

# RHD1250 / RHD2500 (Contra) Electrical Part-Turn Actuator



For continuous positioning,  
Rated torque 1250 Nm / 2500 Nm (1000 / 1900 lbf-ft)

Electrical actuator for continuous positioning or step control

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

Asynchronous three-phase motor

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

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	RHD1250-12	RHD2500-10	RHD2500-25
Rated torque	1250 Nm (1000 lbf-ft) (adjustable to 0.5 / 0.75 or 1x rated torque)	2500 Nm (1900 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°	12 ... 900 s	10 ... 900 s	25 ... 900 s
Operating speed, adjustable	7.5 ... 0.1 °/s	9.0 ... 0.1 °/s	3.6 ... 0.1 °/s
Operating angle	Typically 90° (min. 35°, max. 270°). See instructions for limited operating angle if actuator is equipped with lever and limit stop.		
Weight	approx. 270 kg (595 lb)	approx. 250 kg (551 lb)	approx. 270 kg (595 lb)
Related electronics			
For field installation:	Model EBN853 <sup>1)</sup>	Model EBN861 <sup>3)</sup>	Model EBN853 <sup>1)</sup>
For rack installation:	Model EBS852 <sup>2)</sup>	Model EBS862 <sup>4)</sup>	Model EBS852 <sup>2)</sup>
Motor type	MCS 80 BA	MC 90 BA	MCS 80 BA
Sensors	Position and temperature sensor always available.		

<sup>1)</sup> Data sheet EBN853: 10/68-8 27

<sup>2)</sup> Data sheet EBS852: 10/68-8 24

<sup>3)</sup> Data sheet EBN861: 10/68-8.22

<sup>4)</sup> Data sheet EBS862: 10/68-8.25

### 2.2 General information

	RHD1250 / RHD2500
Operating mode	S9; stall proof acc. to IEC 60034-1 / EN 60034-1
Protection class	IP 66
Humidity	≤ 95% average; condensation not permitted
Ambient temperature	-10 ... 65° C (15 ... 150° F) -30 ... 50° C (-20 ... 130° 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)	Motor: Directly power feed from Contrac electronic unit. Signal space: Separate heating resistor; separate power supply or power feed from Contrac electronic unit.
Electrical connection	Plug with crimp snap-in contacts or terminals. Connecting cable for electronics and actuator is optional (see ordering information for electronic unit).
Power supply for motor and sensors	Only via Contrac electronic unit (see data sheet of electronic unit).

### 2.3 24-pole plug on the actuator

	<b>Crimp pins</b>	<b>Terminals (Option)</b>
Cable gauge	Motor, heater: 1.5 mm <sup>2</sup> (16 AWG) Signals: 0.5 mm <sup>2</sup> (20 AWG)	2.5 mm <sup>2</sup> (14 AWG)
Contact surface	Gold-plated	Motor, signal: Gold-plated Heater: Silver-plated

### 2.4 Tapped holes for cable glands

<b>Tapped holes for cables</b>	<b>optional adapters*</b>	
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

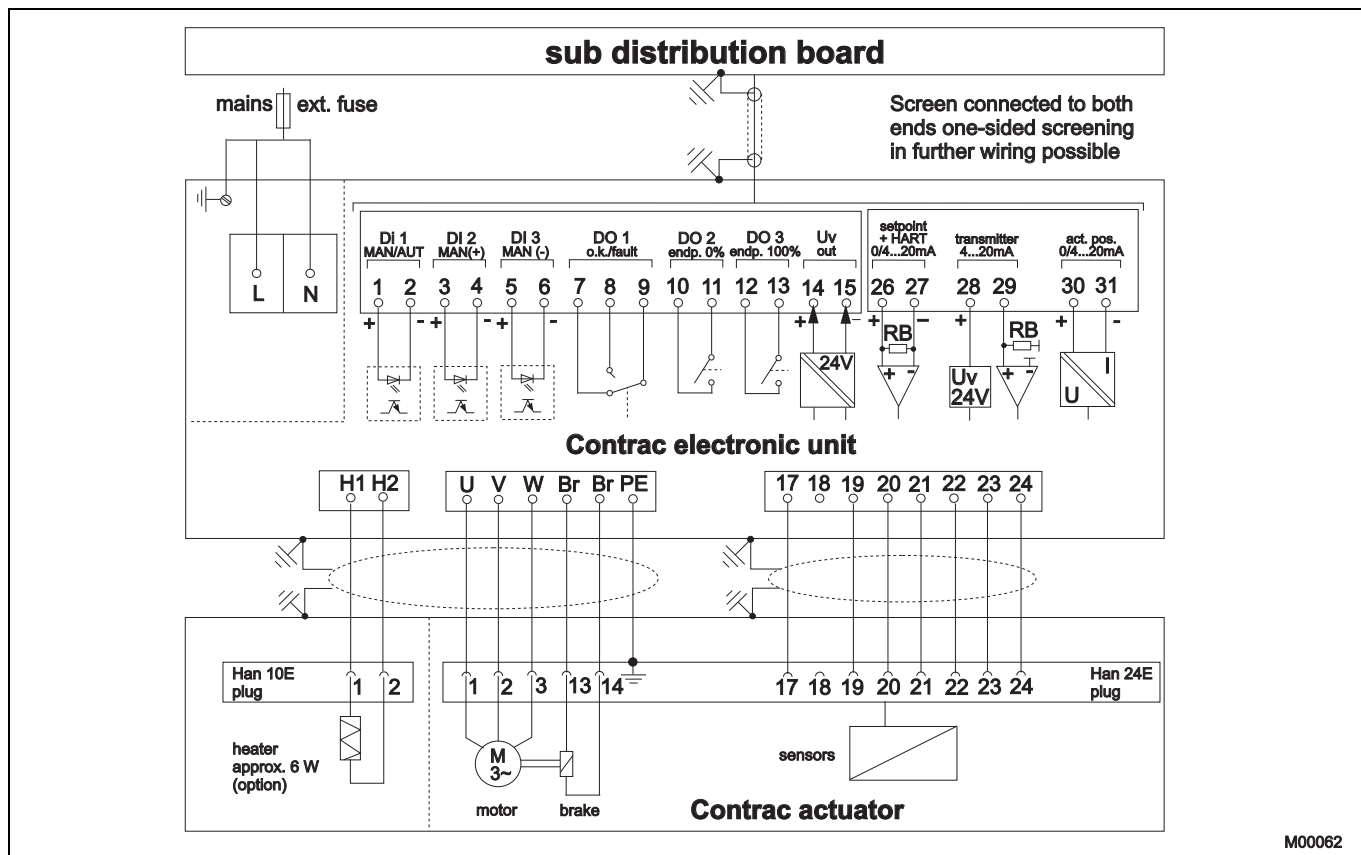
#### 3.1 Power Electronic Unit EBN853 (Contrac) / EBN861 (Contrac)

##### 3.1.1 Analog / digital



**Note**

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



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Fig. 1

3.1.2 PROFIBUS DP

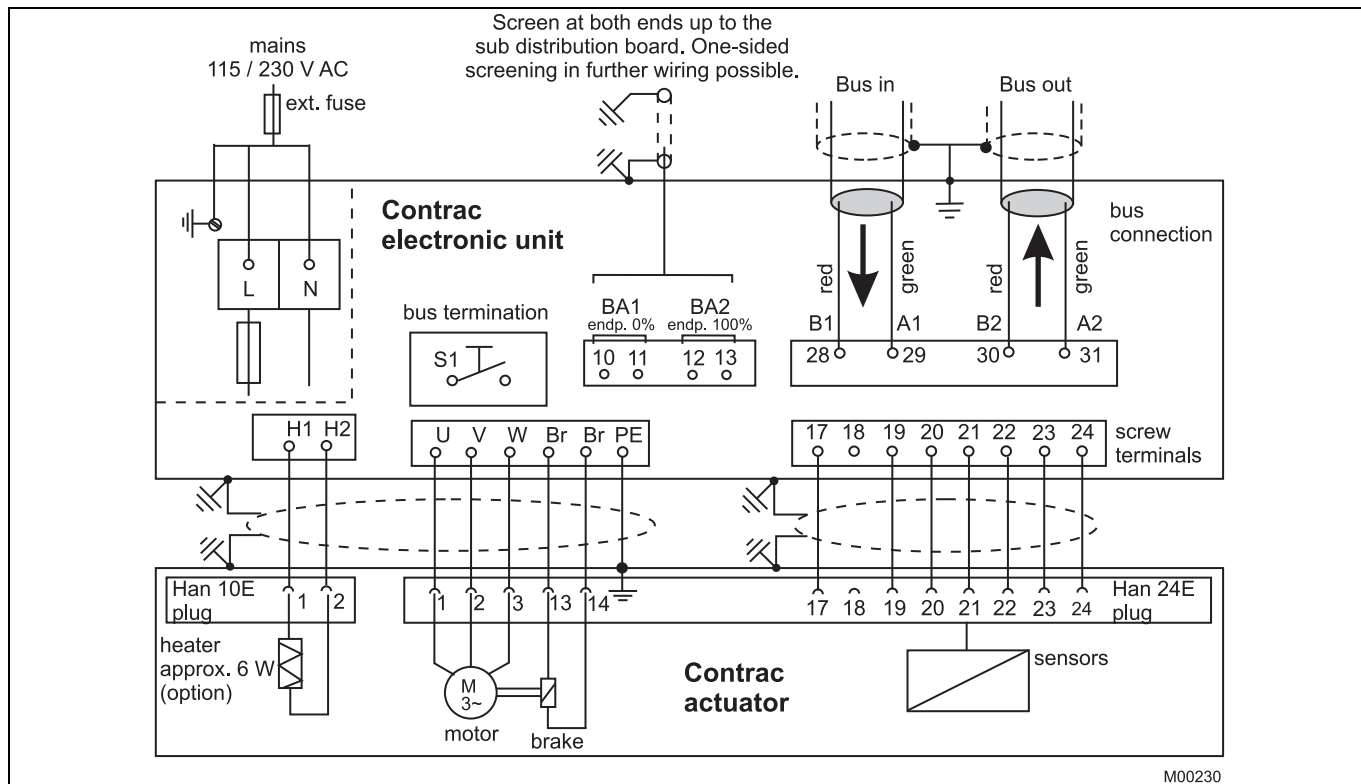


Fig. 2

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### 3.2 Power Electronic Unit EBS852 (Contrac) / EBS862 (Contrac)

#### 3.2.1 Analog / digital



**Note**

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

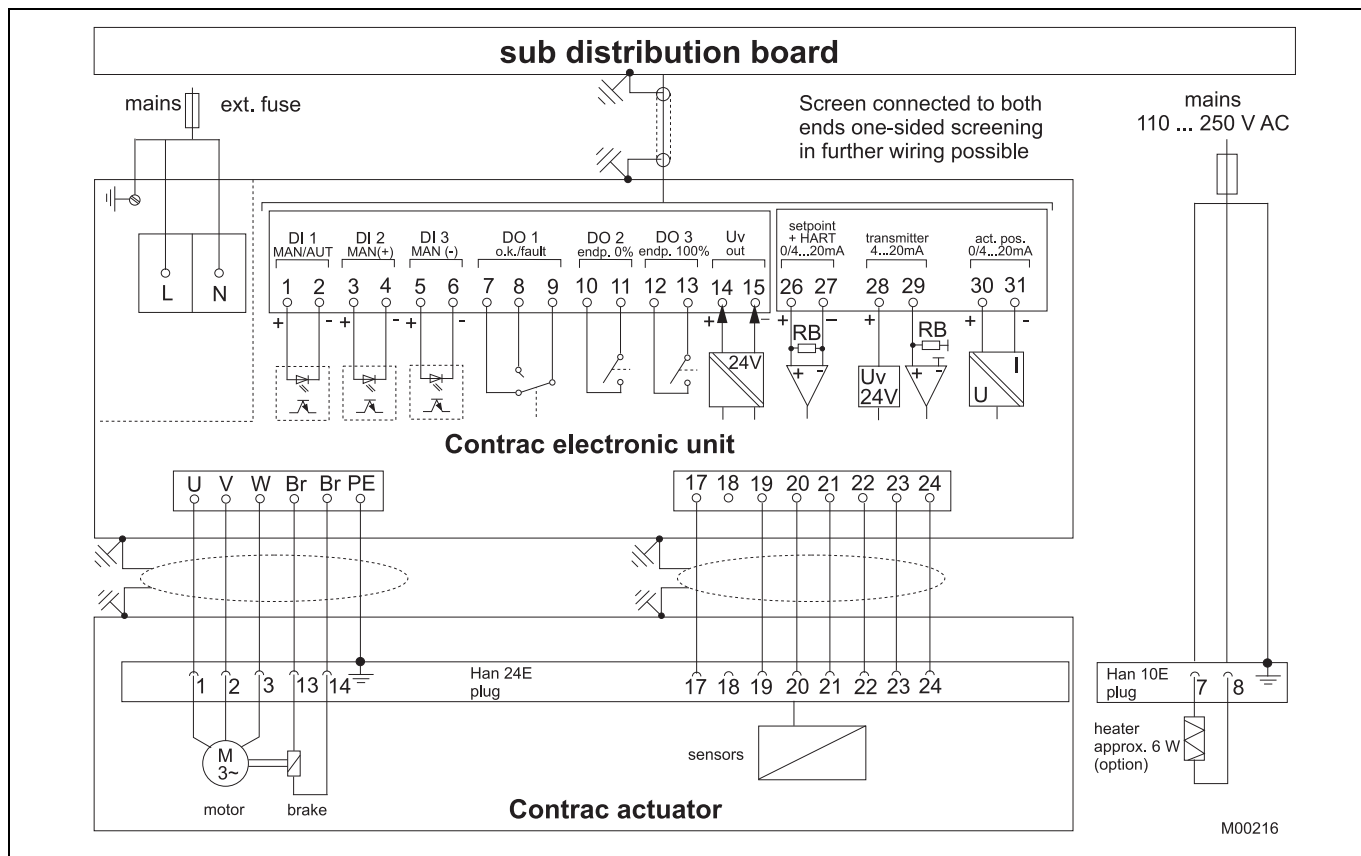
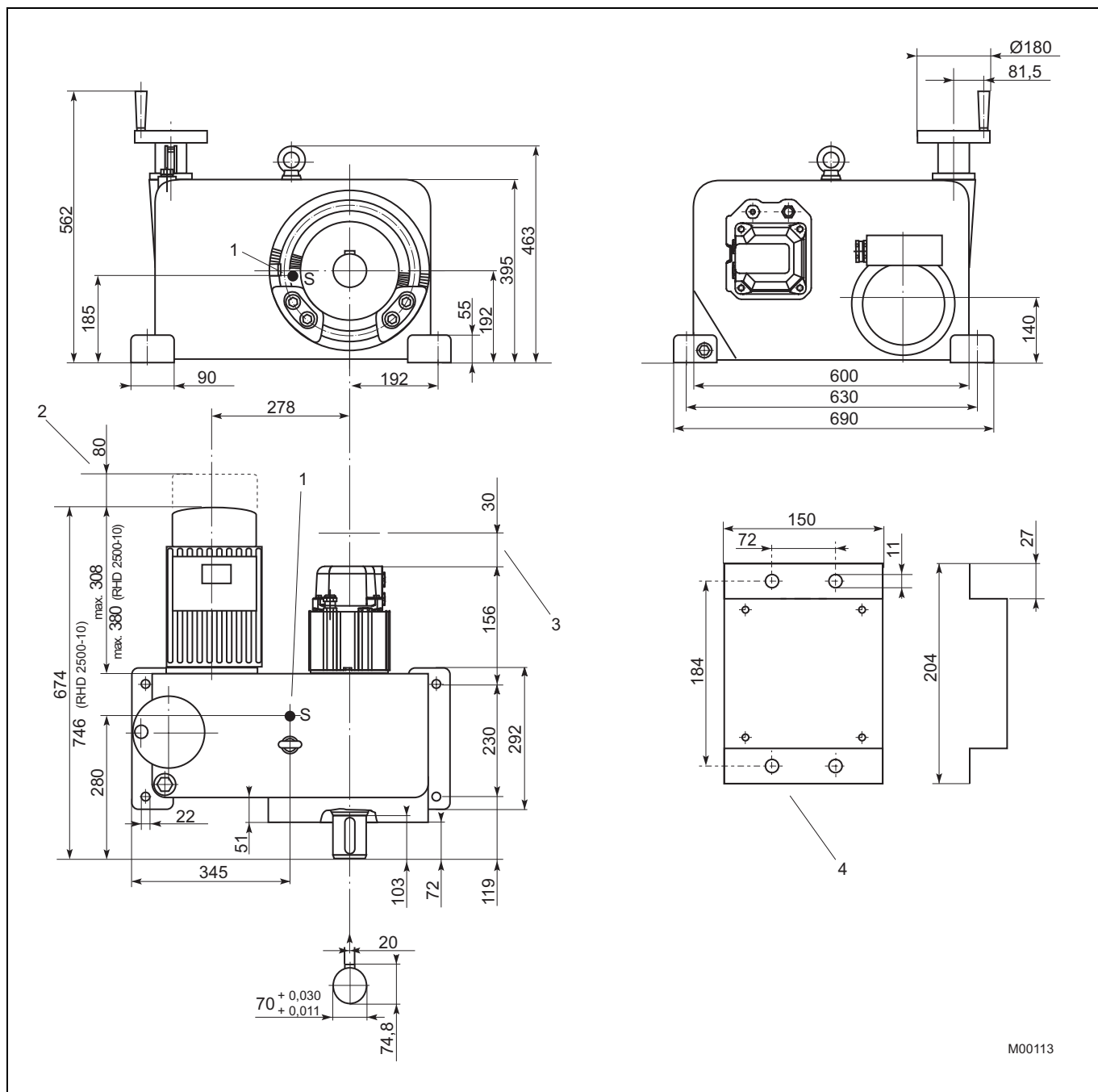


Fig. 3

## 4 Dimensions

### 4.1 Part-turn actuators



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Fig. 4 Dimensions in mm

- 1 S = Center of gravity
- 2 Removal space

- 3 Space for removing the plug
- 4 Plug holder (not to scale)

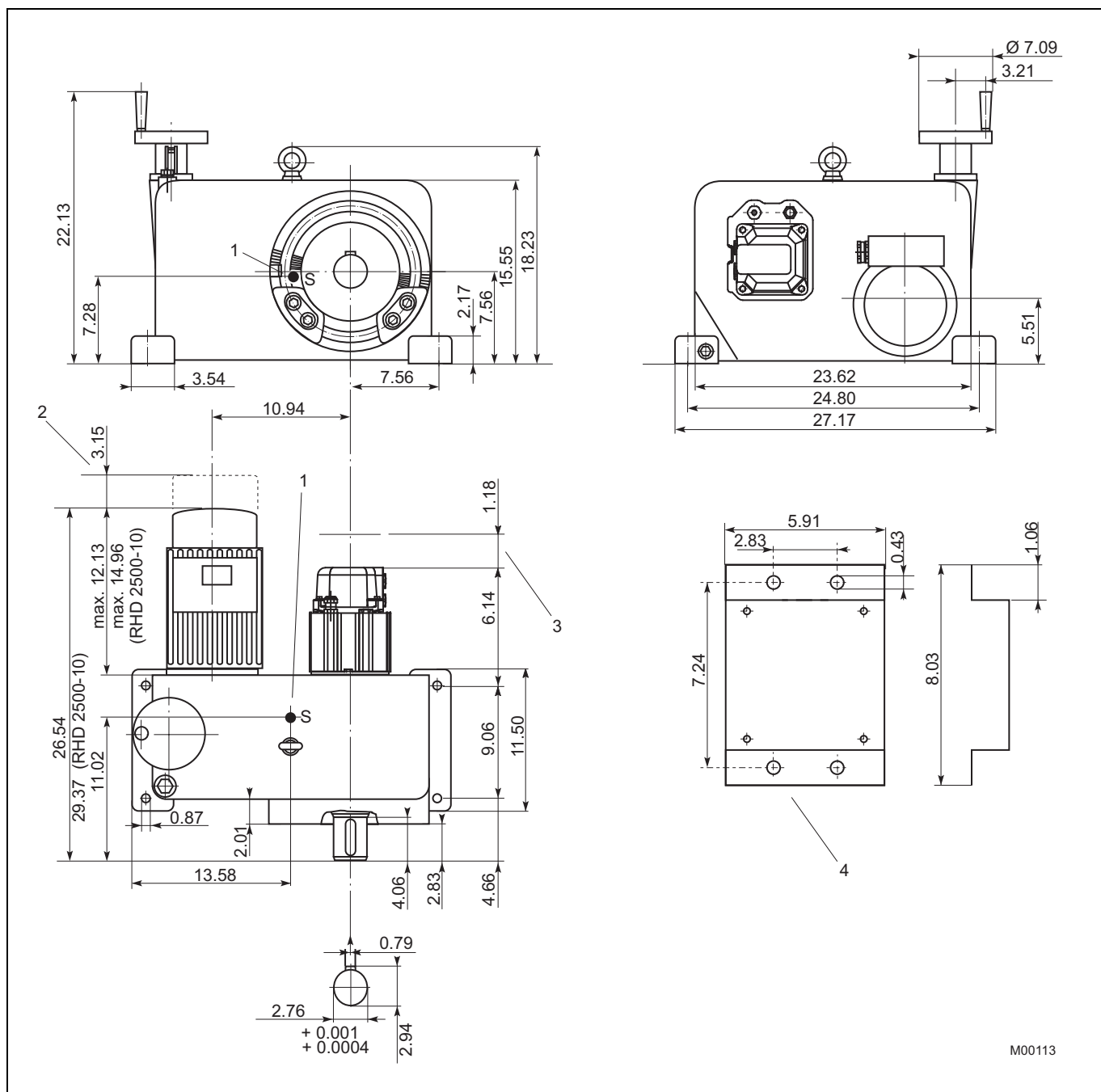


Fig. 5 Dimensions in Inch

- 1 S = Center of gravity
- 2 Removal space

- 3 Space for removing the plug
- 4 Plug holder (not to scale)

4.2 Lever

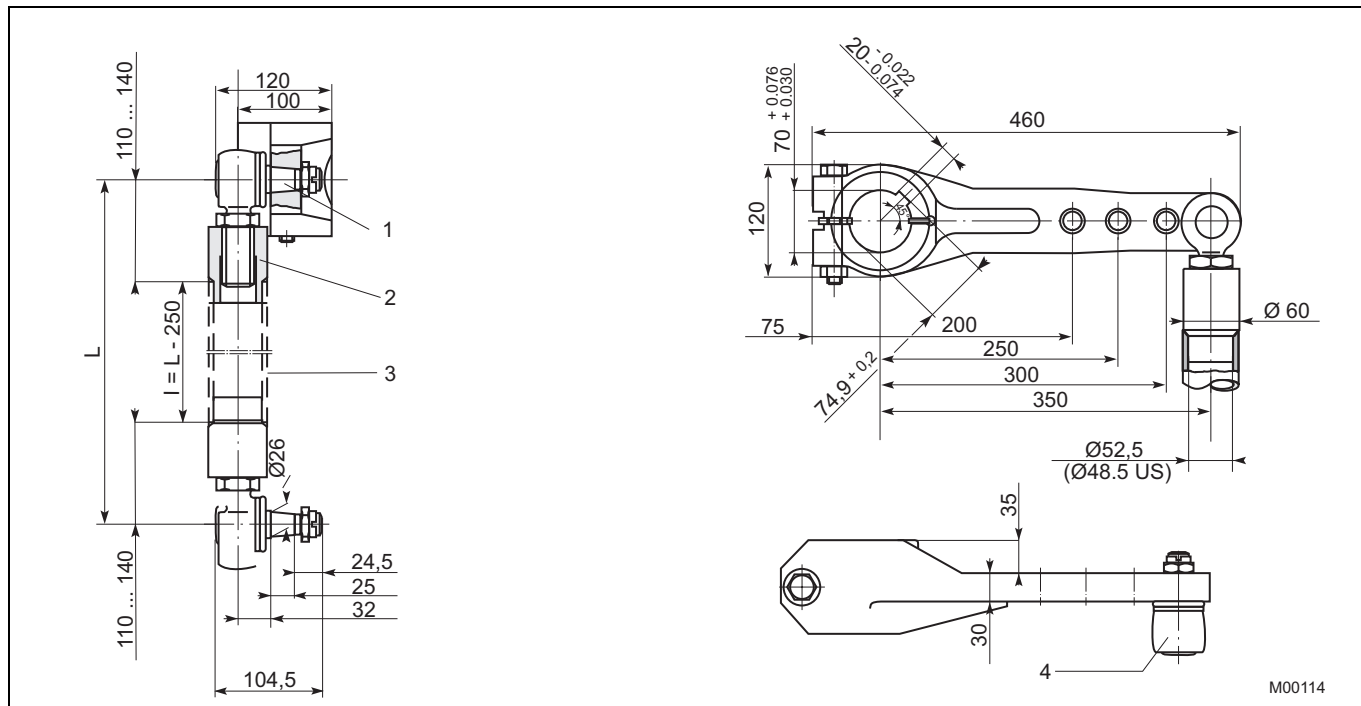


Fig. 6 Dimensions in mm

- 1 Cone 1 : 10
- 2 Welding bushings are part of shipment
- 3 Connection pipe 2" DIN 2440 resp. 2" schedule 80 pipe size "L" acc. to requirements. The pipe is not included in shipment.
- 4 Angular deflection of ball and socket joint:  
 Pointing towards the actuator: max. 3°  
 Pointing away from the actuator: max. 10°

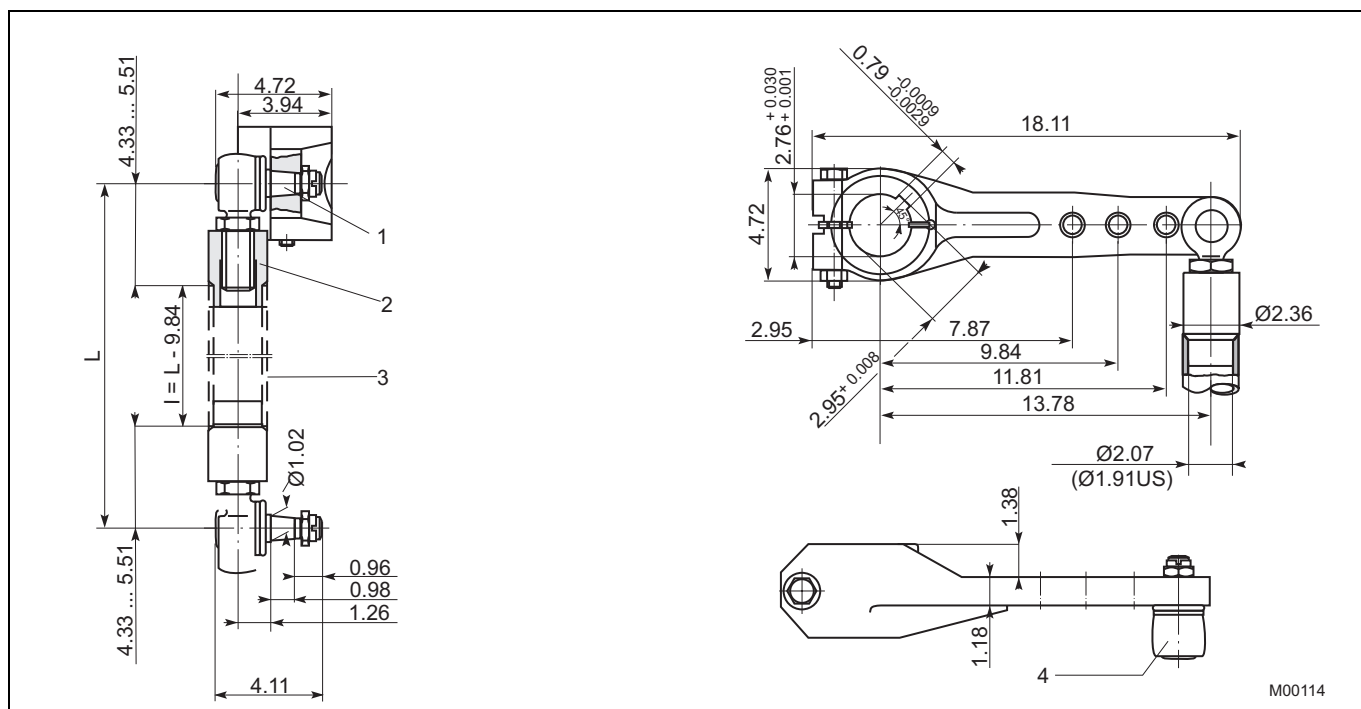


Fig. 7 Dimensions in Inch

- 1 Cone 1 : 10
- 2 welding bushings are part of shipment
- 3 Connection pipe 2" DIN 2440 resp. 2" schedule 80 pipe size "L" acc. to requirements. The pipe is not included in shipment.
- 4 Angular deflection of ball and socket joint:  
 Pointing towards the actuator: max.  $3^\circ$   
 Pointing away from the actuator: max.  $10^\circ$

## 5 Ordering information

### 5.1 Electrical Part-Turn Actuators RHD1250 / RHD2500 (Contract)

Ordering information											
<b>Part-Turn Actuator</b>		Variant digit No.	1 - 7	8	9	10 11	Code				
<b>RHD1250 -12</b>		Catalog No.	<b>V68174-</b>								
Rated torque 1250 Nm (1000 ft-lbs) (adjustable to 50%/75%/100%)											
<b>RHD2500 -10, RHD2500-25</b>		Catalog No.	<b>V68175-</b>								
Rated torque 2500 Nm (1900 ft-lbs) (adjustable to 50%/75%/100%)											
<b>Rated pos. speed</b>											
7.5°/s (adjustable to 7.5 ... 0.1°/s)	only for RHD1250-12			0	1	1	3				
3.6°/s (adjustable to 3.6 ... 0.1°/s)	only for RHD2500-25			0	1	1	4				
9.0°/s (adjustable to 9.0 ... 0.1°/s)	only for RHD2500-10			0	1	1	5				
<b>Special actuator features</b>											
Select at least one feature per group											
<b>Mechanical connection</b>											
Shaft with key								370			
Lever set, standard design (consists of lever, 2 ball-and-socket joints and 2 welding bushings)								496			
Lever set, US design (consists of lever, 2 ball-and-socket joints and 2 US welding bushings)								374			
<b>Electrical connection</b>											
plug (24-pole) complete, crimped								277			
plug (24-pole) complete, terminals								278			
plug bottom part covered 1)								279			
<b>Ambient temperature range</b>											
-10 ... 65 °C (15 ... 150 °F)								344			
-30 ... 50 °C (-20.... 130 °F)								341			

Additional ordering information											
						Code					
Electrical connection thread		set NPT adapter (junction metric / NPT thread)				680					
		set PG adapter (junction 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					
<b>Operating instruction</b>		(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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