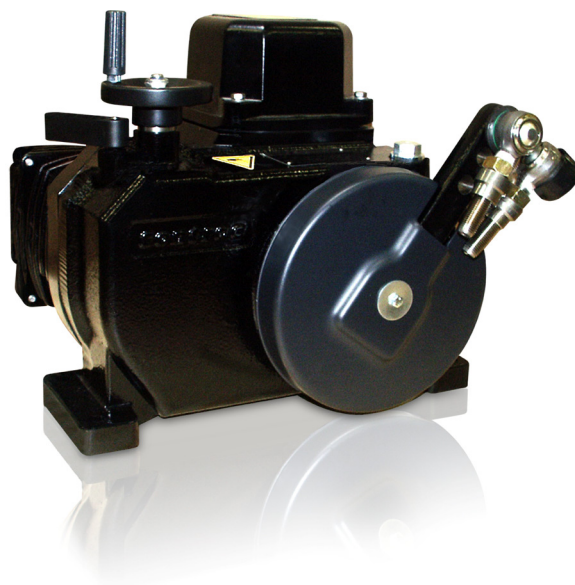


PME120-AI/-AN (Contract) Electrical Part-Turn Actuator



For continuous positioning,
Rated torque 100 Nm (80 lbf-ft),
With integrated electronics or separate electronic unit

Electrical actuator for continuous positioning or step control

Stall proof without the need of position or torque dependent switch-off

Sturdy gear unit with highly efficient design

Adjustable mechanical limit stops for defined operating range

Hand wheel for emergency operation

Integrated sensors for position and temperature

Signal and power input only via separate, microprocessor-controlled power electronics (integrated for PME120-AI)

Voltage supply 115 V AC or 230 V AC only via special power electronics

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1 Concept

Compact actuator for the operation of final control elements with preferably 90° rotary movement such as flaps, cocks, etc.

The torque is transferred via a lever / linkage bar assembly or the actuator is directly coupled to the cock flange.

A special power electronic unit controls the actuator. The electronic unit serves as the interface between actuator and control system.

During continuous positioning the power electronic unit varies the motor torque steplessly until the actuator force and the restoring process forces are balanced. High response sensitivity and high positioning accuracy with short positioning time ensure an excellent control quality and a long actuator life.



Note

The ANSI information appears in parentheses after the SI-information.

2 Technical data

2.1 Actuator

Model	PME120-AN; PME120-AI
Rated torque	100 Nm (80 lbf-ft), adjustable to 0.5; 0.75 or 1x rated torque
Starting torque	1.2 x rated torque (break-away torque in end positions for short time 2 x rated torque)
Rated time for 90° (Operating speed)	Adjustable from 20 ... 900 s (4.5 ... 0.1°/s)
Operating angle	Typically 90 ° (min. 35°; max. 270°), see manual for reduced angle with lever and limit stop
Associated electronic unit (data sheet)	PME120-AI: integrated electronic unit PME120-AN: Designed for field installation: EAN823 (10/68-8.26 DE) Designed for rack installation: EAS822 (10/68-8.23 DE)
Motor	24 V 3~ asynchronous motor for operation with electronic unit EAN823 or EAS822
Sensors	Position and temperature sensor always available

2.2 Electronic unit

(for PME120-AI only)

2.2.1 Power supply

Supply voltage	115 V AC (94 ... 130 V) or 230 V AC (190 ... 260 V); 47.5 ... 63 Hz; 1Ph
Current (electronic unit) (AC 115 V / AC 230 V) max [A] (positioning)	1.0 / 0.5 (approx. 40 ... 50% of I _{max})
Actuators in low temperature design	1.4 / 0.7 (approx. 40 ... 50% of I _{max})
External fuse	16 A; slow

2.2.2 Conventional communication

Analog input	0 / 4 ... 20 mA
Analog output	0 / 4 ... 20 mA, galvanically isolated
3 digital input, BE 1 ... BE 3 (DI 1 ... DI 3)	Digital 0: 3 ... 5 V or open, galvanically isolated Digital 1: 12 ... 35 V, galvanically isolated
3 digital output, BA 1... BA 3 (DO 1 ... DO 3)	Potential free relay contact, max. 60 V, 150 mA
Digital communication	RS 232 for commissioning and service, with optional FSK / HART® or PROFIBUS DP
Default settings	Behavior in 0/100% end position: hold with rated torque Setpoint function: linear, setpoint = position value Setpoint input: 4 ... 20 mA Function selection: Positioner, parameter: Setpoint Output for actual value: 4 ... 20 mA Digital input: BE 1 (DI 1) M/A selection; BE 2 / BE 3 (DI 2 / DI 3) manual intervention +/- Digital output: BA (DO) 1 ready for operation; BA 2 / BA 3 (DO 2 / DO 3) end position signal 0 / 100%
Voltage output U _V	24 V; 15 mA, galvanically isolated for contact scan or similar
Transmitter connection (optional)	Supply of 2-wire transmitter for Contrac with activated controller
Special settings	Refer to data sheet 10/68-2.40 or upon request

2.3 PROFIBUS DP communication

PNO ID no.	0x9655 Actuators with DP/V0 communication (cyclical data traffic) 0x09EC Actuators with DP/V1 communication (cyclical and acyclical data traffic)
Communications protocol	Profibus PA profile V3.0 Class B acc. to IEC 50170 / EN 50170 (DIN 19245)
Bus cable	Twisted, shielded copper wire acc. to IEC 50170 / EN 50170
Interface	EIA-485 (RS485) acc. to IEC 50170 / EN 50170
Permissible baud rates	- 93.75 kbit/s - 187,5 kbit/s - 500 kbit/s - 1500 kbit/s Automatic baud rate detection
Bus address	0 ... 126, default address 126 Set Slave Address service is supported
Bus termination	Connectable active bus termination. Voltage supply from power electronic unit
Block types	1 AO Functional block 1 Transducer block 1 Physical block
Fail Save	Failsafe function is supported. Configurable function for downtime of bus communication - Lock in last position - Drive to safety position - Rules with last effective setpoint Adjustable time delay.
Modules for cyclical communication	8 standards-compliant modules and 2 manufacturer-specific modules are available.* SP (Short) SP (Long) RCAS_IN+RCAS_OUT SP+READBACK+POS_D SP+CHECKBACK SP+READBACK+POS_D+CHECKBACK RCAS_IN+RCAS_OUT+CHECKBACK SP+RCAS_IN+READBACK+RCAS_OUT+POS_D+ CHECKBACK STANDARD SP+RB+MESSEING
Acyclical communication	Full parametrization and configurability via Master Class 2 and DTM
Default settings	Behavior in 0/100% end position: Hold with rated torque / force Setpoint function: Linear, setpoint = position value Setpoint input: Digital Function selection: Positioner, parameter: setpoint Actual value: Digital
Digital outputs, BA 1 and BA 2 (DO 1 and DO 2)	In addition to the Profibus communication, there are 2 digital outputs. Potential free relay contact, max. 60 V, 150 mA Default settings: BA 1 (DO 1) end position signal 0% BA 2 (DO 2) ready for operation 100%
Individual settings	See data sheet 10/68-2.40 or upon request

*Full description of communication modules, see parametrization and configuration instructions 45/68-10 EN

2.4 General information

	PME120-AI (integrated electronic unit)	PME120-AN (separate electronic unit)
Operating mode	S9 - 100%; stall proof acc. to IEC 60034-1 / EN 60034-1	
Protection class	IP 66	
Humidity	≤ 95% average; condensation not permitted	
Ambient temperature	-10 ... 55° C (15 ... 130° F) -25 ... 55° C (-15 ... 130° F)	-10 ... 65° C (15 ... 150° F) -25 ... 55° C (-15 ... 130° F) -1 ... 85° C (30 ... 185° F)
Mounting position	any position; preferably IMB 3 acc. to IEC 60034-7 / EN 60034-7	
Coating	2-layer component epoxy (RAL 9005; black)	
Anti-condensation heater	-	Optional, separate power supply or power feed from Contract electronic unit
Power supply for motor and sensors	Only via Contract electronic unit (refer to the data sheet for the electronic unit)	
Cable between actuator and electronic unit	-	Select from 5 m (16 ft), 10 m (32 ft) or 20 m (65 ft) max. 30 m (98 ft) for EAN823 electronic unit max. 480 m (1575 ft) for EAS822 electronic unit (read the data sheet for the electronic unit)
Weight, approx.	36 kg (79 lb)	32 kg (70 lb)

2.5 24-pole plug on the actuator

		Crimp pins	Terminals (Option)
PME120-AN	Cable gauge	Motor, heater: 1.5 mm ² (16 AWG) Signals: 0.5 mm ² (20 AWG)	2.5 mm ² (14 AWG)
	Contact surface	Gold-plated	Motor, signal: Gold-plated Heater: Silver-plated
PME120-AI	Cable gauge	Mains: 2.5 mm ² (14 AWG) Signals: 0.5 mm ² (20 AWG)	Mains: 2.5 mm ² (14 AWG) Signals: 2.5 mm ² (14 AWG)
	Contact surface	Gold-plated	Mains: Silver-plated Signals: Gold-plated

2.6 Tapped holes for cable glands

Tapped holes for cables	optional adapters*	
M20 x 1.5 (2x)	PG 16 (2x)	NPT ½" (2 x)
M25 x 1.5 (1 x)	PG 21 (2x)	NPT ¾" (1 x)

* Adapter for PG or NPT thread must be ordered separately

3 Electrical connection

3.1 PME120-AI (integrated electronic unit)

3.1.1 Analog / digital



Note

The electrical connection is provided by a 24-pole plug on the actuator.

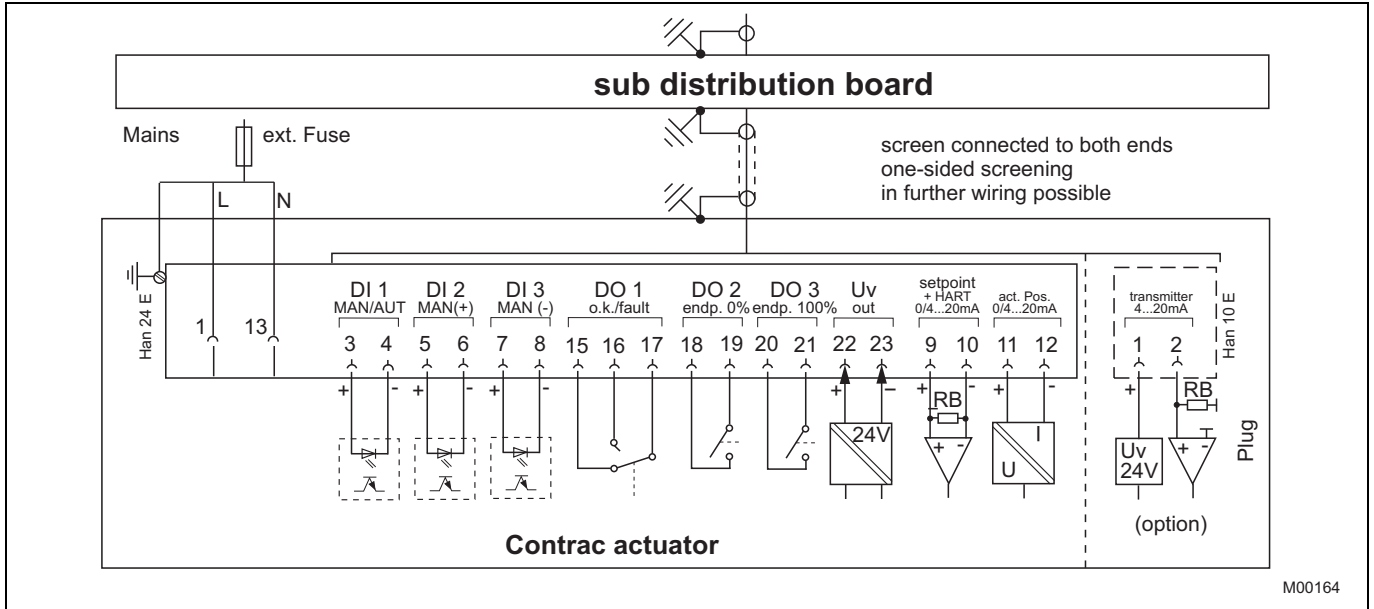


Fig. 1

3.1.2 PROFIBUS DP

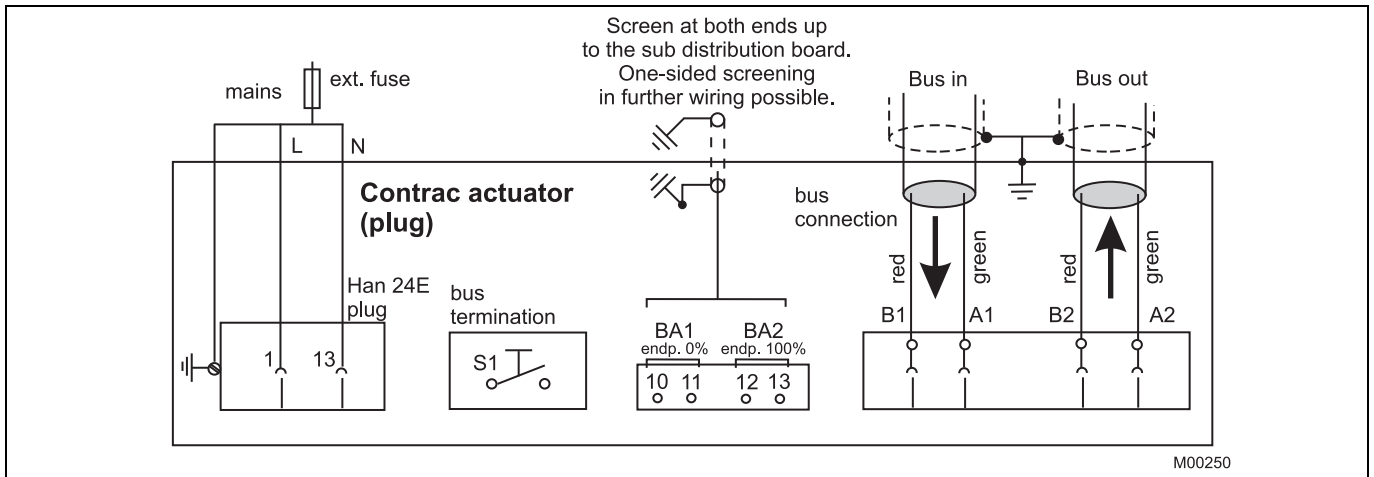


Fig. 2

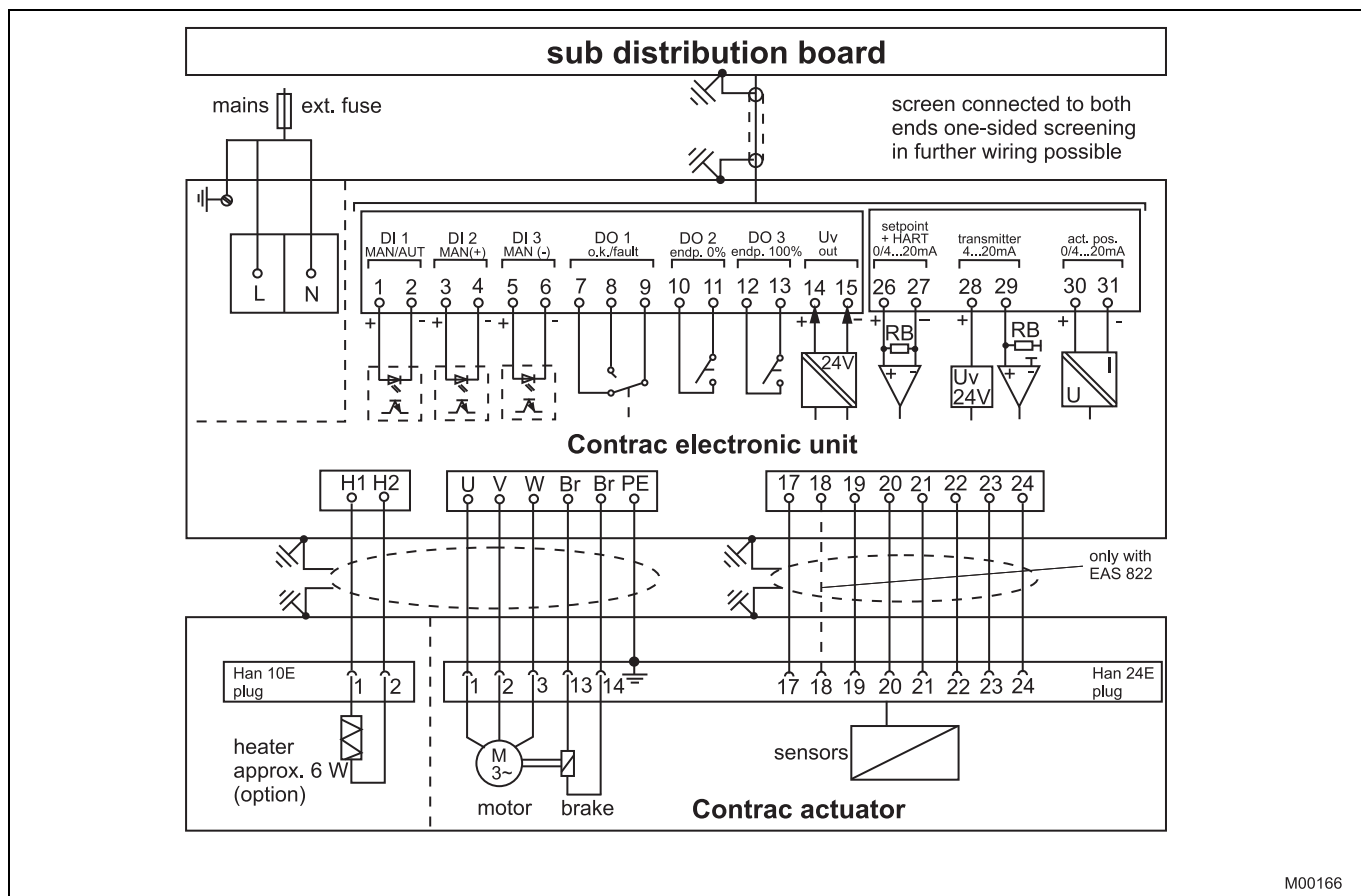
3.2 PME120-AN with power electronic unit EAN823 (Contrac)

3.2.1 Analog / digital



Note

The electrical connection is provided by a plug on the actuator and terminals on the electronic unit.



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Fig. 3

3.2.2 PROFIBUS DP

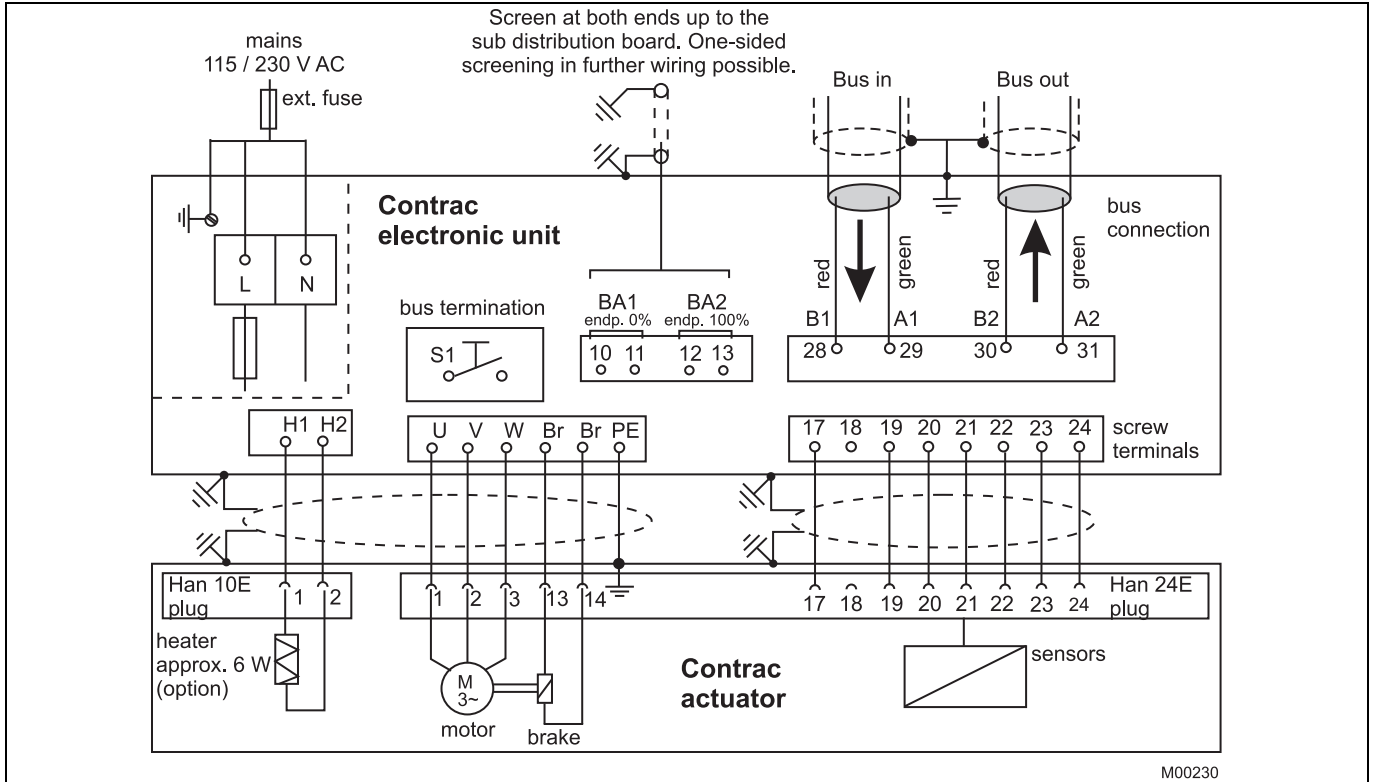


Fig. 4

3.3 PME120-AN with power electronic unit EAS822 (Contrac)

3.3.1 Analog / digital



Note

The electrical connection is provided by a plug on the actuator and the terminals on the electronic unit.

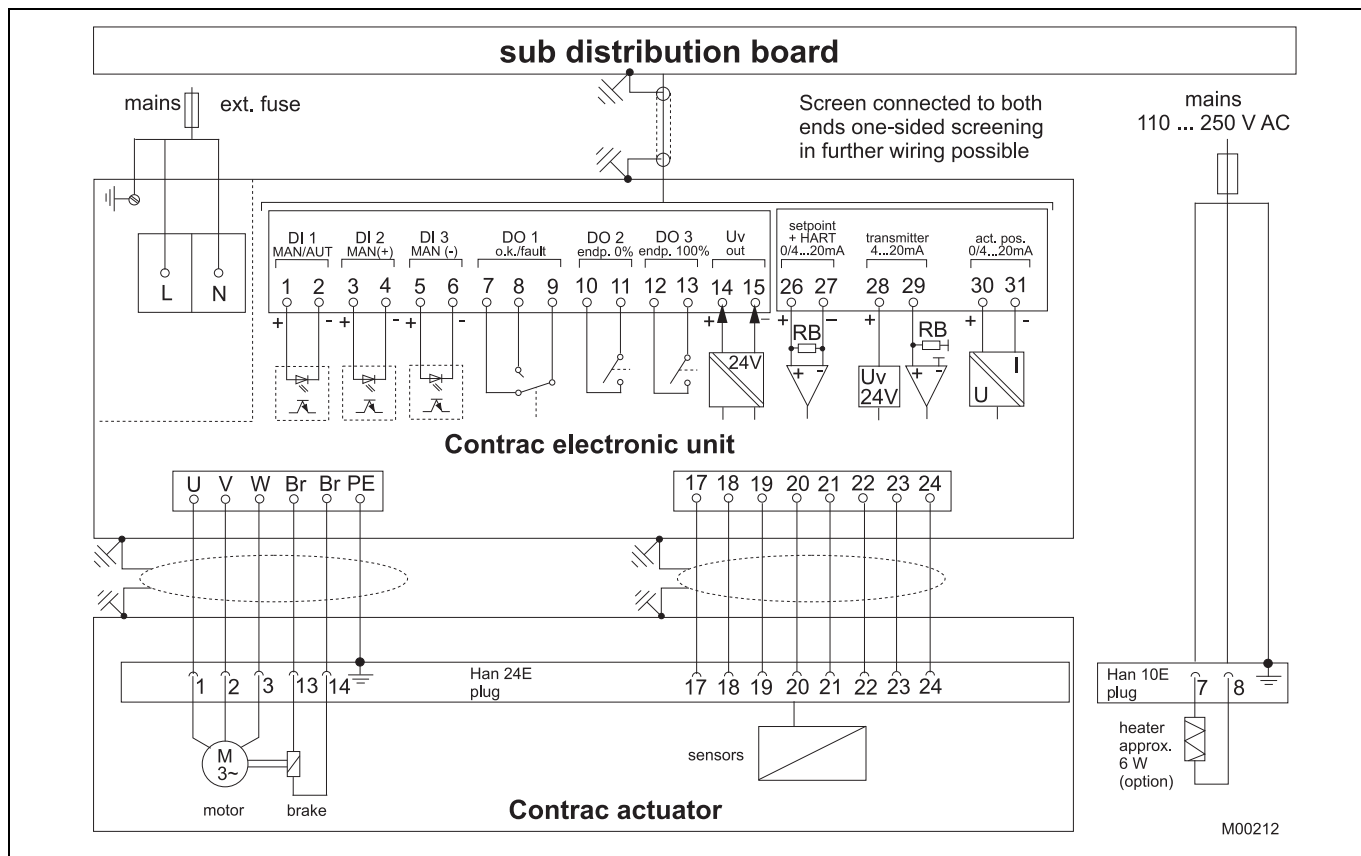


Fig. 5

4 Dimensions

4.1 Actuator

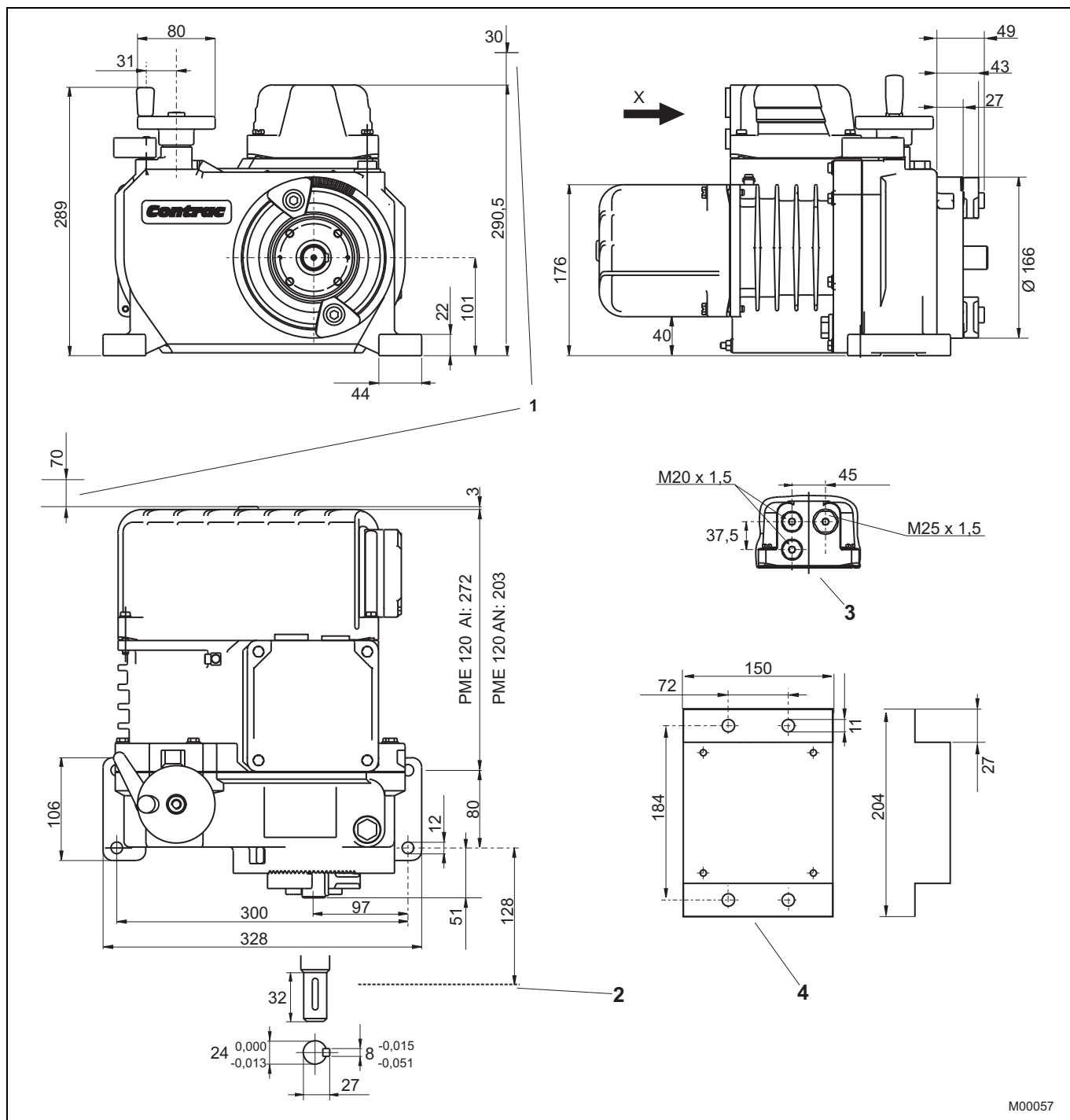


Fig. 6 Dimensions in mm

- 1 Space for disassembly
- 2 Direct adapter

- 3 View "X" (plug only)
- 4 Plug holder (not to scale)

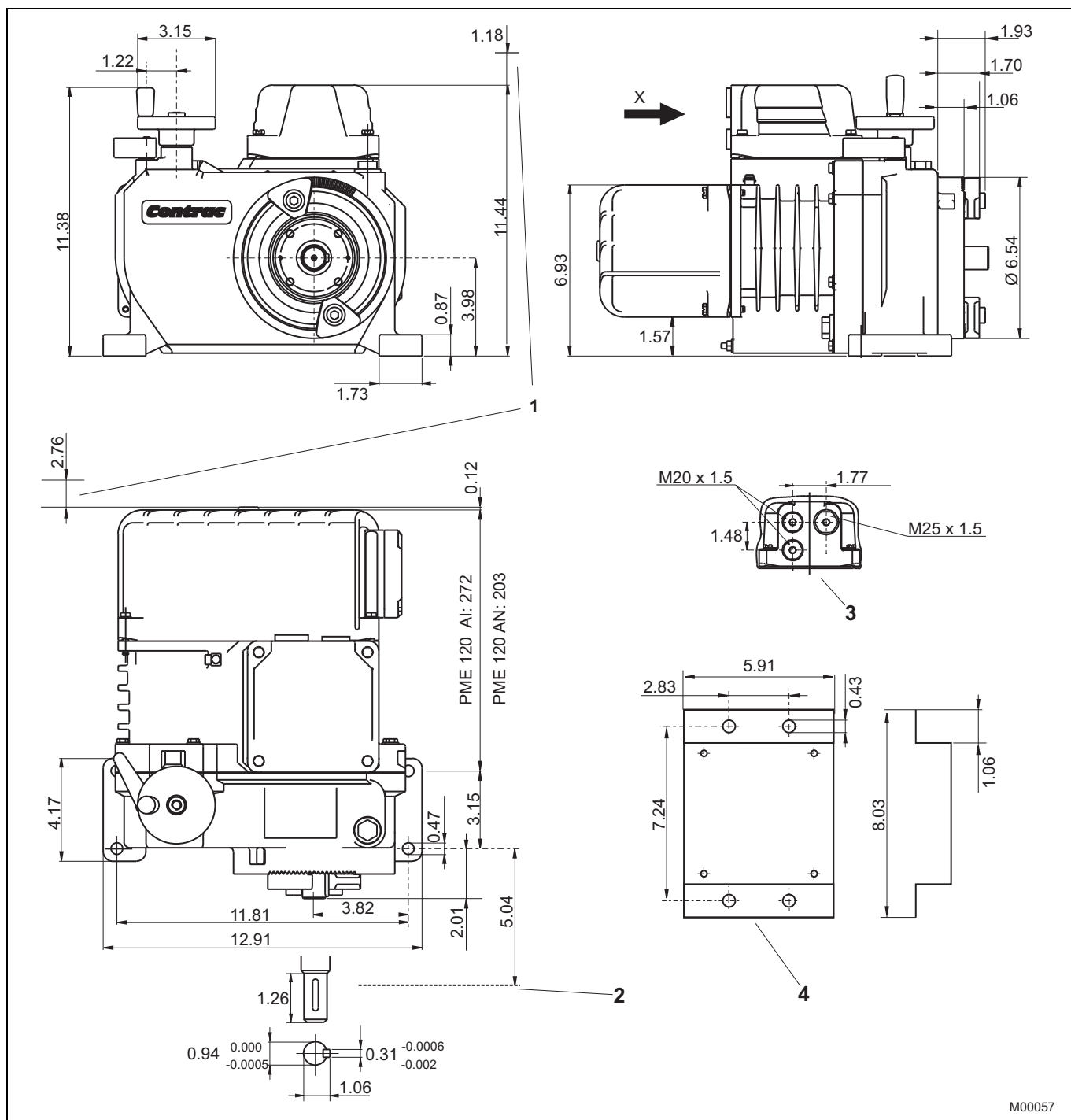


Fig. 7 Dimensions in inch

- 1 Space for disassembly
- 2 Direct adapter

- 3 View "X" (plug only)
- 4 Plug holder (not to scale)

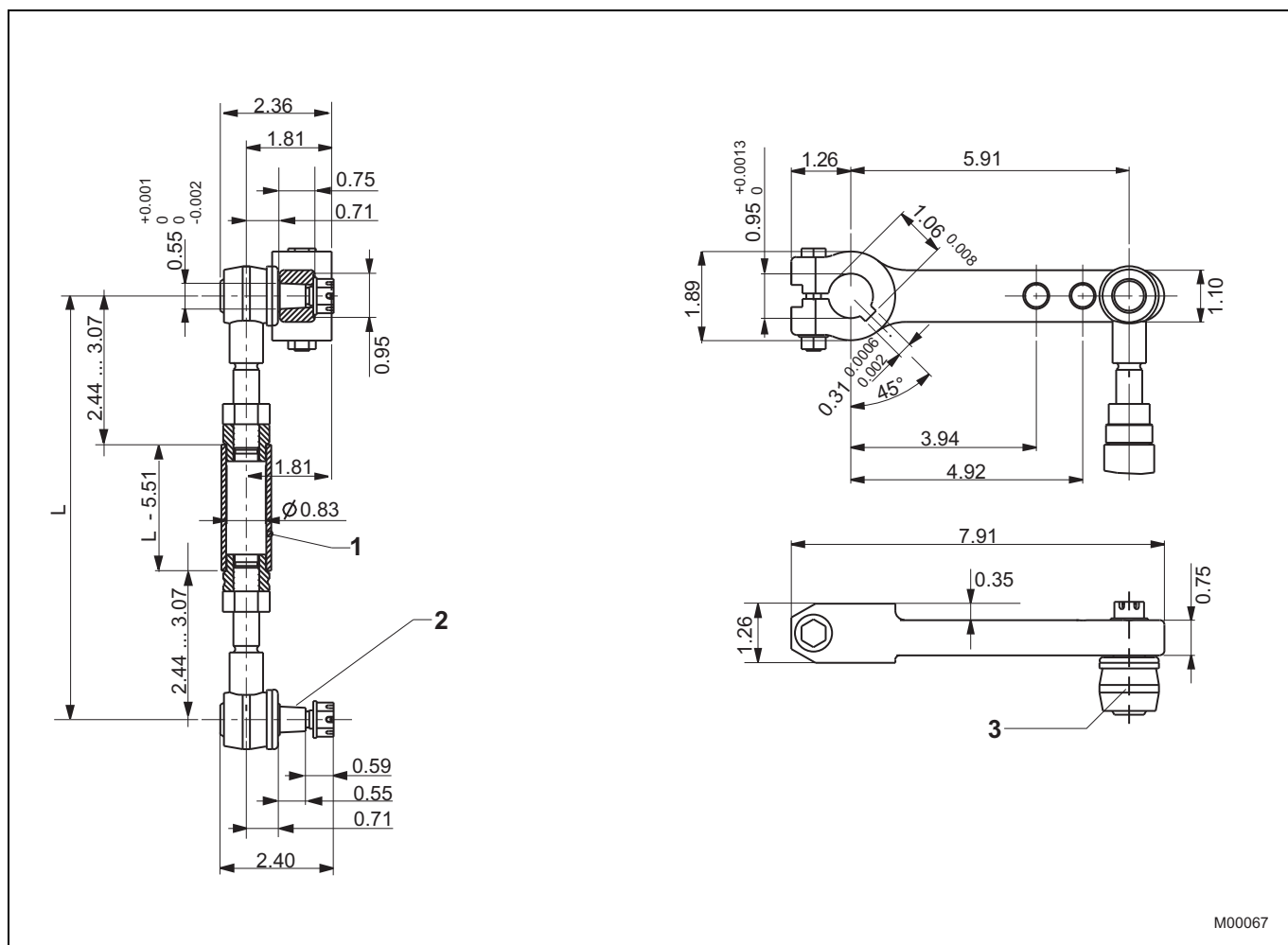


Fig. 9 Dimensions in inch

1 Connection pipe 3/4" DIN 2440 resp. 3/4" schedule 40 pipe size "L" acc. to requirements. The pipe is not included in shipment.

2 Cone 1: 10

3 Angular deflection of ball and socket joint:
 Pointing towards the actuator: max. 3°
 Pointing away from the actuator: max. 10°

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4.3 Direct adapter

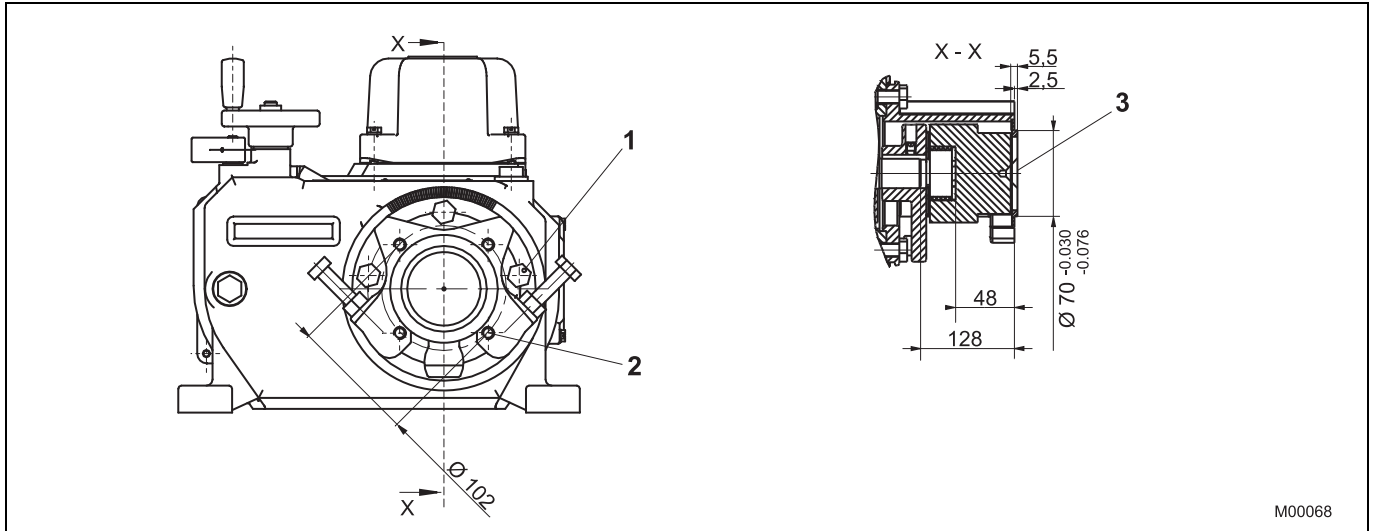


Fig. 10 Dimensions in mm

- 1 $M_A = 40 \text{ Nm}$
- 2 M10; 15 deep

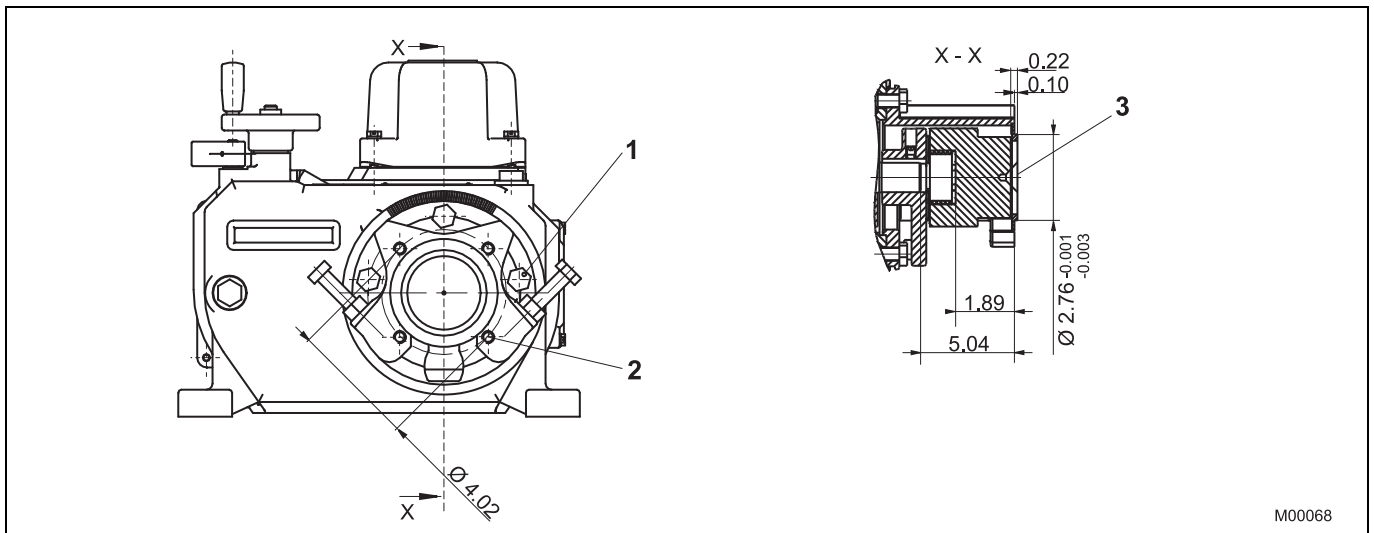


Fig. 11 Dimensions in inch

- 1 $M_A = 40 \text{ Nm}$
- 2 M10; 15 deep

5 Ordering information

5.1 PME120-AI (integrated electronic unit)

Ordering information									
Part-Turn Actuator		Variant digit No.	1 - 8	9	10 11 12	Code			
PME120-AI		Catalog No.	V68122A-						
Rated torque	100 Nm (80 ft-lbs) (adjustable to 50%/75%/100%)								
Rated pos. speed	4.5°/s (adjustable to 4.5 ... 0.1°/s)			0	0	0	0		
Special actuator features									
Select at least one feature per group									
adjusted to:	Nm	(ft-lbs)	°/s	s/90°					
	100	80	4.5	20	310				
	100	80	3.0	30	311				
	100	80	1.5	60	312				
	50	40	3.0	30	313				
	50	40	1.5	60	314				
Mechanical connection									
Shaft with key					370				
Lever set, standard design (consists of lever, 2 ball-and-socket joints and 2 welding bushings)					371				
Lever set, US design (consists of lever, 2 ball-and-socket joints and 2 US welding bushings)					374				
Direct adapter					372				
Electrical connection									
plug (24-pole) complete, crimped					277				
plug (24-pole) complete, terminals					278				
Supply voltage									
230 V AC 1 Ph					380				
115 V AC 1 Ph					381				
Frequency									
50 Hz					382				
60 Hz					383				
Digital communication									
RS 232					384				
RS 232 + HART					385				
PROFIBUS DP (cyclic communication)					386				
PROFIBUS DPV1 (cyclic and acyclic communication)					387				
Settings of electronic unit									
Standard settings (see techn. data)					390				
Customer specific settings (see data sheet 10/68-2.40 EN)					391				
Ambient temperature range									
-10 ... 55 °C (15 ... 130 °F)					342				
-25 ... 55 °C (-15 ... 130 °F)					343				

Additional ordering information									
					Code				
Electrical connection thread		Set NPT adapter (junction metric / NPT thread)			680				
		Set PG adapter (junction metric / PG thread)			681				
Identification on data label		(alphanumeric, max. 32 characters)			294				
Data label with US units					253				
Accessories		cover for male plug (24 pole)			337				
Accessories		plug holder			338				
Certificates		Factory certificate 2.1 acc. to EN 10204			291				
Certificates		Certificate B acc. to EN 10204			292				
Assembly with valve at ABB		(order and pos. no. of valve required)			481				
Operating instruction		(specify total quantity required, 1 copy without extra charge)							
German		(no specification for 1 copy)			Z1D				
English		(always state Code-No.)			Z1E				

Note: Delivery time for max. 2 pcs. For 3 pcs. or more delivery time on request.

5.2 PME120-AN (separate electronic unit)

Ordering information		Variant digit No.	1 - 8	9	10	11	12	Code			
Part-Turn Actuator		Catalog No.		V68120A-							
PME120-AN		Rated torque		100 Nm (80 ft-lbs) (adjustable to 50%/75%/100%)							
Rated pos. speed		4.5°/s (adjustable to 4.5 ... 0.1°/s)				0 0 0 0					
Special actuator features											
Select at least one feature per group											
Mechanical connection											
Shaft with key								370			
Lever set, standard design (consists of lever, 2 ball-and-socket joints and 2 welding bushings)								371			
Lever set, US design (consists of lever, 2 ball-and-socket joints and 2 US welding bushings)								374			
Direct adapter								372			
Electrical connection											
plug (24-pole) complete, crimped								277			
plug (24-pole) complete, terminals								278			
plug bottom part covered 1)								279			
Connection to electronic unit											
EAN820, EAN823 (supply voltage 230 V AC)								280			
EAN820, EAN823 (supply voltage 115 V AC)								281			
EAS822 (supply voltage 230 V AC)								282			
EAS822 (supply voltage 115 V AC)								283			
Ambient temperature range											
-10 ... 65 °C (15 ... 150 °F)								344			
-25 ... 55 °C [-15 ... 130 °F]								343			
-1 ... 85 °C (30 ... 185 °F) (rated speed limited to 2°/s)								349			

Additional ordering information		Code			
Electrical connection thread	Set NPT adapter (joint metric / NPT thread)	680			
	Set PG adapter (joint metric / PG thread)	681			
Anti condensation heater		360			
Identification on data label	(alphanumeric, max. 32 characters)	294			
Data label with US units		253			
Accessories	cover for male plug (24 pole)	337			
Accessories	plug holder	338			
Certificates	Factory certificate 2.1 acc. to EN 10204	291			
Certificates	Certificate B acc. to EN 10204	292			
Assembly with valve at ABB	(order and pos. no. of valve required)	481			
Operating instruction	(specify total quantity required, 1 copy without extra charge)				
	German (no specification for 1 copy)	Z1D			
	English (always state Code-No.)	Z1E			

1) female plug with cables to be ordered with electronic unit

Attention!

Electronic unit to be ordered separately

Note: Delivery time for max. 2 pcs. For 3 pcs. or more delivery time on request.

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