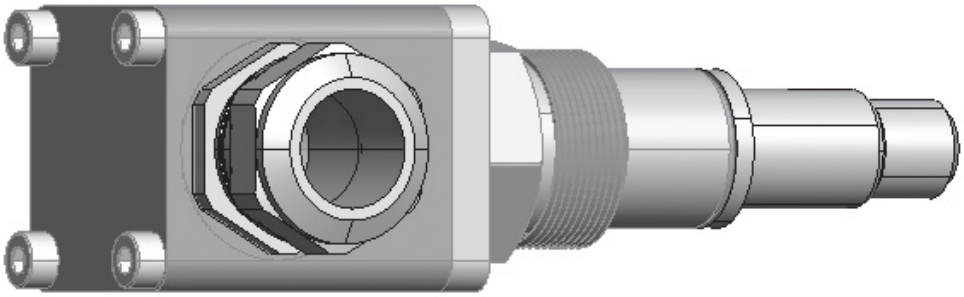
Product Data Sheet
October 2013
SD 2000-0E06

Damcos DPI-C and DPI-E

Position Indicators



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Description

The DPI is designed to fit DMS quarterturn valve actuators BRC and BRCF for use within the temperature range from -20° C to +80° C.

The DPI range consists of the DPI-E (ON/ OFF/switches), DPI-C (Continuous/potentio-meter) and the hydraulic DPI-B (By-pass).

For further information about the DPI-B, please see separate data sheet.

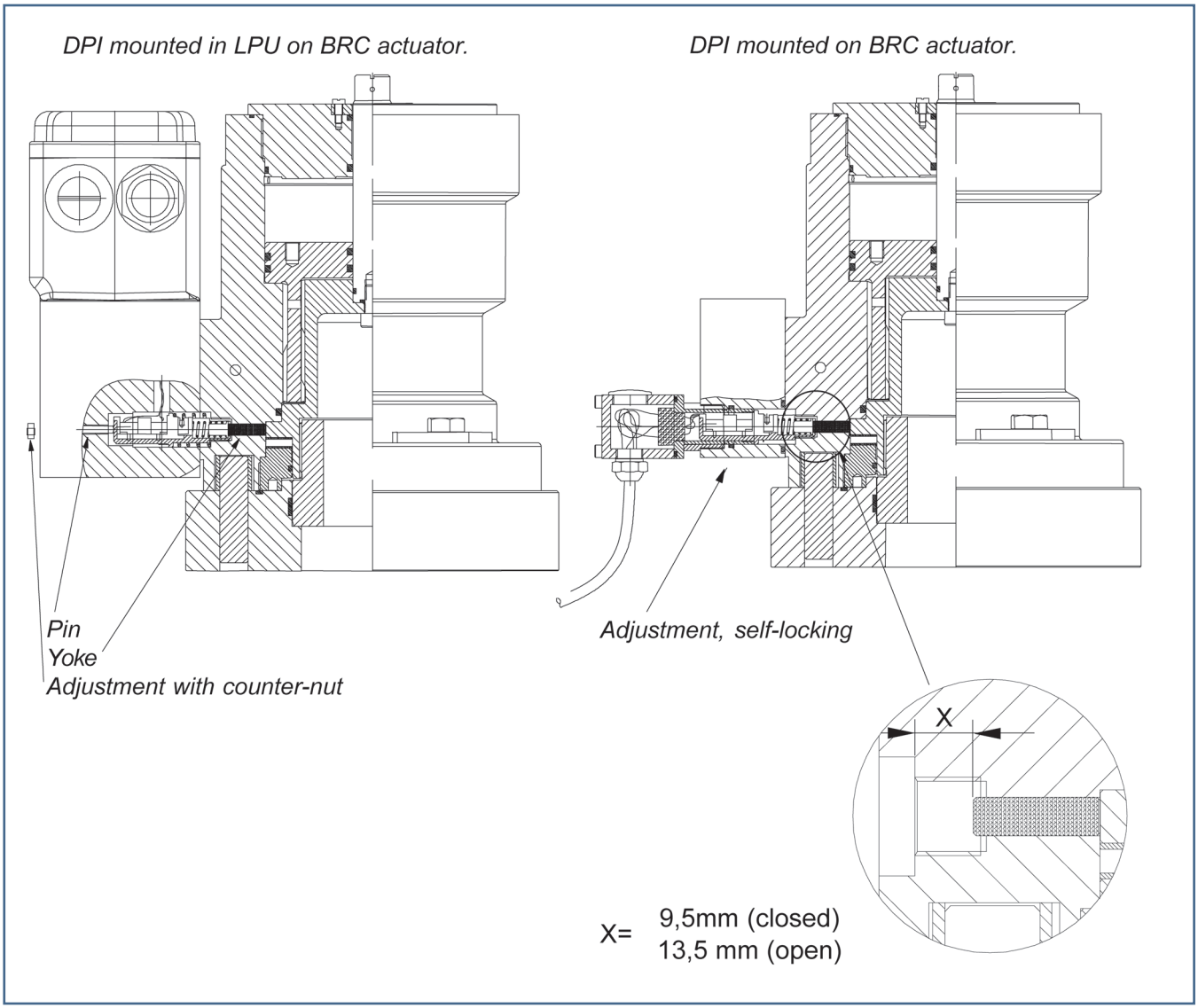
Basic Design

The DPI-E and -C can be mounted in different mounting blocks or in LPU, with only internal wiring.

Valve/actuator position is indicated by means of a precision potentiometer or 2 micro-switches.

Resistance (commonly used Ω output) increases during opening and decreases during closing the valve/actuator.

Set point adjustment is performed without dismounting the DPI or cable from the LPU or block.



Mounting and Adjustment

When mounting the DPI-C/-E be sure not to press the DPI too far towards the actuator. Several misadjustments of the DPI may cause destruction of the DPI.

When the valve/actuator is closed you may adjust the DPI by screwing it towards the actuator until

DPI-C: - potentiometer reaches the desired 300 Ω (1500 Ω)

DPI-E: - CLOSED switch closes (opens if NC configuration)

and then adjust the desired overlap (1° - 5°).

Check the indicator signal in open position.

When DPI is mounted in a block, make sure that the locking screw is tightened sufficiently to prevent the DPI from turning.

When mounted in LPU remember to tighten the counter-nut.

If correct adjustment is not possible - check the yoke distance "X" (see enlargement), and the presence of the yoke.

Enclosure

When mounted in block

Cavity seals are designed to fulfil demands of enclosure rating IP 68.

Note!
In case of installation where a larger enclosure rating than IP 67 is required, the connection house should be filled with silicone after wire mounting and test of function.

With each actuator comes a yoke, fit to transfer the mechanical signal from the actuator to the DPI.

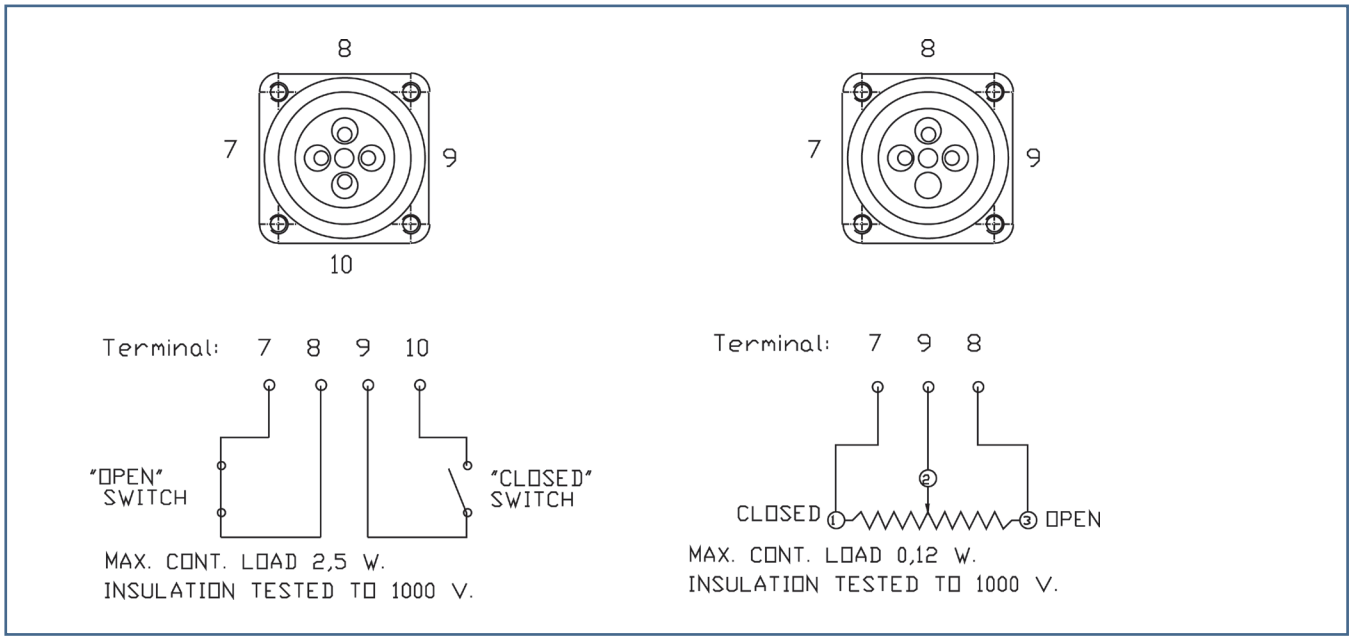
Potentiometer

The potentiometer incorporated in the DPI-C is a high quality potentiometer that is extremely reliable as long as the following ratings are observed:

Max. continuous load	0.12 W (VA)	
Max. peak load	1 W(VA)	
The normal output range is at:	1 kΩ	0-500 Ω for 0-90° rotation *
	2 kΩ	300-1400 Ω for 0-90° rotation *
	10 kΩ	1500-7000 Ω for 0-90° rotation *

Approx. adjustment for open (1400/7000) and close (300/1500) set point.

Terminal Layout



Analogue signal processing

LPU is equipped with signal conditioning, with a 2-wire 4 - 20 mA signal output. We recommend the PR 4114 isolation amplifier for transforming the potentiometer signal into a standard 4 - 20 mA signal.

Generally we recommend using the potentiometer as voltage divider, rather than a variable resistance.

The output can be displayed visually by means of the DMS meter PQ 48 measuring 48 x 48 mm and scaled: “closed, ¼, ½, 3/4, open”.

Materials

Housing	Brass, MS 58 (CuZn39Pb3)
Screws	AISI 304
Seals	NBR ~ Acrylonitrile Butadiene
Fixture	PPS

Cable gland data

Cable outer diameter	ø 6-10.5 or ø 8-15 mm
Ingress protection	IP 68
Thread	M 16 or M 20
Material	Nickel plated brass
Seal material	Perbunan and NBR

Cable quality/connection

Wiring to the terminal: Cross sections 0.5-1.5 mm² (AWG 22 - 16).

Observe that water intrusion into the terminal housing can take place through the cable - even through each individual wire.

The IP tightness is based on correct and careful mounting.

Potentiometer

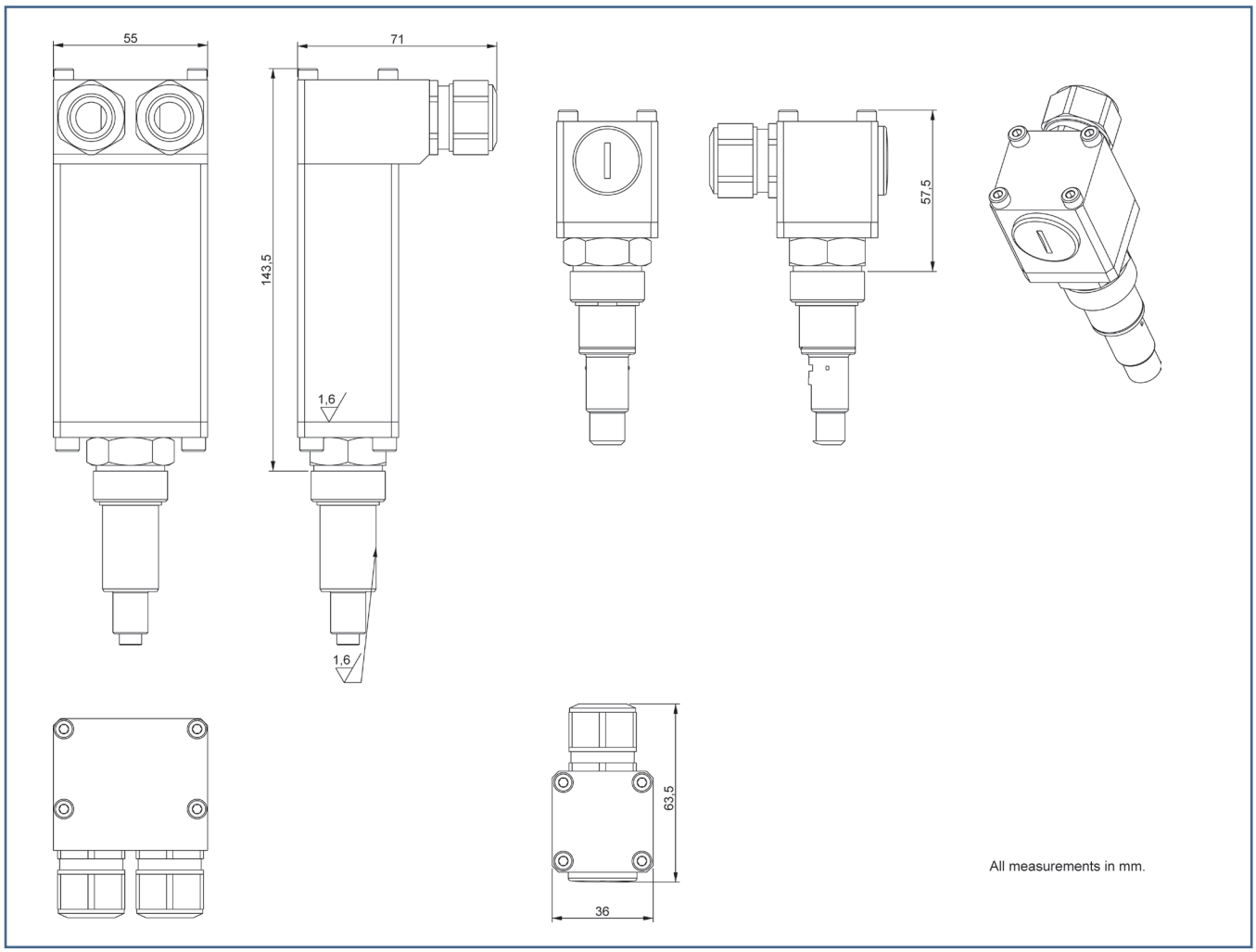
Standard resistance values	1k Ω, 2k Ω, 10k Ω
Total resistance tolerance	Precision class ± 20%
Independent linearity tolerance	Precision class ± 5%
Resolution	Essentially infinite
Output smoothness	Below 0.1% against input voltage
Insulation resistance	Over 50 M Ω at 500 V DC
Dielectric strength	1 minute at 500 V AC
Resistance temperature coefficient	± 400 p.p.m./°C
Operating temperature range	-55° C to +125° C
Temperature cycle: - Total resistance value variation - No mechanical damage	5 cycles under -55° C to 125° C Below ±10%.
Exposure at low temperature: - Total resistance value variation - No mechanical damage	24 hours at -55° C Below ± 5%.
Exposure at high temperature: - Total resistance value variation - No mechanical and electrical damage	1,000 hours at 105° C Below ± 10%.
Vibration: - Total resistance value variation - No mechanical and electrical damage	10 Hz to 2,000 Hz 20 G Below ± 2%.
Shock: - Total resistance value variation - No mechanical and electrical damage	50 G 7 mS Below ± 1%
Moisture resistance: - Total resistance value variation - Insulation resistance	40° C 95% RH 120 hours Below ±10% Over 10 M Ω
Life expectancy	500,000 cycles
Total resistance value variation	Below ± 10% against initial value

Switches

Contact resistance	Max. 100 m Ω
Switching current	Max. 100 mA at 30 V DC resistive load
Dielectric strength	1500 V AC to ground 1 minute
Life expectancy	Min. 100,000 operations
Insulation resistance	100 M Ω at 500 V DC
Humidity	Max. 85%

Weight and Dimensions

DPI	420 g
DDPI	1760 g



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