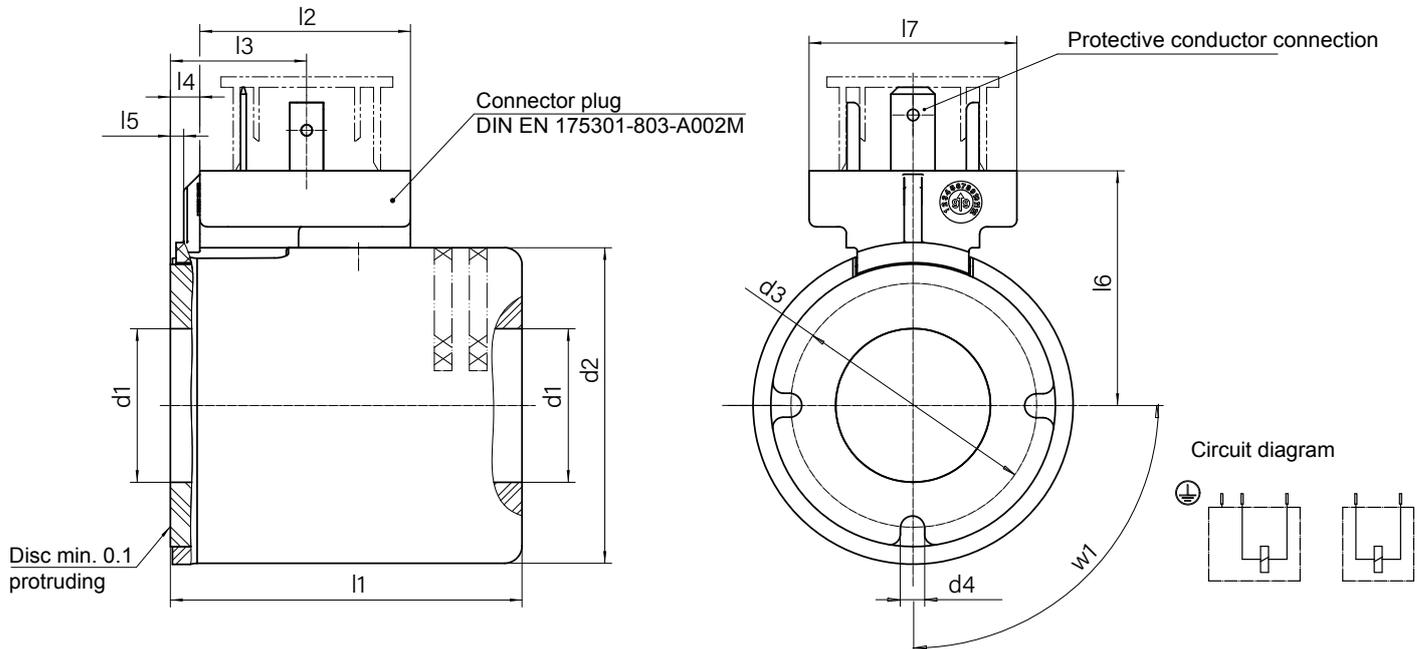
Solenoid interior and armature bearing are resistant to all neutral fluids that are commonly used in hydraulics.

Please contact us if you intend to use other operating media.

#### Protection class

The protection class of the complete device depends on the plug connection of the solenoid body used. Please consider the notes in the data sheet of the solenoid body F HM G.

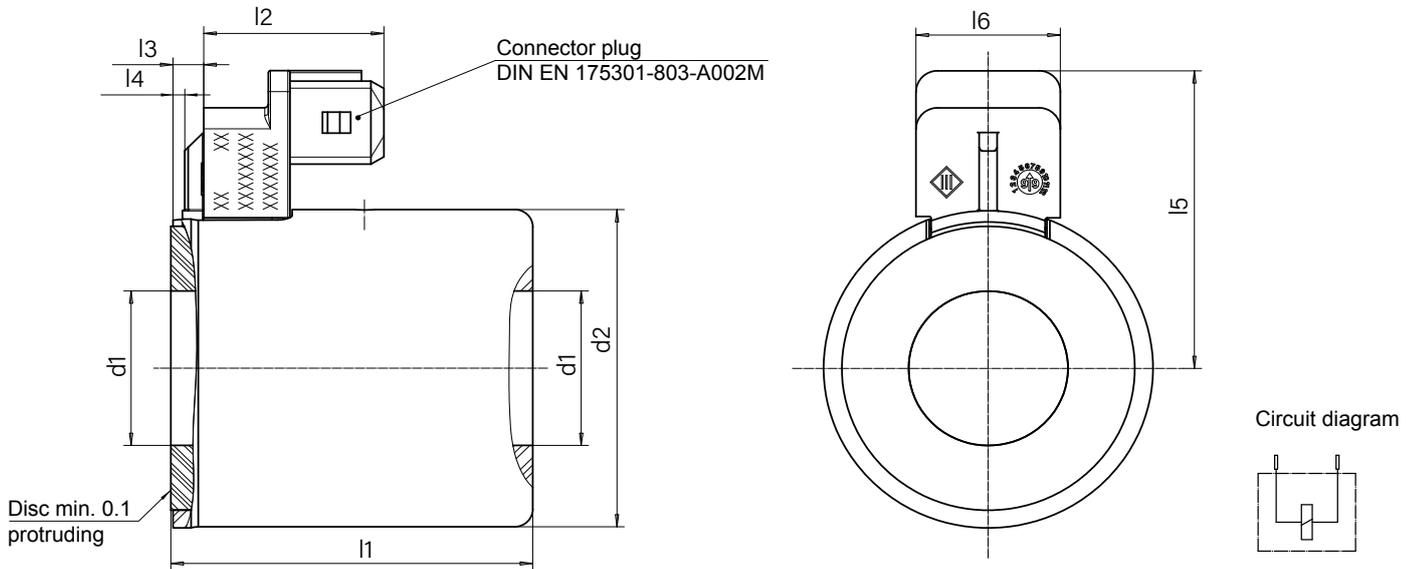
## Solenoid body (connector: DIN)



Size	037	045	063
Material no.	925428	926433	924585
Dimensions in mm / electrical data see table 1			
d1	Ø 19.03	Ø 22	Ø 31
d2	Ø 37.1	Ø 45	Ø 63
d3	-	-	Ø 50.9 ±0.2
d4	-	-	Ø 3.45 ±0.1
l1	50	50.1	72
l2	30	30 ±0.5	31
l3	18.35	19.4 ±1	22
l4	3.15 ±0.4	4.2	5.8
l5	0.85 ±0.4	1.9 +0.4/-0.3	-
l6	29.7	33.7 ±1	42.2
l7	29.6	29.6 ±0.5	29.6
w1	-	-	90° ±30°

Table 2

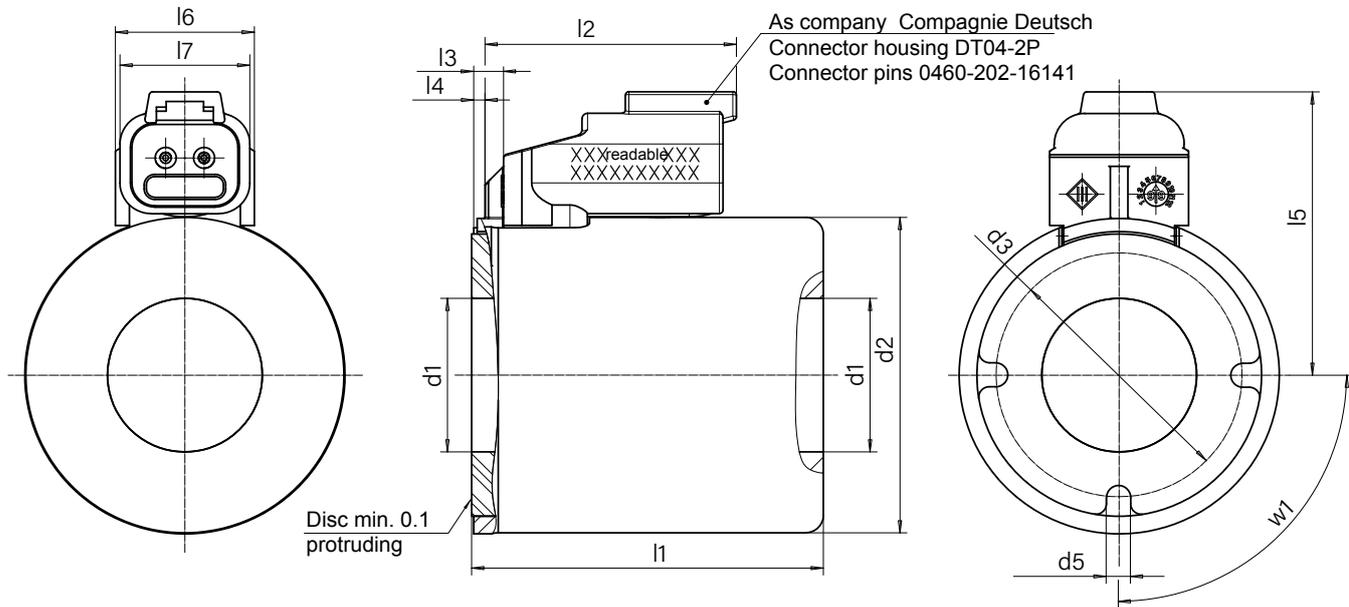
### Solenoid body (connector: AMP-Junior-Timer 2-pole)



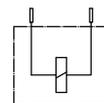
Size	037	045
Material no.	925123	925384
Dimensions in mm / electrical data see table 1		
d1	Ø 19.03	Ø 22
d2	Ø 37.1	Ø 45
l1	50	50.1
l2	24.95 ±0.3	24.95
l3	3.5 ±0.2	4.25
l4	1.55 +0.3/-1	-
l5	38.5 ±0.5	42.5
l6	20 ±0.2	20

Table 3

## Solenoid body (Deutsch-connector DT04-2P)



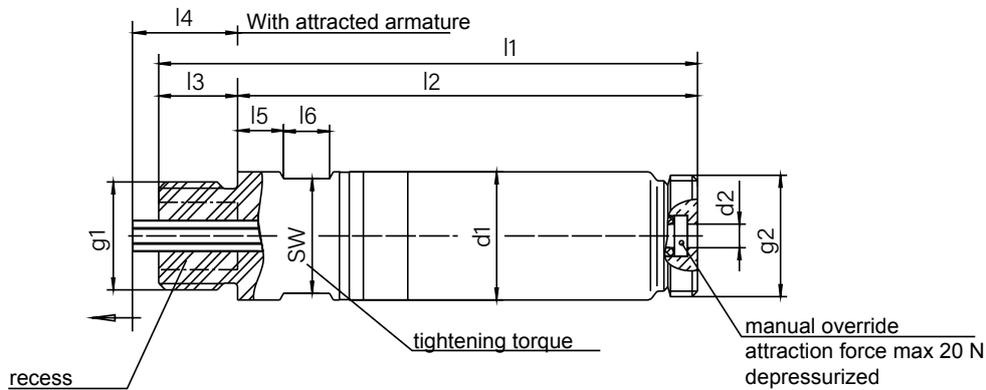
Circuit diagram



Size	037	045	063
Material no.	925770	926292	926296
Dimensions in mm / electrical data see table 1			
d1	Ø 19.03	Ø 22	Ø 31
d2	Ø 37.1	Ø 45	Ø 63
d3	-	-	Ø 50.9 ±0.2
d4	-	-	Ø 3.45 ±0.1
l1	50	50.1	72
l2	33.2 ±0.3	36 ±1	40.6
l3	3.5 ±0.2	-	7 +0.5
l4	0.85 ±0.35	1.6 ±0.5	-
l5	36.7 ±0.5	40.7 ±1	49.2 ±1
l6	19.8 ±0.2	19.8 -0.2	19.9 ±0.5
l7	-	18.5 ±0.5	-
w1	-	-	90° ±30'

Table 4

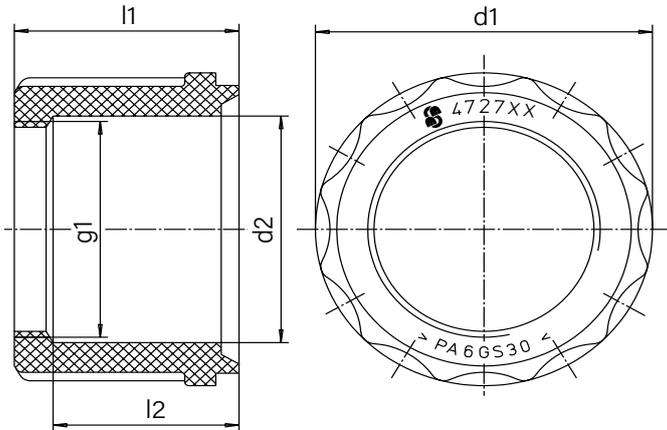
## Tube on/off solenoid



Size	037	045	063
Material no.	926099	923690	923685
d1	Ø 19	Ø 22	Ø 31
d2	Ø 3.5	Ø 3.5	Ø 4.5
l1	82	83	113
l2	70	71	101
l3	12 ±0.1	12 ±0.1	12 ±0.1
l4	20 ±0.15	20 ±0.15	25 ±0.15
l5	7	7	8
l6	7	7	10.5
Hub	4 +0.5	6 +1	8 +1
SW	SW17	SW19	SW27
Tightening torque (Nm)	12 bis 14	22 bis 24	50 bis 55
g1	M16x1.5	M18x1.5	M27x1.5
g2	M18x1.5	M22x1.5	M30x1.5
Admissible recess	max. Ø 10 - 12 deep	max. Ø 11 - 12 deep	max. Ø 18 - 12 deep

Table 6

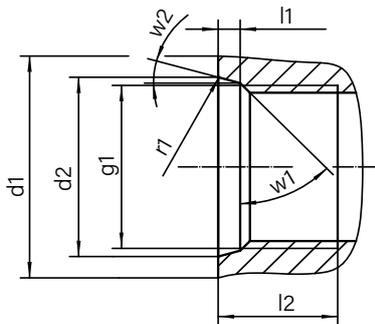
## Fastening nut



Size	037	045	063
Material no.	472793	472778	472794
Dimensions in mm			
d1	Ø 30 ±0.3	Ø 35	Ø 43.5
d2	Ø 19.5 ±0.2	Ø 23.3 ±0.1	Ø 31.5
l1	20	21	29
l2	15	15	24
g1	M18x1.5	M22x1.5	M30x1.5

Table 7

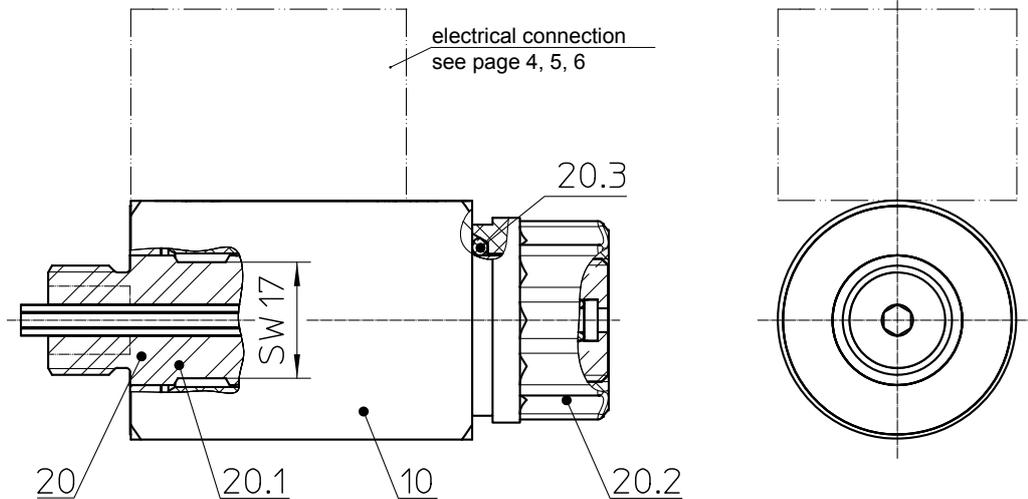
## Connection geometry



Size	037	045	063
Dimensions in mm			
d1	Ø 22.5	Ø 24.5	Ø 33.5
d2	Ø 17.8 +0.1	Ø 19.8 +0.1	Ø 28.8 +0.1
l1	2.4 +0.4	2.4 +0.4	2.4 +0.4
l2	min.13	min.13	min.13
r1	R0.2 ±0.1	R0.2 ±0.1	R0,2 ±0.1
w1	45° ±5°	45° ±5°	45° ±5°
w2	15° ±1°	15° ±1°	15° ±1°
g1	M16x1.5	M18x1.5	M27x1.5
suitable o-ring	13.3x2.2	15.3x2.2	23.3x2.4

Table 8

## Valve solenoid complete



Size	Pos.	Designation	Material no.	Designation 2	Plug	Remark
037	10	Solenoid body F HM G 037	925428 021	24VDC, 100%ED	DIN	Order description for complete unit please order pos. 10 + 20
	10		925123 007		AMP	Alternative
	10		925770 004		Deutsch	
	20	Tube complete FHTS037	902312	bagged		Order description for complete unit please order pos. 10 + 20
	20.1	Tube FHTS037	926099			Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472793	Suitable socket wrench SW26 (12 kt DIN 3124) Tightening torque 5+1 Nm		
	20.3	O-ring	781754	19x2,5 70 Sh-A NBR		
045	10	Solenoid body F HM G 045	926433 005	24VDC, 100%ED	DIN	Order description for complete unit please order pos. 10 + 20
	10		925384 011		AMP	Alternative
	10		926292 004		Deutsch	
	20	Tube complete FHTS045	902314	bagged		Order description for complete unit please order pos. 10 + 20
	20.1	Tube FHTS045	923690			Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472778	Suitable socket wrench SW30 (12 kt DIN 3124) Tightening torque 6+1 Nm		
	20.3	O-ring	781744	22x2,5 70 Sh-A NBR		
063	10	Solenoid body F HM G 063	924585 020	24VDC, 100%ED	DIN	Order description for complete unit please order pos. 10 + 20
	10		on request		AMP	Alternative
	10		926296 003		Deutsch	
	20	Tube complete FHTS063	902316	bagged		Order description for complete unit please order pos. 10 + 20
	20.1	Tube FHTS063	923685			Supplied as tube compl. (included in Pos. 20)
	20.2	Fastening nut	472794	Suitable socket wrench SW38 (12 kt DIN 3124) Tightening torque 6+1 Nm		
	20.3	O-ring	781755	31x2,5 70 Sh-A NBR		

Table 9

## Example

Please note that for a functional unit always a combination of solenoid body and tube must be ordered.

Solenoid body	Designation:	Solenoid body F HM G 037
	Material no.:	925428 021
	Rated voltage:	24 V DC
	Duty cycle	100%

Tube	Designation:	Tube F HT S 037
	Material no.:	902312

## Specials designs

Please do not hesitate to ask for our assistance with the solution of your application-oriented task. 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.