

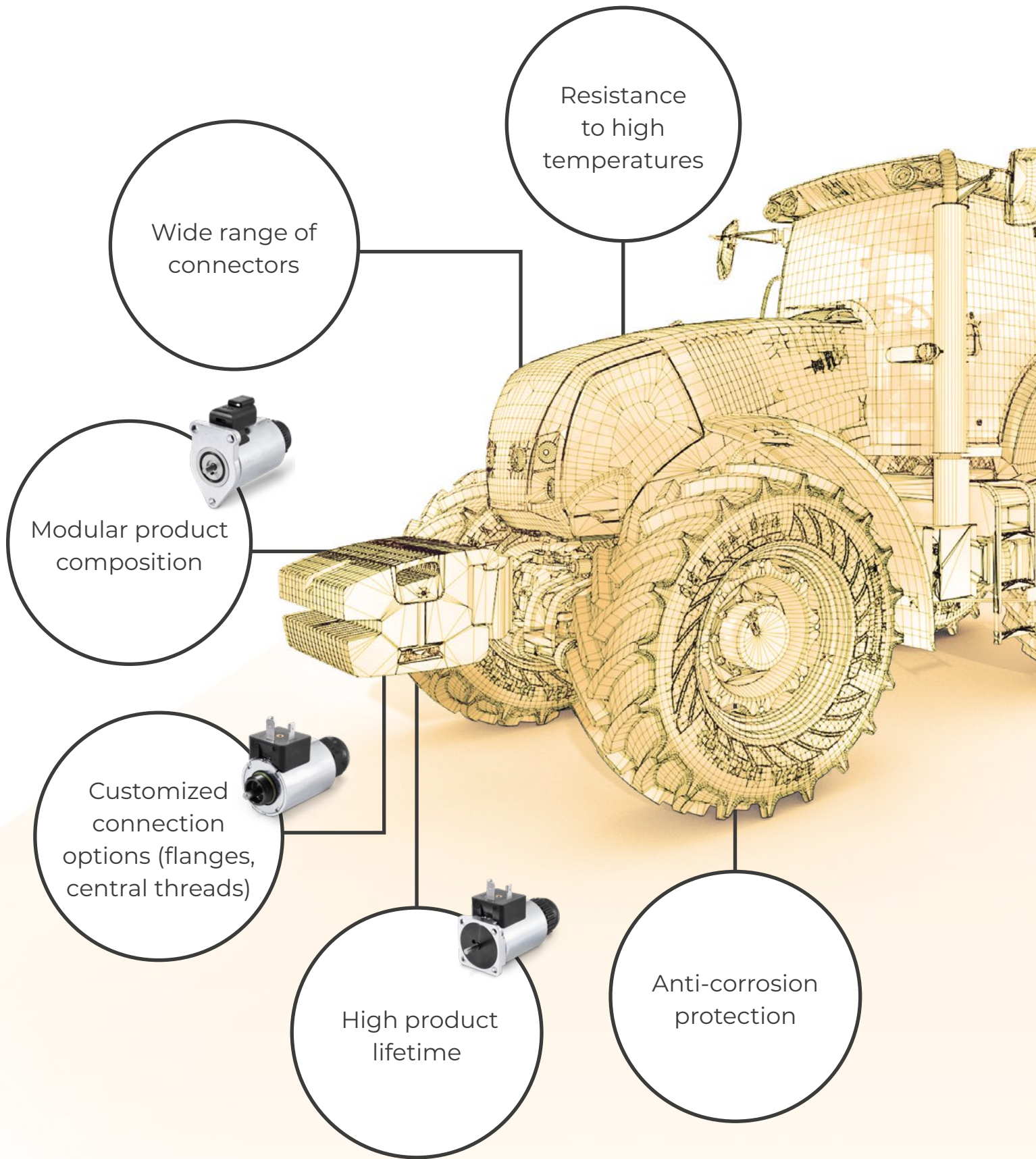


**SOLERO**  
TECHNOLOGIES



# Proportional and On-Off Solenoids

for Mobile and Standard Hydraulics



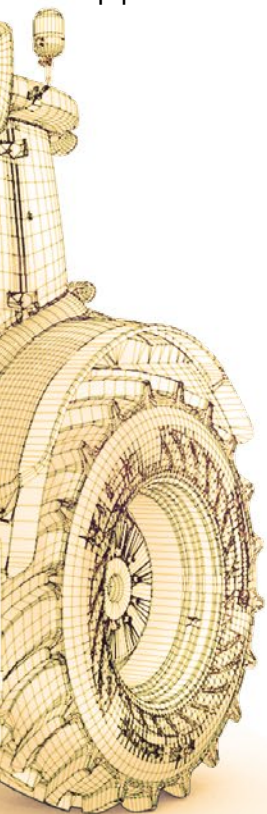
As **electromagnetic technology specialists** we offer solenoids for hydraulic applications in various standard configurations and sizes, we are also able to design solenoids for specific needs customized to customer application.

Our hydraulics solenoids are equipped with a pressure-sealed armature chamber and are maintenance-free. Their advantage is the capability of servicing the system with the hydraulic circuit remaining sealed.

The outstanding features of our solenoids are excellent proportional functions, low hysteresis, precise functions. All of this, along with consistent quality, contributes to the satisfaction of our customers.

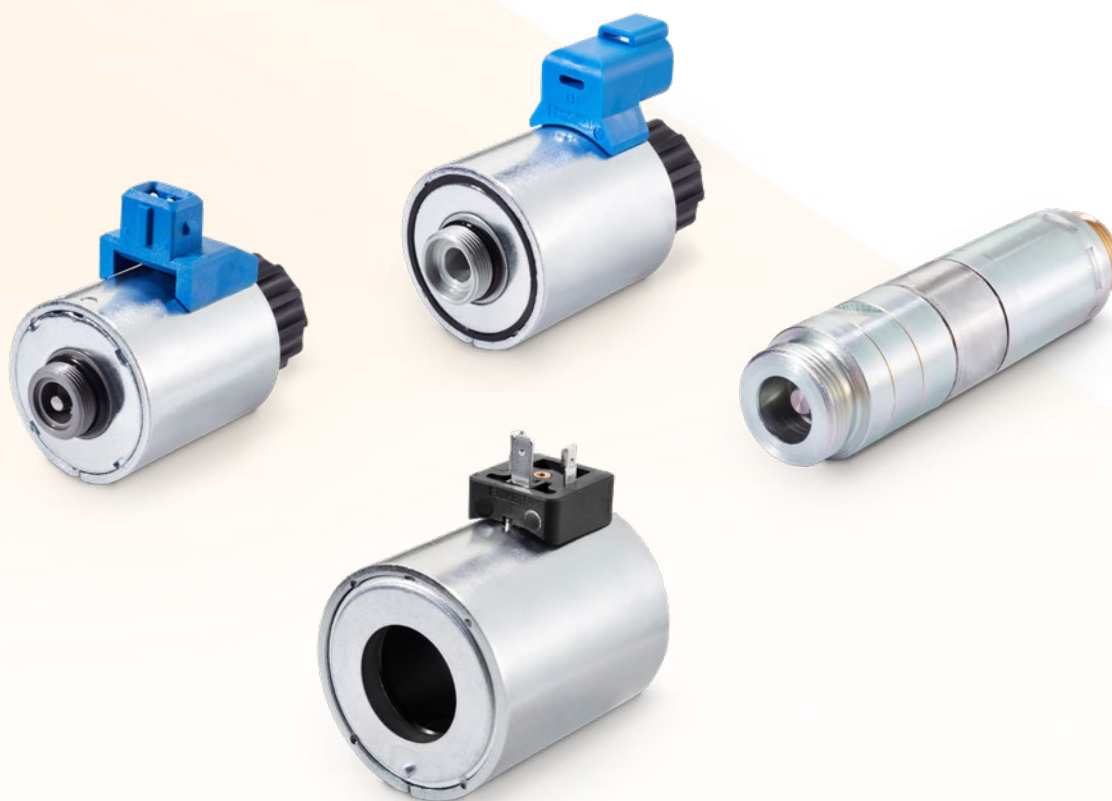
## Hydraulic solenoids

Control of pumps, motors, cartridge and cetop valves for proportional and on/off applications



### Technical details

<b>Solenoid sizes / Performance</b>	NG4, NG6, NG10 Others available on request
<b>Degree of protection</b>	IP 65 – IP 69 K
<b>Connectors</b>	DIN 43 650, DT04 (2-pin, Deutsch-Kompagnie), AMP Junior Timer, Desina (3- and 5-pin); NG6 and NG4 also available with integrated diode
<b>Features</b>	<ul style="list-style-type: none"><li>  Different voltage variants</li><li>  Variable temperature ranges</li><li>  Operating pressure 210 – 270 bar; higher dynamic operating pressures on request</li><li>  Resistant to external influences</li><li>  Various connection geometries</li></ul>

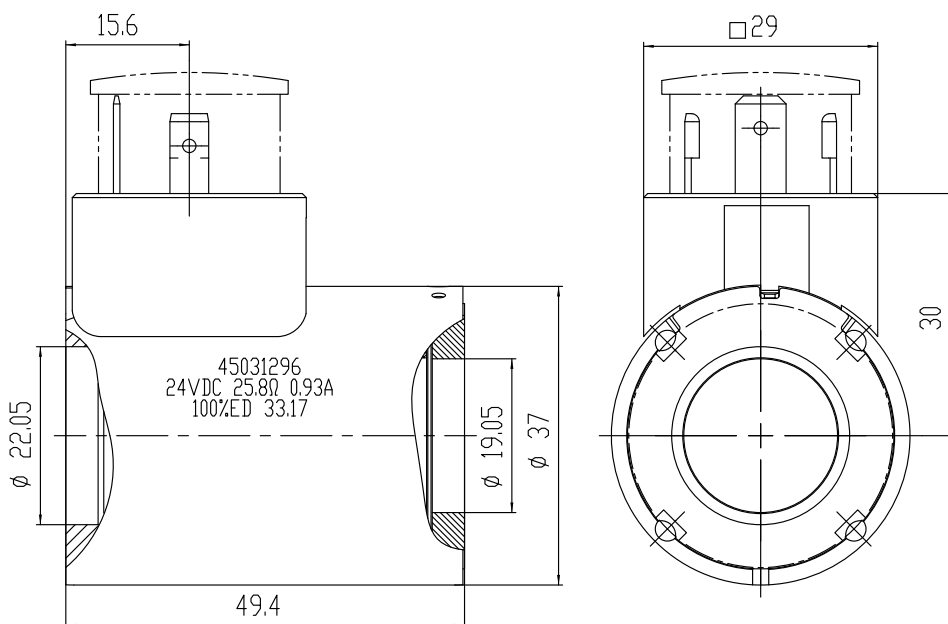


Type no.: 45 13603F4A

## NG04 On/Off Excitation system

### Technical specification according to VDE 0580

<b>Thermal class</b>	F (155°C)
<b>Surface protection</b>	DIN 50979-Fe//Zn12//An//TO
<b>Protection class (Assembled)</b>	IP65



### Electrical specification

Ident. no.	Nominal voltage $U_N \pm 10\%$ [V DC]	Nominal current $I_N$ [A]	Resistance at 20°C $R_{20} \pm 6\%$ [Ω]	Nominal power $P_N$ [W]	Duty cycle ED [%]
45031295	12	2	6	24	100
45031296	24	0.93	25.8	22.3	100

### Type of connector



IP65<sup>1</sup>  
DIN 43 650



IP6K9K<sup>1</sup>  
DT04-2P



IP67<sup>1</sup>  
AMP  
Junior Timer  
(Coding I)



IP6K9K<sup>1</sup>  
Axial AMP  
Junior Timer  
(Coding I / Coding II)

<sup>1</sup> in properly mounted condition

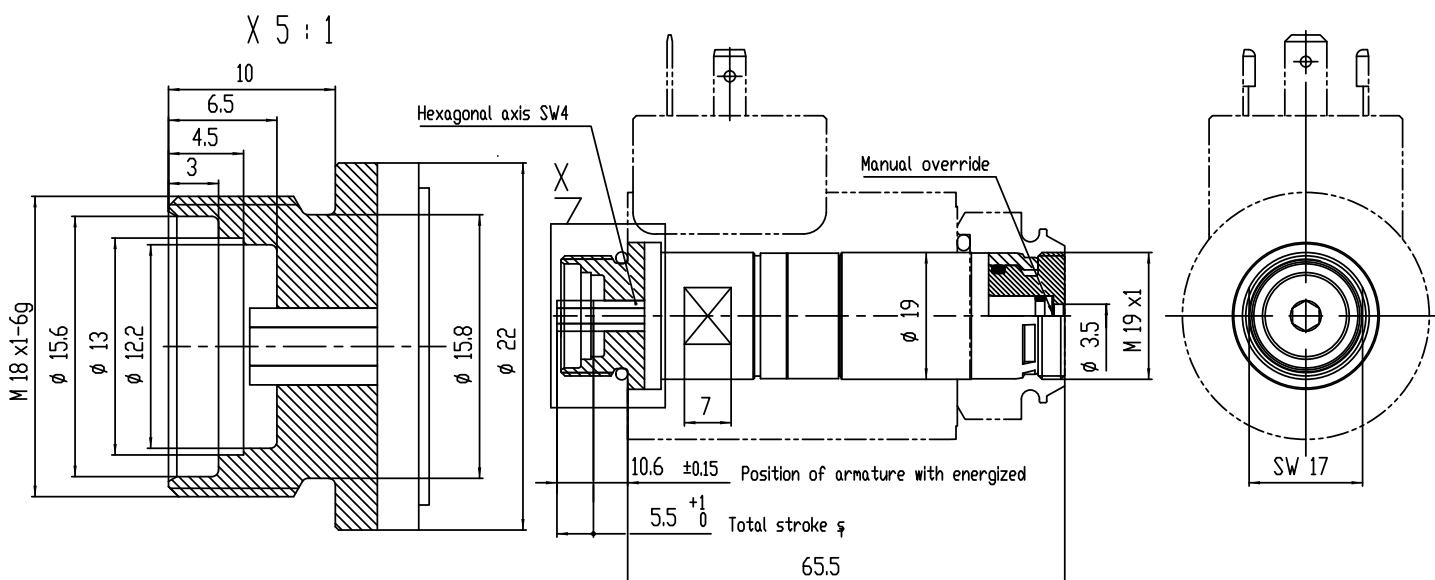
Type no.: 45 13603E4A

## NG04 On/Off Actuating system

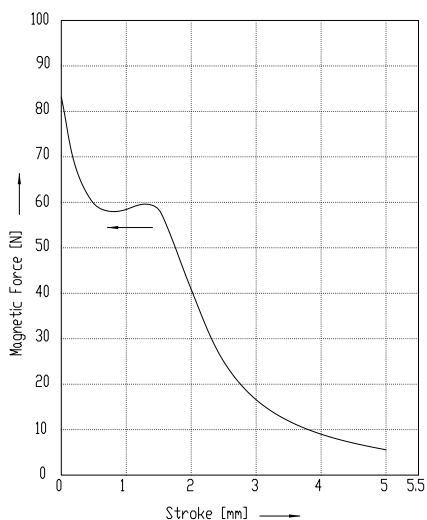


### Technical specification

Ambient temperature	-20 to +50 °C
Hydraulic manifold dimensions (steel)	46x46x66 mm
Hydraulic fluid	Hydraulic oil
Max. dynamic pressure	210 bar
Max. static pressure	315 bar
Sealing material	Viton
Total stroke	5.5 <sup>+1</sup> mm
Surface protection	DIN 50979-Fe//Zn8//An//TO



F/s Characteristic



F/s Characteristic measured at

Nominal voltage $U_N$ [V DC]	24
Duty cycle ED [%]	100
Nominal current $I_N$ [A]	0.93
Testing current (PWM 100Hz) $I_{test} = (0.9 \times U_N) / R_w$ [A]	0.59
Nominal power $P_N$ [W]	22.3
Weight armature $m_A$ [kg]	0.04
Testing speed $v_{test}$ [mm/min]	20

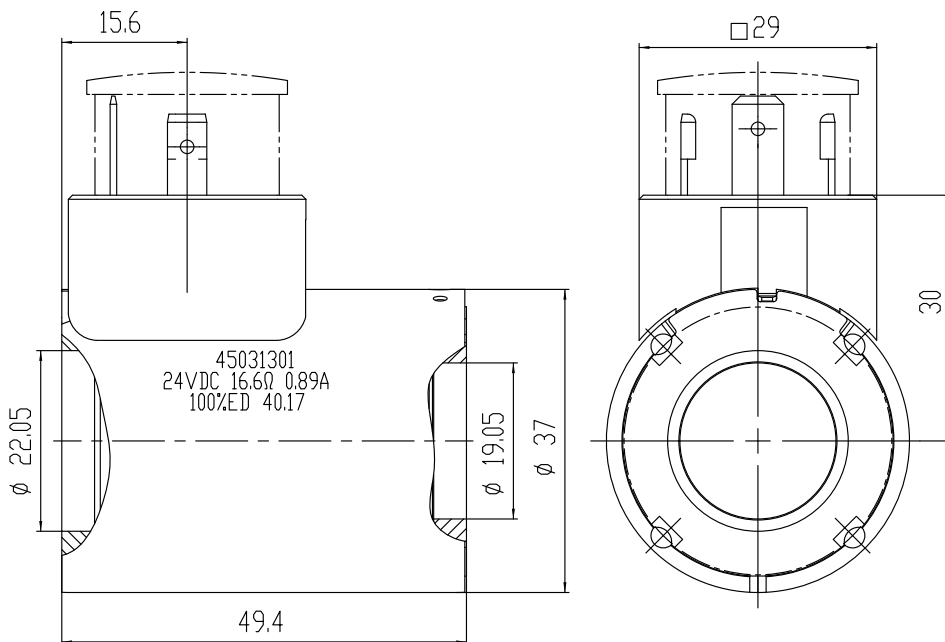
The characteristic of solenoid measured with steel hydraulic manifold.

Type no.: 45 85603E4A

# NG04 Proportional Excitation system

## Technical specification according to VDE 0580

<b>Thermal class</b>	F (155°C)
<b>Surface protection</b>	DIN 50979-Fe//Zn12//An//TO
<b>Protection class (Assembled)</b>	IP65



## Electrical specification

Ident. no.	Nominal voltage $U_N$ [V DC]	Nominal current $I_{Lim}$ [A]	Resistance at 20°C $R_{20} \pm 6\%$ [ $\Omega$ ]	Nominal power $P_{Lim}$ [W]	Duty cycle ED [%]
45031299	12	1.98	3.66	21.4	100
45031301	24	0.89	16.6	19.3	100

## Type of connector



IP65<sup>1</sup>  
DIN 43 650



IP6K9K<sup>1</sup>  
DT04-2P



IP67<sup>1</sup>  
AMP  
Junior Timer  
(Coding I)



IP6K9K<sup>1</sup>  
Axial AMP  
Junior Timer  
(Coding I / Coding II)

<sup>1</sup> in properly mounted condition

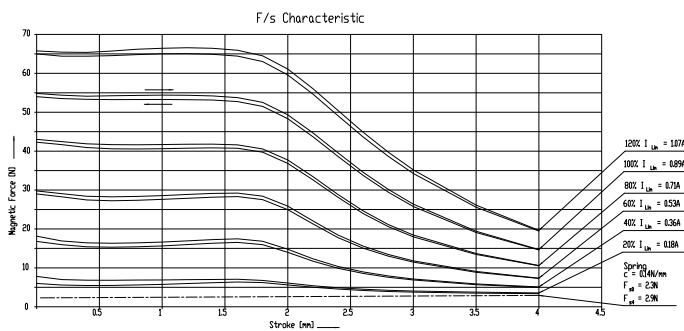
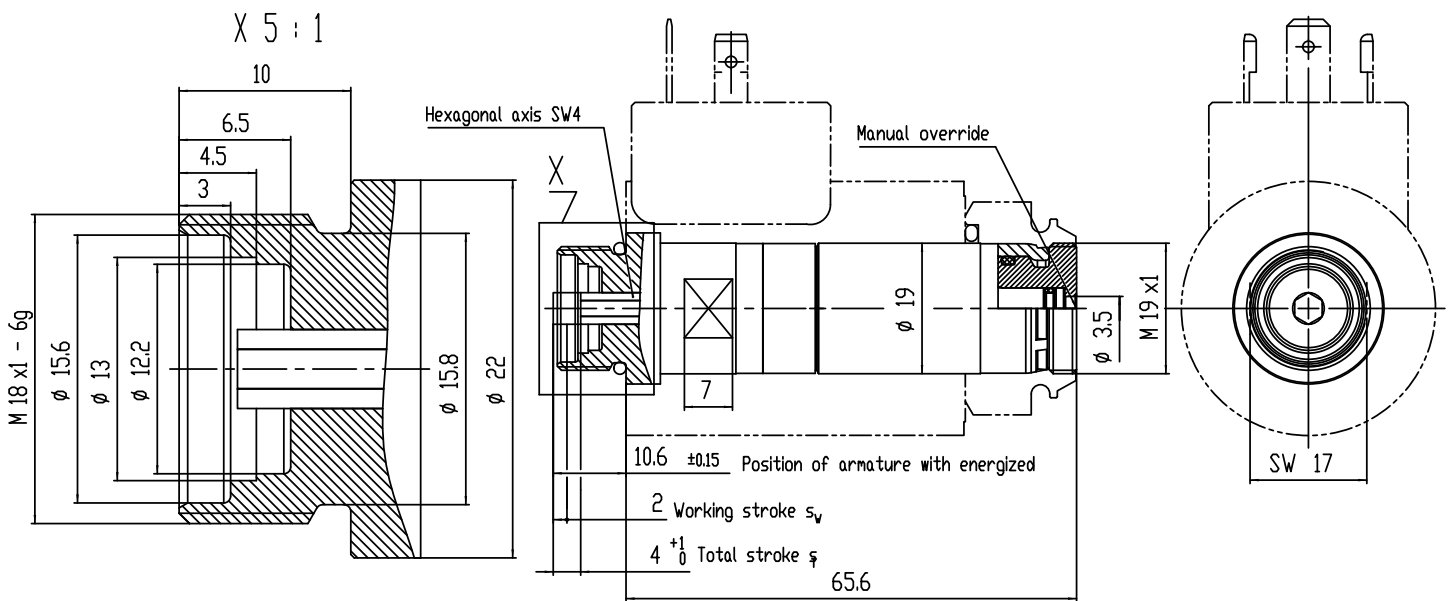
Type no.: 45 85603E3E

# NG04 Proportional Actuating system



## Technical specification

Ambient temperature	-20 to +50 °C
Hydraulic manifold dimensions (steel)	46x46x66 mm
Hydraulic fluid	Hydraulic oil
Max. dynamic pressure	210 bar
Max. static pressure	315 bar
Mechanical lifetime	10 mil. cycles
Sealing material	Viton
Working stroke	2 mm
Total stroke	4 <sup>+1</sup> mm
Surface protection	DIN 50979-Fe//Zn8//An//TO



## F/s Characteristic measured at

Nominal voltage $U_N$ [V DC]	24
Duty cycle ED [%]	100
Limit current (PWM 100Hz) Testing current $I_{Lim} = I_{test}$ [A]	0.89
Limit power $P_{Lim} = I_{Lim}^2 \times R_w$ [A]	19.3
Weight armature $m_A$ [kg]	0.04
Testing speed $v_{test}$ [mm/min]	20

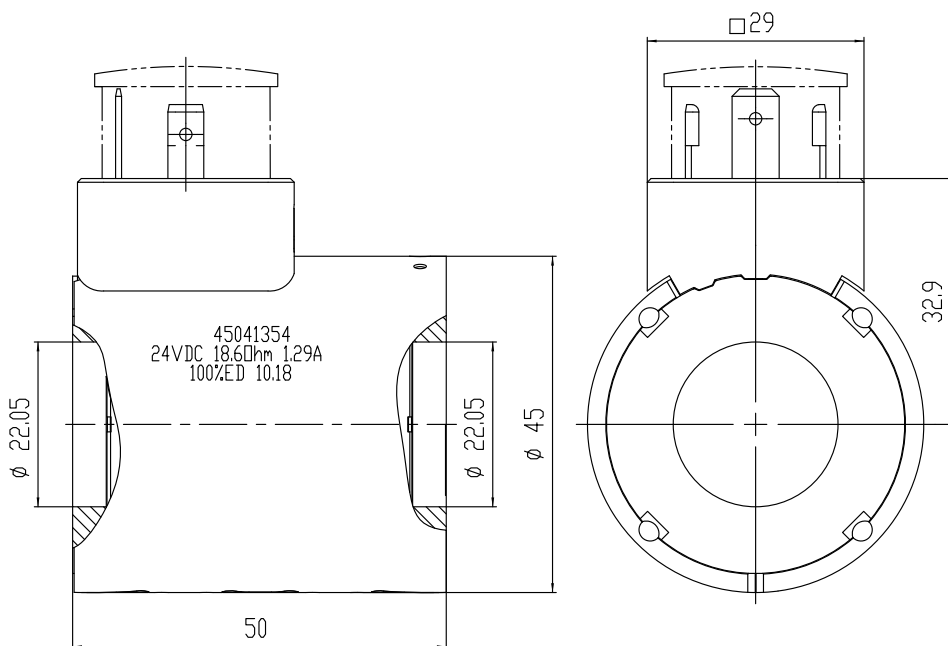
The characteristic of solenoid measured with steel hydraulic manifold.

Type no.: 45 13604K3A

# NG06 On/Off Excitation system

## Technical specification according to VDE 0580

<b>Thermal class</b>	F (155°C)
<b>Surface protection</b>	DIN 50979-Fe//Zn12//An//TO
<b>Protection class (Assembled)</b>	IP65



## Electrical specification

Ident. no.	Nominal voltage $U_N \pm 10\%$ [V DC]	Nominal current $I_N$ [A]	Resistance at 20°C $R_{20} \pm 6\%$ [ $\Omega$ ]	Nominal power $P_N$ [W]	Duty cycle ED [%]
45041353	12	2.72	4.41	32.7	100
45041354	24	1.29	18.6	31	100

## Type of connector



IP65<sup>1</sup>  
DIN 43 650



IP6K9K1  
DT04-2P  
(In)



IP6K9K1  
DT04-2P  
(Out)



IP671  
AMP  
Junior Timer  
(Coding I)



IP6K9K1  
Axial AMP  
Junior Timer  
(Coding I /  
Coding II)



IP65<sup>1</sup>  
M12  
367038



IP65<sup>1</sup>  
M12  
367039

<sup>1</sup> in properly mounted condition



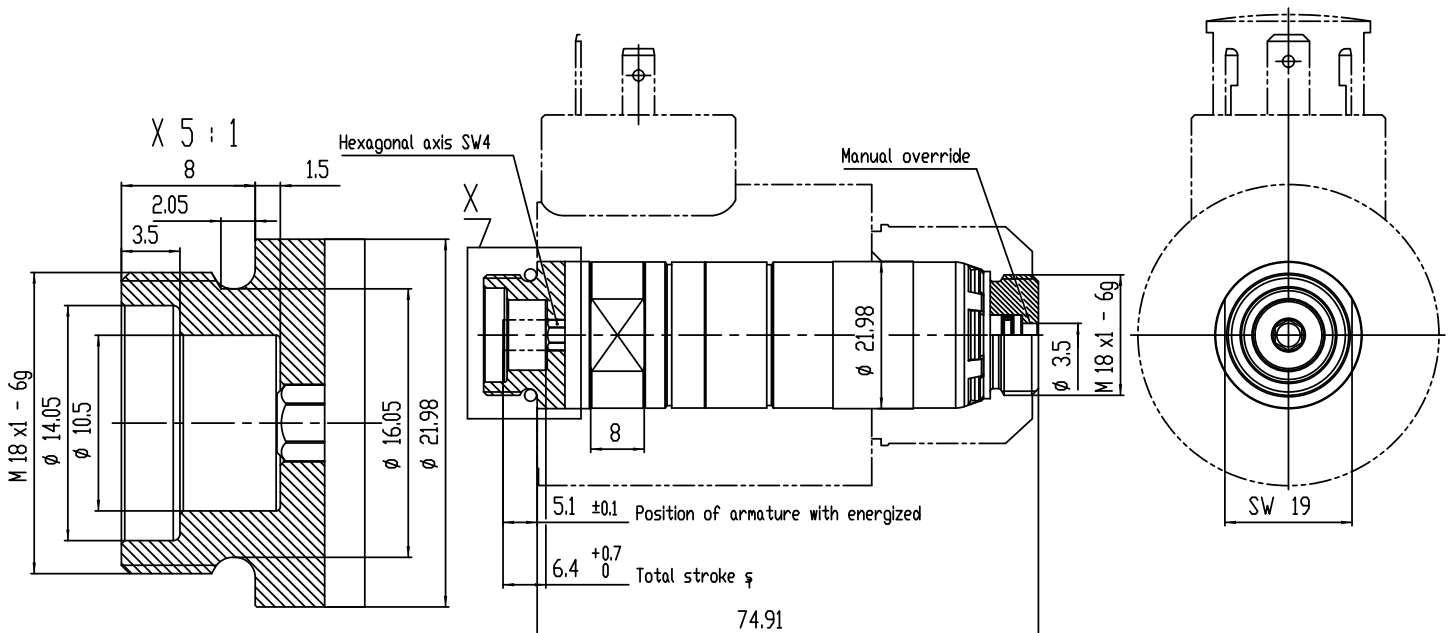
Type no.: 45 13604G0F

## NG06 On/Off Actuating system

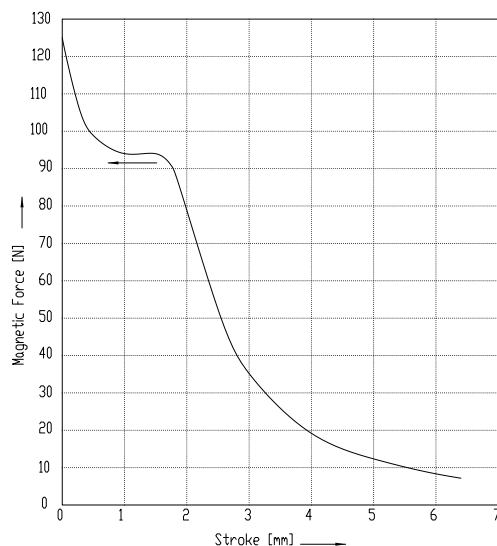


### Technical specification

Ambient temperature	-20 to +50 °C
Hydraulic manifold dimensions (steel)	46x46x66 mm
Hydraulic fluid	Hydraulic oil
Max. dynamic pressure	210 bar
Max. static pressure	315 bar
Sealing material	Viton
Total stroke	6.4 <sup>+0.7</sup> mm
Surface protection	DIN 50979-Fe//Zn8//An//T0



F/s Characteristic



F/s Characteristic measured at

Nominal voltage $U_N$ [V DC]	24
Duty cycle ED [%]	100
Nominal current $I_N$ [A]	1.29
Testing current (PWM 100Hz) $I_{test} = (0.9 \times U_N) / R_w$ [A]	0.81
Nominal power $P_N$ [W]	31
Weight armature $m_A$ [kg]	0.06
Testing speed $v_{test}$ [mm/min]	20

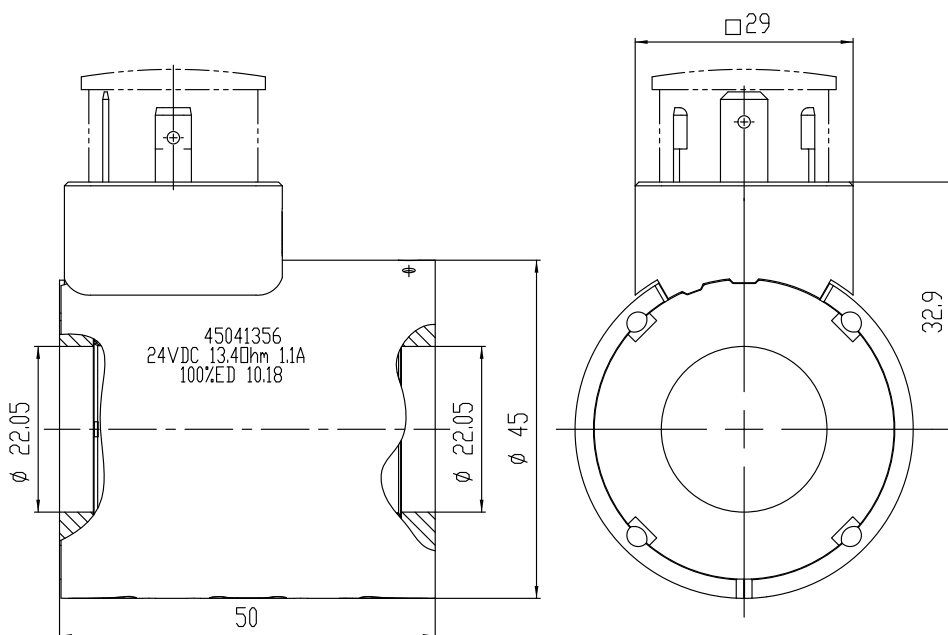
The characteristic of solenoid measured with steel hydraulic manifold.

Type no.: 45 85604E8A

# NG06 Proportional Excitation system

## Technical specification according to VDE 0580

<b>Thermal class</b>	F (155°C)
<b>Surface protection</b>	DIN 50979-Fe//Zn8//An//T0
<b>Protection class (Assembled)</b>	IP65



## Electrical specification

Ident. no.	Nominal voltage $U_N$ [V DC]	Nominal current $I_{Lim}$ [A]	Resistance at 20°C $R_{20} \pm 6\%$ [ $\Omega$ ]	Nominal power $P_{Lim}$ [W]	Duty cycle ED [%]
45041355	12	2.98	2.33	32.2	100
45041356	24	1.1	13.4	23.7	100

## Type of connector



IP65<sup>1</sup>  
DIN 43 650



IP6K9K<sup>1</sup>  
DT04-2P  
(In)



IP6K9K<sup>1</sup>  
DT04-2P  
(Out)



IP67<sup>1</sup>  
AMP  
Junior Timer  
(Coding I)



IP6K9K<sup>1</sup>  
Axial AMP  
Junior Timer  
(Coding I / Coding II)

<sup>1</sup> in properly mounted condition

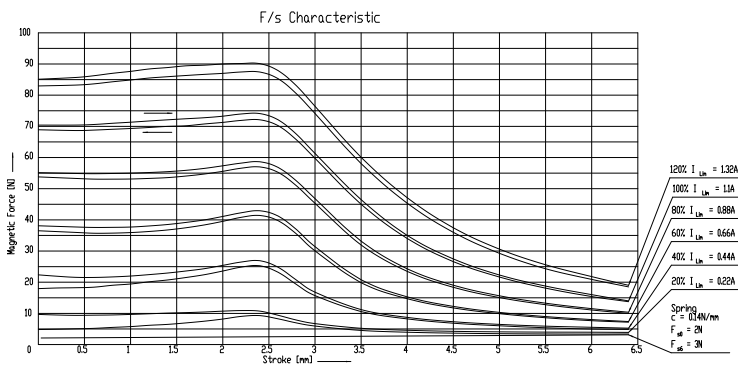
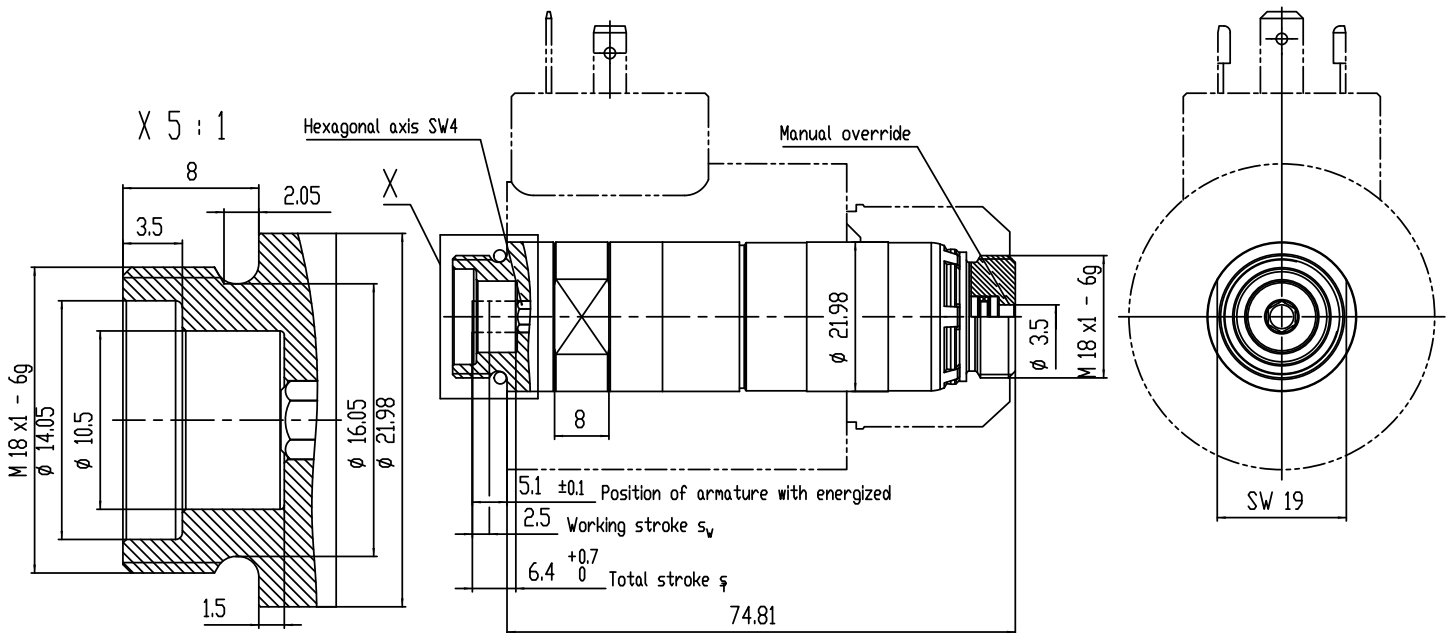
Type no.: 45 85604E8D

# NG06 Proportional Actuating system



## Technical specification

Ambient temperature	-20 to +50 °C
Hydraulic manifold dimensions (steel)	46x46x66 mm
Hydraulic fluid	Hydraulic oil
Max. dynamic pressure	210 bar
Max. static pressure	315 bar
Mechanical lifetime	10 mil. cycles
Sealing material	Viton
Working stroke	2.5 mm
Total stroke	6.4 <sup>+0.7</sup> mm
Surface protection	DIN 50979-Fe//Zn8//An//TO



## F/s Characteristic measured at

Nominal voltage $U_N$ [V DC]	24
Duty cycle ED [%]	100
Limit current (PWM 100Hz)	1.1
Testing current $I_{Lim} = I_{test}$ [A]	
Limit power $P_{Lim} = I_{Lim}^2 \times R_w$ [A]	23.7
Weight armature $m_A$ [kg]	0.06
Testing speed $v_{test}$ [mm/min]	20

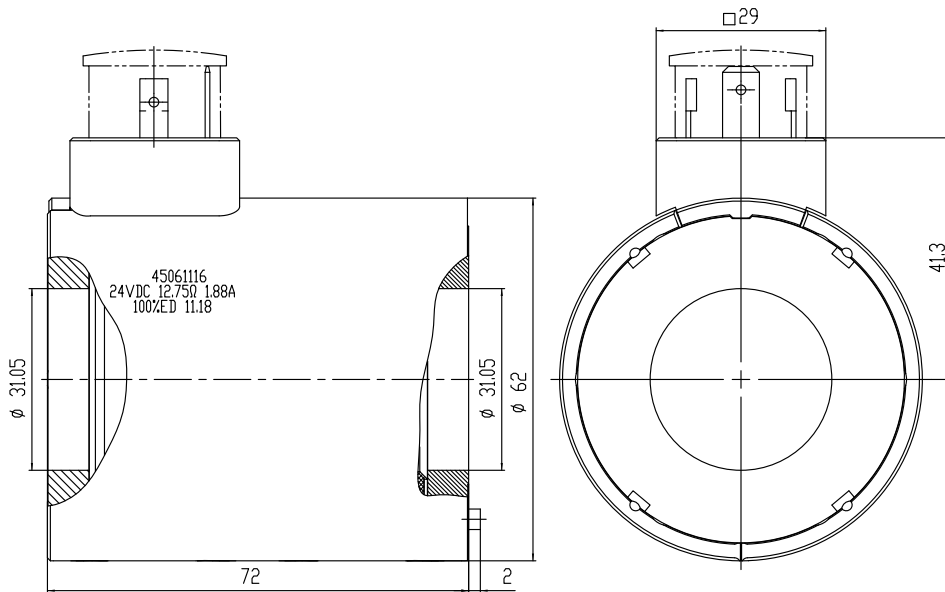
The characteristic of solenoid measured with steel hydraulic manifold.

Type no.: 45 13606E1B

## NG10 On/Off Excitation system

### Technical specification according to VDE 0580

<b>Thermal class</b>	F (155°C)
<b>Surface protection</b>	DIN 50979-Fe//Zn8//An//TO
<b>Protection class (Assembled)</b>	IP65



### Electrical specification

Ident. no.	Nominal voltage $U_N \pm 10\%$ [V DC]	Nominal current $I_N$ [A]	Resistance at 20°C $R_{20} \pm 6\%$ [ $\Omega$ ]	Nominal power $P_N$ [W]	Duty cycle ED [%]
45061115	12	3.17	3.78	38.1	100
45061116	24	1.88	12.75	45.2	100

### Type of connector



IP65<sup>1</sup>  
DIN 43 650



IP69K<sup>1</sup>  
DT04-2P

<sup>1</sup> in properly mounted condition

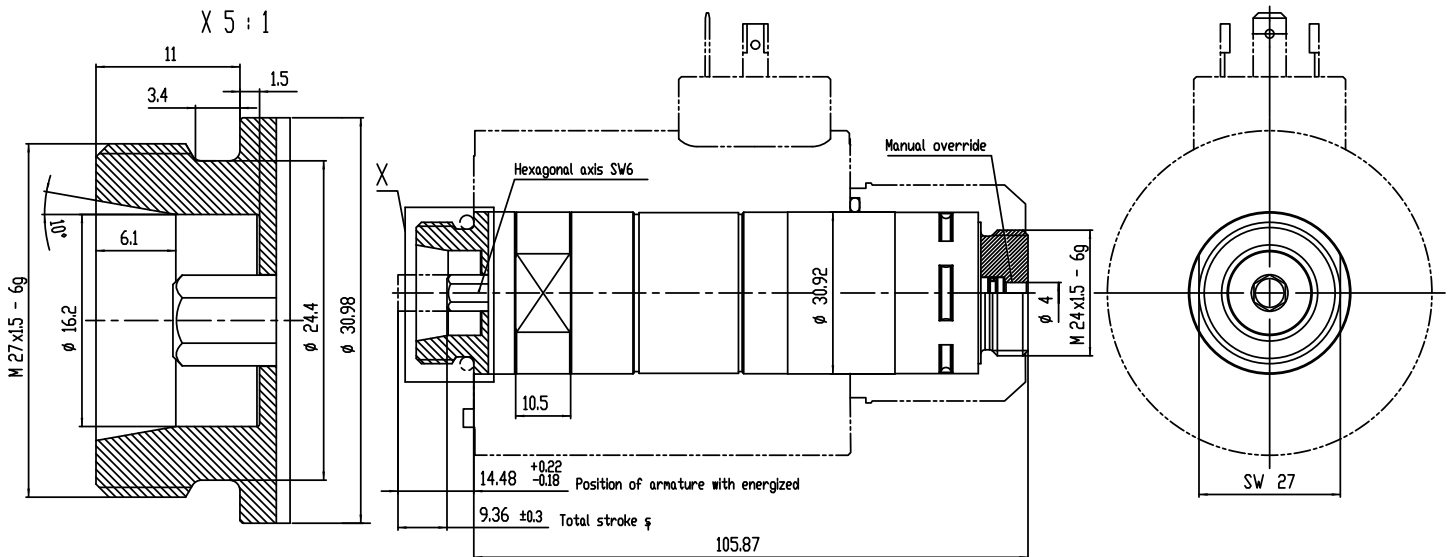
Type no.: 45 13606F4D

# NG10 On/Off Actuating system

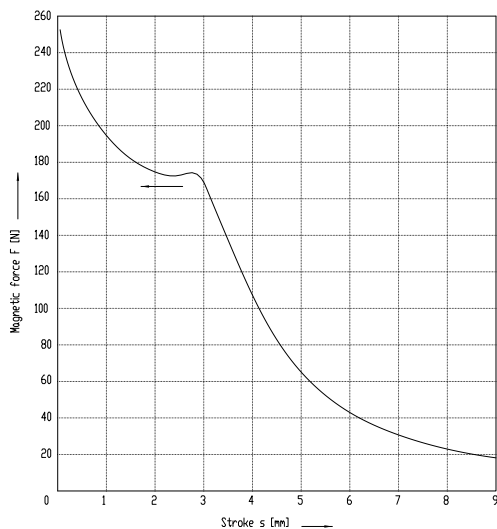


## Technical specification

Ambient temperature	-20 to +50 °C
Hydraulic manifold dimensions (steel)	70x80x102 mm
Hydraulic fluid	Hydraulic oil
Max. dynamic pressure	210 bar
Max. static pressure	315 bar
Sealing material	Viton
Total stroke	9.36 <sup>±0.3</sup> mm
Surface protection	DIN 50979-Fe//Zn8//An//TO



F/s Characteristic



F/s Characteristic measured at

Nominal voltage $U_N$ [V DC]	24
Duty cycle ED [%]	100
Nominal current $I_N$ [A]	1.88
Testing current (PWM 100 Hz) $I_{test} = (0.9 \times U_N) / R_w$ [A]	1.21
Nominal power $P_N$ [W]	45
Weight armature $m_A$ [kg]	0.15
Testing speed $v_{test}$ [mm/min]	20

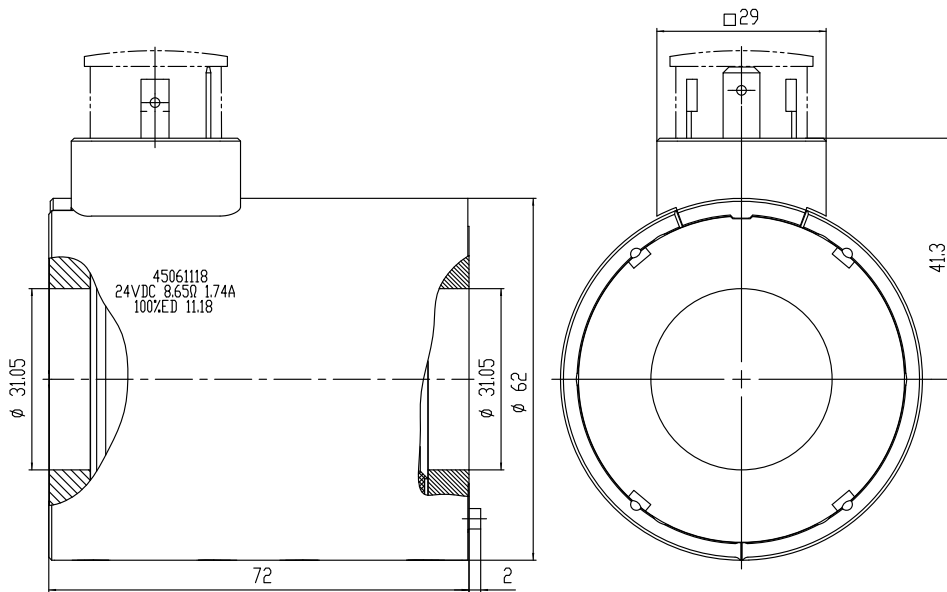
The characteristic of solenoid measured with steel hydraulic manifold.

Type no.: 45 85606E4A

# NG10 Proportional Excitation system

## Technical specification according to VDE 0580

<b>Thermal class</b>	F (155°C)
<b>Surface protection</b>	DIN 50979-Fe//Zn8//An//T0
<b>Protection class (Assembled)</b>	IP65



## Electrical specification

Ident. no.	Nominal voltage $U_N$ [V DC]	Nominal current $I_{Lim}$ [A]	Resistance at 20°C $R_{20} \pm 6\%$ [ $\Omega$ ]	Nominal power $P_{Lim}$ [W]	Duty cycle ED [%]
45061117	12	1.64	5.06	17.7	100
45061118	24	1.74	8.65	37.6	100

## Type of connector



IP65<sup>1</sup>  
DIN 43 650



IP6K9K<sup>1</sup>  
DT04-2P

<sup>1</sup> in properly mounted condition

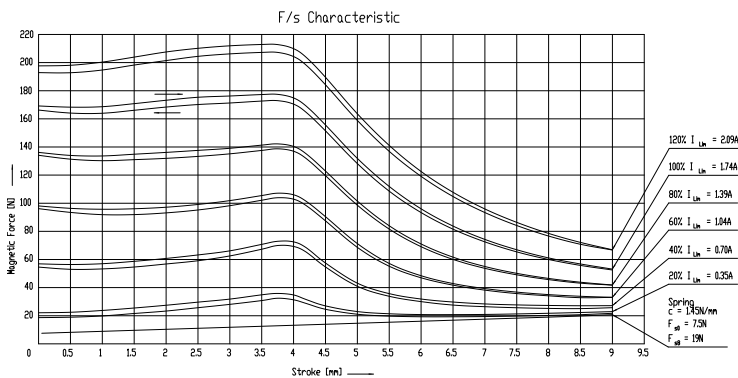
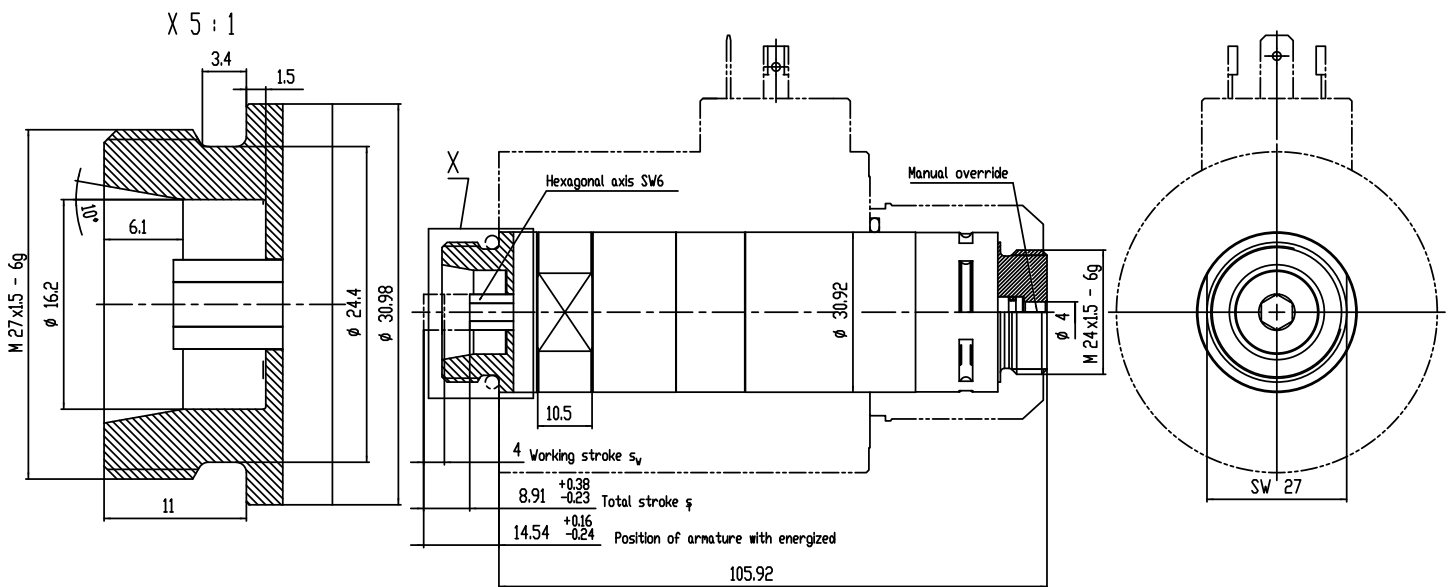
Type no.: 45 85606E5D

# NG10 Proportional Actuating system



## Technical specification

Ambient temperature	-20 to +50 °C
Hydraulic manifold dimensions (steel)	70x80x102 mm
Hydraulic fluid	Hydraulic oil
Max. dynamic pressure	210 bar
Max. static pressure	315 bar
Mechanical lifetime	10 mil. cycles
Sealing material	Viton
Working stroke	4 mm
Total stroke	8.91 <sup>+0.38/-0.23</sup> mm
Surface protection	DIN 50979-Fe//Zn8//An//TO



## F/s Characteristic measured at

Nominal voltage U <sub>N</sub> [V DC]	24
Duty cycle ED [%]	100
Limit current (PWM 100Hz) Testing current I <sub>Lim</sub> = I <sub>test</sub> [A]	1.74
Limit power P <sub>Lim</sub> = I <sub>Lim</sub> <sup>2</sup> x R <sub>w</sub> [A]	37.6
Weight armature m <sub>A</sub> [kg]	0.15
Testing speed v <sub>test</sub> [mm/min]	20

The characteristic of solenoid measured with steel hydraulic manifold.

# ABOUT SOLERO

We are a global supplier for OEMs and Tier 1 in the automotive industry, specializing in Vehicle Dynamics, Fluid Management, and Transmission/E-Drive.





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We'll find the right product for your application!

**Our qualified employees, the precisely defined manufacturing processes and globally-uniform, strict quality guidelines ensure top quality at the end of every production process – worldwide.**

Our customers trust us because we have successfully been on the market for over 100 years, and always with the optimum for them in our focus. The cooperation with leading automotive manufacturers continually improves our know-how and processes. In this, we rely on production and logistics processes that enable both modular and individual production – regardless if large or small-lot orders are placed.



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**We'll find the right product  
for your application!**

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