

Pressure Switches for all Applications

DS-307(302)



DS-103/ES/MS
(also with ATEX admittance)

see page 10



DS-104/EX
(with ATEX admittance)

see page 10

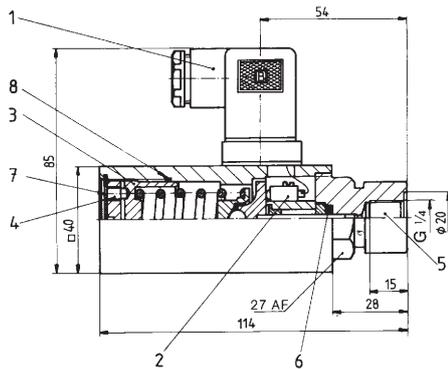


DAS ZEICHEN DER HYDROPA-GRUPPE

hydropa[®] - HYDROSTAR

General Data

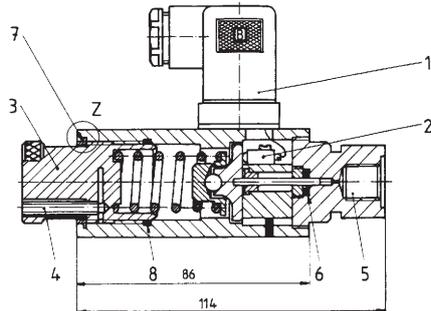
DS-307 or DS-302



8	1	O-Ring	DS-307 DS-302
7	1	Snap ring	
6	1	Set of seals (non-sticking, non-slipping)	
5	1	Connection G 1/4-female	
4	1	Locking screw	
3	1	Adjustable screw top	
2	1	Micro switch (single-pole double-throw)	
1	1	Appliance inlet - DIN 43650	
Item	No.	Description	

DS-307/V2 or DS-302/V2

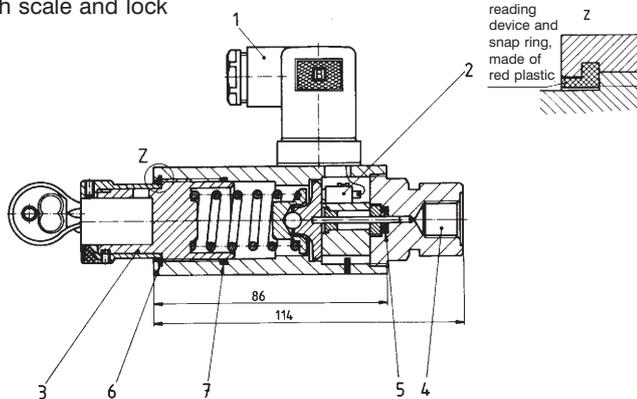
with scale



8	1	O-Ring	DS-307/V2 DS-302/V2
7	1	Reading device and snap ring	
6	1	Set of seals (non-sticking, non-slipping)	
5	1	Connection G 1/4-female	
4	1	Locking screw	
3	1	Knurled knob with scale	
2	1	Micro switch (single-pole double-throw)	
1	1	Appliance inlet - DIN 43650	
Item	No.	Description	

DS-307/V2/AS-H2 or DS-302/V2/AS-H2

with scale and lock



7	1	O-Ring	DS-307 / V2/AS-H2 DS-302 / V2/AS-H2
6	1	Reading device and snap ring	
5	1	Set of seals (non-sticking, non-slipping)	
4	1	Connection G 1/4-female	
3	1	Knurled knob with scale and lock (lock E 10 H2)	
2	1	Micro switch (single-pole double-throw)	
1	1	Appliance inlet - DIN 43650	
Item	No.	Description	

Description DS-307 / DS-302

These models are piston-spring type pressure switches. With pressure at zero the micro-switch remains pressed and will only be released when the adjusted switching pressure has been reached. In case of higher pressure the ram works against the spring. The piston pressure will then depend on the initial spring force. Adjustment by turning the screw top (or knurled knob) which can be fixed with a locking screw. The complete adjusting travel is approx. 9 mm.

Admissible ranges of application for pressure components, series DS

hazardous fluids*	P_{max.} ≤ 500 bar
non-hazardous fluids*	P_{max.} ≤ 1000 bar
* According to the regulation on hazardous materials In the meaning of paragraph 9, sub-paragraph 2 of the regulation on pressure components DGRL 97/23/EC	

For applications with higher pressure please contact our technical department !
In order to retain service-life over a long period vibrations, oscillations and high switching currents resp. inductive loads should - as far as possible - be avoided.

Pressure Switch, Characteristics

DS-307/302	piston diameter mm						
	ø 3	ø 4	ø 5	ø 6			
1. General							
Design	spring-loaded piston, because of mechanical turn it is no longer possible to get the spring screwed on "block"						
Connection	thread G ¼ female or subplate, pitch circle ø 44 mm						
Adjustment	adjustable screw top or knurled knob						
Safety	locking screw or lock (E 10 H2 [Type AS])						
Mounting position	variable						
2. Hydraulic data							
Switching pressure range	50-600 bar	50-420 bar	20-350 bar	40-240 bar	20-150 bar	10-100 bar	5-55 bar
Switching accuracy	variations of less than 1%						
Ambient temperature	- 40 °C up to + 90 °C						
Fluid	oil, oil-in-water-emulsion						
3. Electric data							
Switch	electro-mechanical double-throw switch						
Current	AC - DC current						
Protection according to DIN 40050	IP 65						
Electrical connection	appliance inlet according to DIN 43650 (PG 11, on request PG 9 without additional price)						
4. Features							
Housing	Aluminium						
Standard body	Brass						
Switching travel	0,5 mm - reducing wear of seal and ram to a minimum						
Subplates	valve mounting NG 6 and NG 10 (only for subplate connection Type DS-307/F or DS-302/F)						
Rights of alteration reserved in sense of technical development !							

Switching Capacity

Standard Contact: Silver

voltage V	max. switching capacity resistive load A	motor load (inductiv) A
250 AC	5	1
24 DC	5	4

Nominal switching capacity:

Standard micro switch: Silver (Ag 999), CEE 24; VDE 0630
50 TSD circuits, T85, UL 1054/CSA C22.2 No. 55 6 TSD, T90

**On request: Gold on silver palladium
(max. load 1 A, 30 V.)**



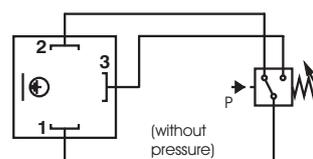
NOTE !

The unit may only be installed by technical specialists. Comply with the national and international regulations for the installation of electro-technical equipment. Voltage supply in compliance with EN 50178, SELV, PELV. Ensure that the equipment is not energized before connecting the unit.

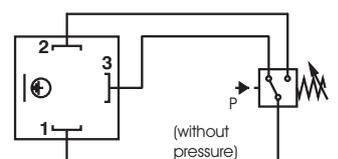
Electrical Connection

Symbols

DS-307 (Standard)



DS-302



connection:

NCC: clamp 1-2

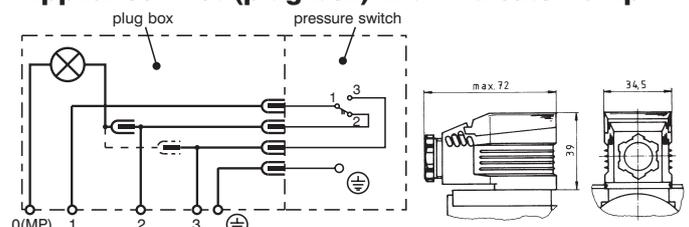
NOC: clamp 1-3

connection:

NCC: clamp 1-3

NOC: clamp 1-2

Appliance inlet (plug box) with indicator lamp



Utilization of the insert for indicator lamp only in connection with the plug box (see graphical symbol above). The indicator lamp can be connected to clamp 2 or clamp 3 on request. The clamp connection "MP" is directly provided on the sheet bar of the insert for indicator lamp.

How to order DS-307 etc.

DS-307 / / - /

Standard **DS-307,DS-302**

additional notes (indicated by bar)

- F** = flange mounting
- F/P** = pressure switch with integrated 90°-subplate (**p max. 350 bar**, see page 6)
- V2** = scale and knurled knob
- **AS-H2** = with lock E10 H2
- SCH** = panel mounting
- **PO** = lead seal (not for version with scale)
- L-MP 24** = 4-pole appliance inlet 24 V-DC
- L-MP 220** = 4-pole appliance inlet 220 V-AC
- LED-34** = plug with indicating function DIN 43 650
- **MS** = brass housing
- **SS** = special sealing (low function) only for the following pressure ranges:
5- 55 bar 10-100 bar
40-240 bar 20-350 bar

***= insert pressure range e.g. 055 (5-55 bar)

Pressure set at factory: standard pressure increasing, on request decreasing.

- ** AUX** = Contact gold on silver palladium
- ** S** = Viton®/fluoroelastomers
- G** = 2 tapped holes (see page 7)
- B** = 2 mounting holes (see page 7)

pressure ranges:	p _{max.} standard	p _{max.} special sealing SS
55 = 5- 55 bar	300 bar	200 bar
100 = 10-100 bar	400 bar	200 bar
150 = 20-150 bar	500 bar	-
240 = 40-240 bar	500 bar	400 bar
350 = 20-350 bar	600 bar	400 bar
420 = 50-420 bar	600 bar	-
600 = 50-600 bar	800 bar	-

** Special execution, not on stock !

Viton® is a registered trademark of DuPont Performance Elastomers.

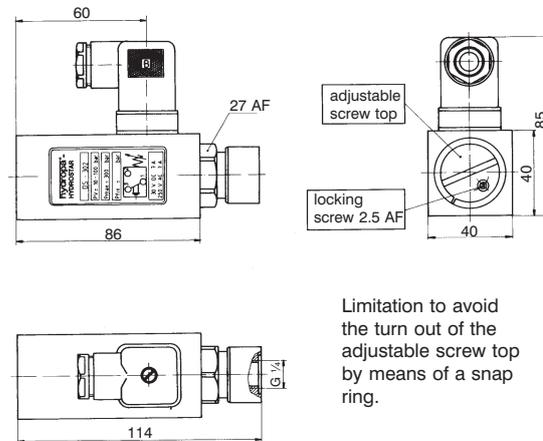
Dimensions DS-307/302

DS-307-*** or DS-302-***

Weight: 0,63 kg



standard



threaded connection: G 1/4 female

Protection IP 65

Pressure adjustment as follows: detachment of locking screw; increase of pressure when turning the adjustable screw top clockwise. on request max. switching pressure set - at factory.

(***=pressure range)

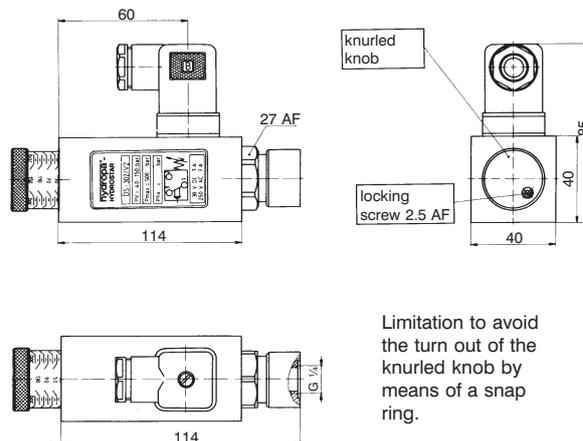
Limitation to avoid the turn out of the adjustable screw top by means of a snap ring.

DS-307/V2-*** or DS-302/V2-***

Weight: 0,66 kg



with scale and knurled knob ø 30 mm



threaded connection: G 1/4 female

Protection IP 65

Graduated ring for precise pressure adjustment; lockable by means of locking screw; the required switching point is pre-selectable when turning the knurled knob.

(***=pressure range)

Limitation to avoid the turn out of the knurled knob by means of a snap ring.

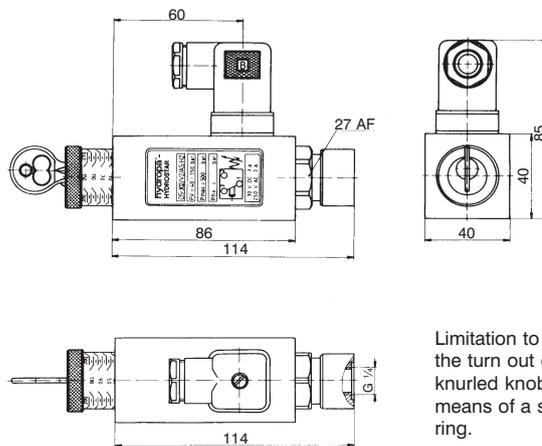
DS-307/V2/AS-H2-***

or DS-302/V2/AS-H2-***

Weight: 0,67 kg



with scale, knurled knob \varnothing 30 mm and lock E10 H2



Limitation to avoid the turn out of the knurled knob by means of a snap ring.

threaded connection:
G 1/4 female

Protection IP 65

Pull of the key -
pressure adjustment
legible (all-round).

(***=pressure range)

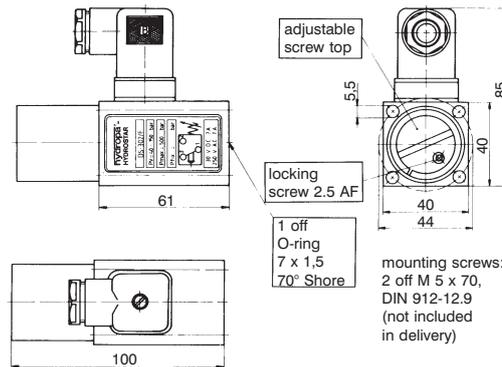
DS-307/F-***

or DS-302/F-***

Weight: 0,65 kg



subplate connection



Limitation to avoid the turn out of the adjustable screw top by means of a snap ring.

Connection:
subplate connection

Protection IP 65

Pressure adjustment as follows: detachment of locking screw; increase of pressure when turning the adjustable screw top clockwise.

On request max. switching pressure set-at factory.

(***=pressure range)

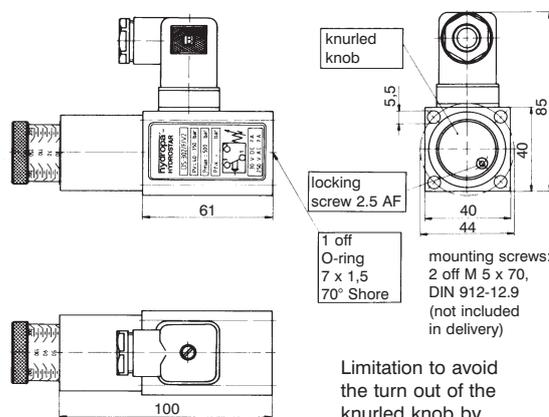
DS-307/F/V2-***

or DS-302/F/V2-***

Weight: 0,67 kg



subplate connection with scale, knurled knob \varnothing 30 mm



Limitation to avoid the turn out of the knurled knob by means of a snap ring.

Connection:
subplate connection

Protection IP 65

Graduated ring for precise pressure adjustment; locking screw; the required switching point is pre-selectable when turning the knurled knob.

(***=pressure range)

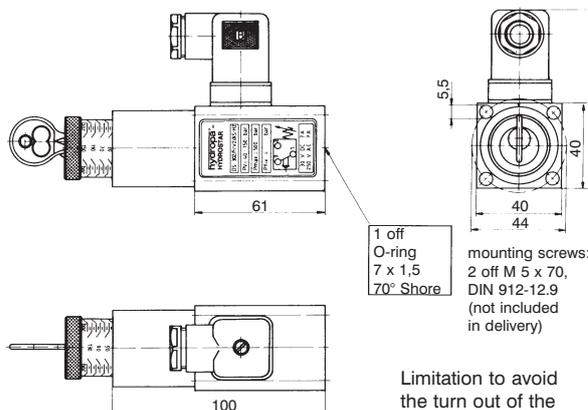
DS-307/F/V2/AS-H2-***

or DS-302/F/V2/AS-H2-***

Weight: 0,68 kg



subplate connection with scale, knurled knob \varnothing 30 mm and lock E10 H2



Limitation to avoid the turn out of the knurled knob by means of a snap ring.

Connection:
subplate connection

Protection IP 65

lock E10 H2

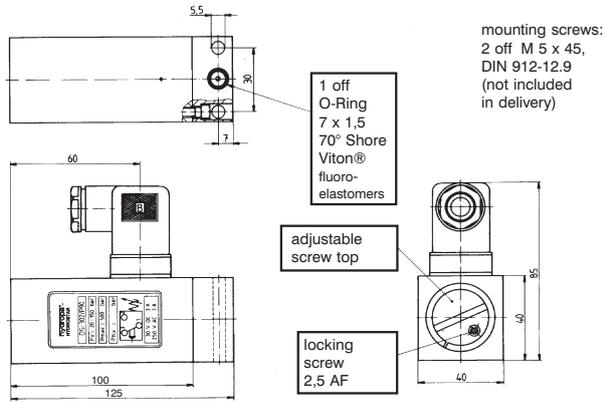
pull off the key -
pressure adjustment
legible (all-round).

(***=pressure range)

DS-307/F/P-***

or DS-302/F/P-***

Weight: 0,62 kg



Connection:
Subplate connection

Protection IP 65

Pressure adjustment as follows: detachment of locking screw; increase of pressure when turning the adjustable screw top clockwise.

On request max. switching pressure set - at factory.

(***=pressure range)
p max. 350 bar

standard

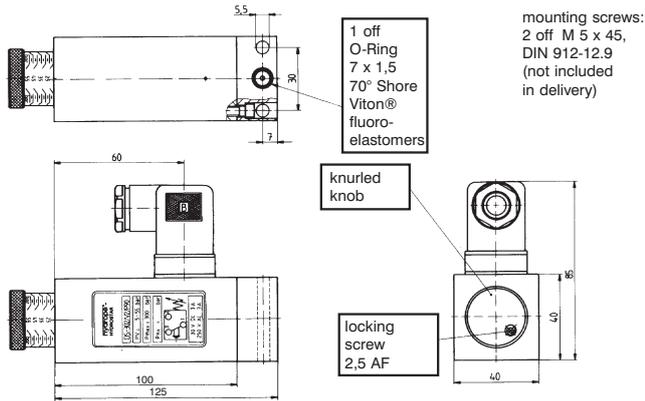
Viton® is a registered trademark of DuPont Performance Elastomers.

Limitation to avoid the turn out of the adjustable screw top by means of a snap ring.

DS-307/F/P/V2-***

or DS-302/F/P/V2-***

Weight: 0,68 kg



Connection:
Subplate connection

Protection IP 65

graduated ring for precise pressure adjustment; lockable by means of locking screw; the required switching point is pre-selectable when turning the knurled knob.

(***=pressure range)
p max. 350 bar

with scale, knurled knob \varnothing 30 mm

Viton® is a registered trademark of DuPont Performance Elastomers.

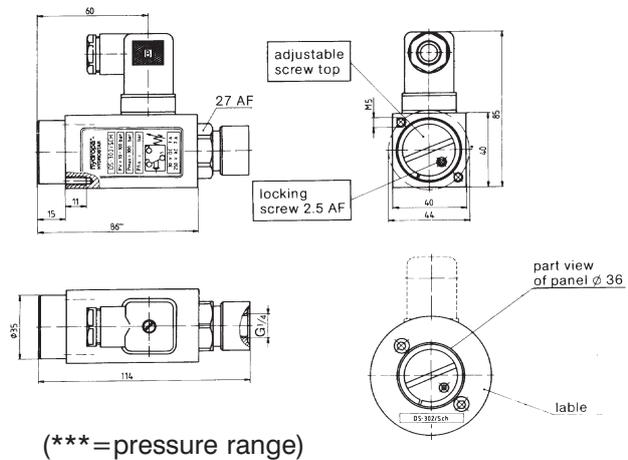
Limitation to avoid the turn out of the knurled knob by means of a snap ring.

DS-307/SCH-* or DS-302/SCH-*****

Weight: 0,62 kg



panel mounting



Limitation to avoid the turn out of the adjustable screw top by means of a snap ring.

(***=pressure range)

DS-307/SCH/V2***

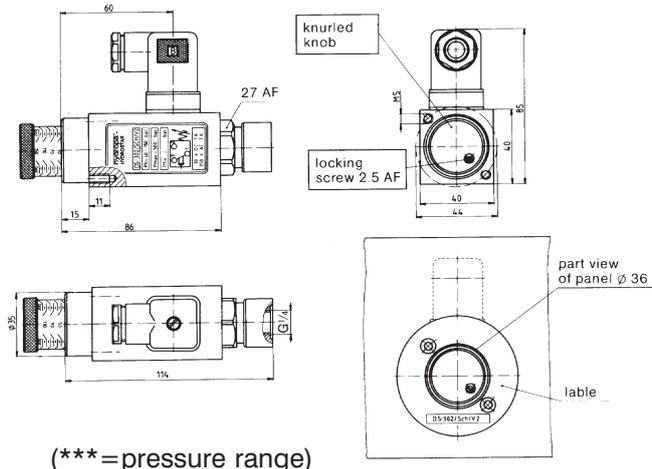
or DS-302/SCH/V2-***

Weight: 0,65 kg



panel mounting with scale, knurled knob \varnothing 30 mm

Limitation to avoid the turn out of the knurled knob by means of a snap ring.



(***=pressure range)

DS-307/SCH/V2/AS-H2-***

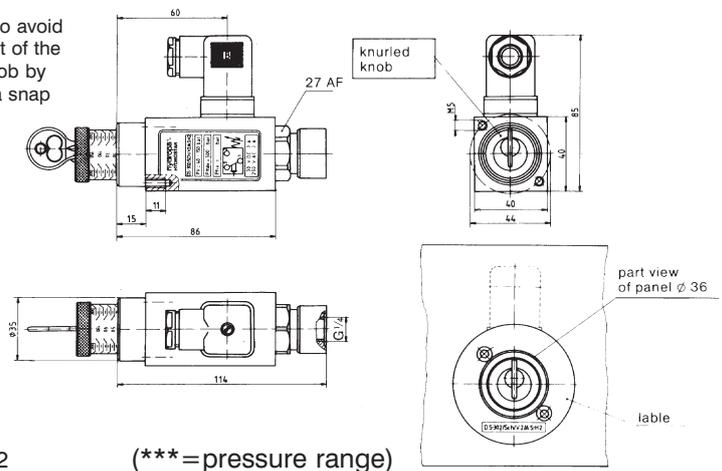
or DS-302/SCH/V2/AS-H2-***

Weight: 0,66 kg



panel mounting with scale, knurled knob \varnothing 30 mm and lock E10 H2

Limitation to avoid the turn out of the knurled knob by means of a snap ring.



(***=pressure range)

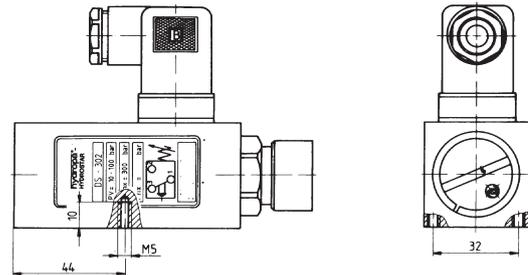
Tapped holes for pressure switches

Pressure switch mounting with tapped holes 2 x M5, 10 deep at opposite side to the appliance inlet.

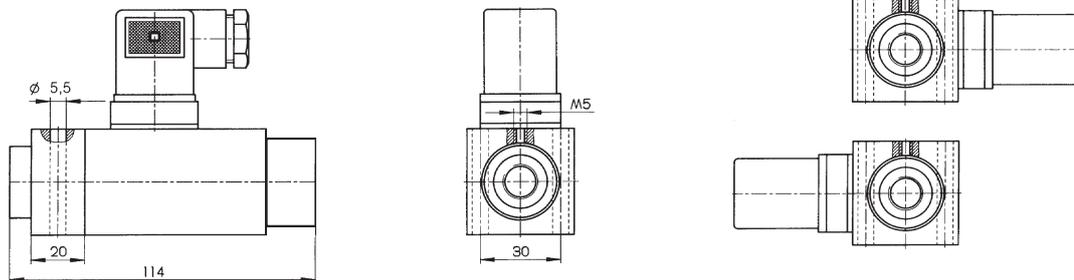
Only on request.

To be added after indication of pressure range: ***/G

Not for flange mounting pressure switches (DS-307/F or DS-302/F).



Mounting holes for pressure switches with connection thread G 1/4 female



Only on request

Plug with indicator function - LED-34



DIN 43 650

- To turn at 270°
- 45° detent
- Wiring for all voltages (12 to 220 V/AC-/DC)
- 2 off LED indicator
Green: energized
Yellow: switched (selectable)

The significant supplement

IP 65
(acc. to DIN 40050)

Hysteresis for DS-307/DS-302

1. Standard sealing:

Pressure switch Type DS-307/302: For an adjustable pressure of approximately 60-70% of the max. adjustable pressure the Hysteresis is approximately 7-12% of end value.

These values are dependent on the temperature and viscosity of working fluid.

Example:	DS-307/100	Adjusted pressure: 70 bar
	pressure range: 10-100 bar	Hysteresis: approx. 7-12 bar

2. Special sealing (low friction) type "SS"

Pressure switch Type DS-307/SS: For an adjustable pressure of approximately 60-70% of the max. adjustable pressure the Hysteresis is approximately 3-6% of end value.

These values are dependent on the temperature and viscosity of working fluid.

Example:	DS-307/SS-100	Adjusted pressure: 70 bar
	pressure range: 10-100 bar	Hysteresis: approx. 3 bar
	DS-307/SS-240	Adjusted pressure: 200 bar
	pressure range: 40-240 bar	Hysteresis: approx. 12 bar

Two Circuit Pressure Diaphragm Seal Unit

hydropa® - Two Circuit Diaphragm Seal Unit with hydropa® - Hydrostar measuring units

Up to 600 bar
-50°C up to + 100°C



DMH-630 R with
pressure switch
DS-307



DMH-630 R with
pressure gauge
TKF-2060



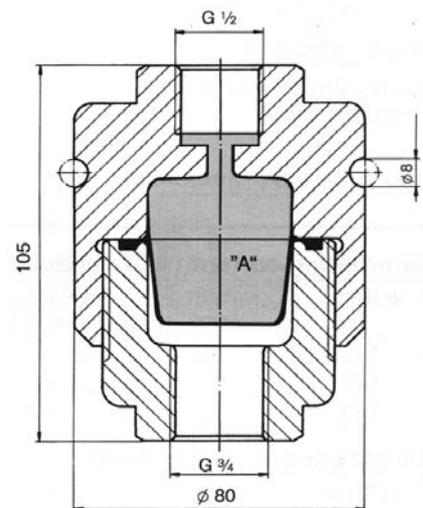
DMH-630 R with
glycerine gauge
MG 63

DMH-630 R

G 1/2 : connection
measuring unit

G 3/4 : connection
working fluid

"A" : place for
mineral oil
40 cm³



The **hydropa**® - Two Circuit Diaphragm Connector is an absolutely safe solution for separation of the measured fluid and the measuring unit. The separation is done by a stationary mounted membrane. This model based on a housing with flange connection is particularly appropriate for heavily polluted and dense fluids such as sewage, sludge etc.

In the coal mining industry cementitious grout is sprayed under pressure on the mine walls to bind the coal dust.

These units have been developed for this application with the co-operation between **hydropa**® and the Ruhrkohle AG mining research station Essen.

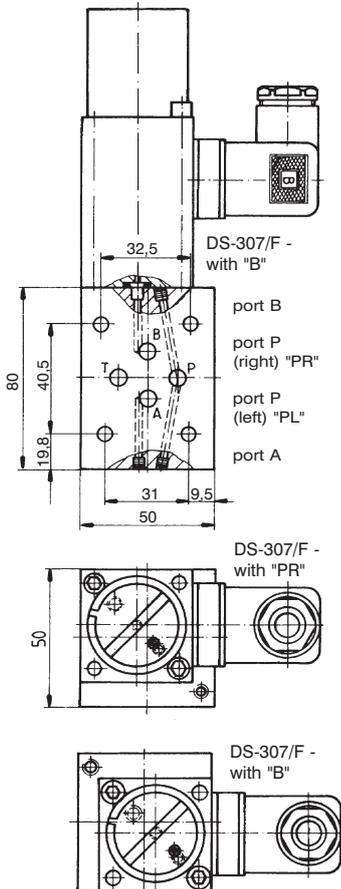
For bigger quantities, special designs are possible on request.

Material of Membrane:
50 NBR/253 based on acrylonitrile butadiene rubber useable for the following fluids:
mineral oil, oily compressed air, water and water-oil-emulsion.

Subplates for compact mounting

These subplates are for direct connection of the flangeable pressure switch onto an optional port e.g. "P", "A" or "B" without drilling of additional ports. Maximum pressure: 350 bar.

NG 6-subplate PZ-6/1

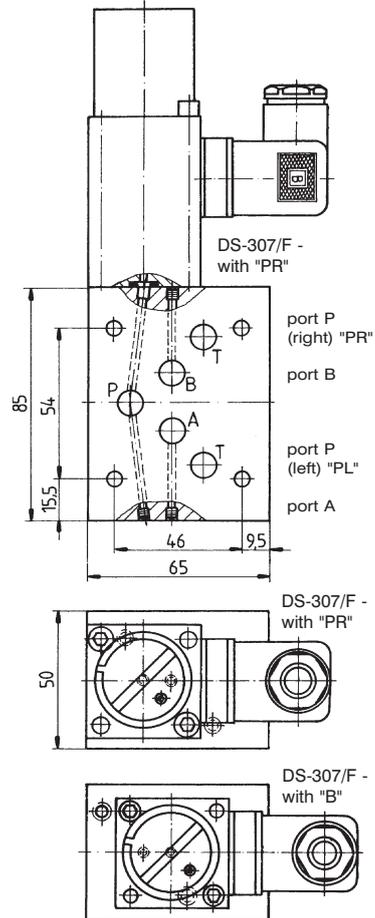


Example:
Subplate
with
pressure switch
Typ DS-307/F...
at
port "B"

Scope of delivery:

- 1 off subplate with
- 4 off O-Ring 5-612
(8.74 x 1.78)
- 3 off expander

NG 10-subplate PZ-10



Example:
Subplate
with
pressure switch
Typ DS-307/F...
at
port "PR" (right)

Scope of delivery:

- 1 off subplate with
- 5 off O-Ring 2-014
(12.42 x 1.78)
- 3 off expander

How to order

Subplates for
pressure switch connection

- 6/1** = NG 6 with graphical
symbol A 6-DIN 24 340
- 10** = NG 10 with graphical
symbol A 10-DIN 24 340

PZ / /

connection in
PR = port P (right)
PL = port P (left)
A = port A
B = port B
AB = port A and B
 other combinations on request
 (e.g. PR + PL)

no indications = Perbunan-seals
S = Viton®/fluoroelastomers-seals

Viton® is a registered trademark of DuPont Performance Elastomers.

Pressure switches DS-103 and DS-104

DS-103/ES/MS-***

Weight: 1,5 kg

(*** = pressure range)

For the mining industry

Housing brass

Electrical production facilities
or machines for mines with mine gas.

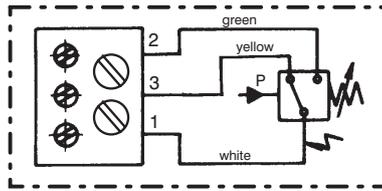
Connection box:
with 3-pole terminal board



Also with ATEX admittance
DMT 02 ATEX E 200

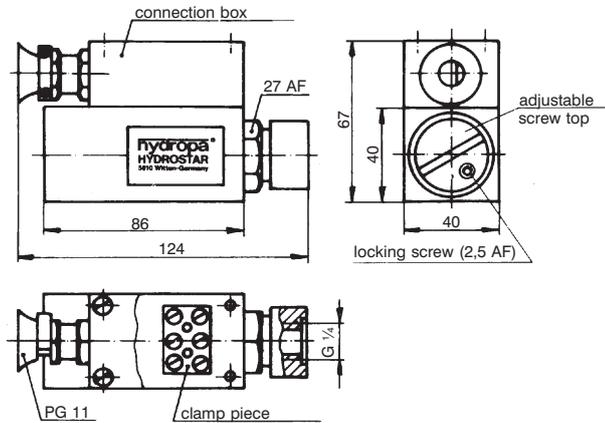
Equipment identification: **Ex** I M2 EEx ia I
Please indicate supplement "ATEX" at order!

Symbol



pressure ranges:

55	= 5- 55 bar
100	= 10- 100 bar
150	= 20- 150 bar
240	= 40- 240 bar
350	= 20- 350 bar
420	= 50- 420 bar
600	= 50- 600 bar



NOTE !

The unit may only be installed by technical specialists. Comply with the national and international regulations for the installation of electro-technical equipment. Voltage supply in compliance with EN 50178, SELV, PELV. Ensure that the equipment is not energized before connecting the unit.

DS-104/EX-***

Weight: 0,8 kg
(*** = pressure range)

According to Council Directive 94/9/EC (ATEX)



Pressure switch type DS-104/EX is fitted with a special end switch from Bartec. This end switch has the approval acc. PTB no. 01 ATEX 1005X dated 16.05.2001.
Identification of the end switch : **Ex** II 2G EEx d IIC T6.

Special requirements:

The end switch must be mounted with a mechanical protection.

The cable of this electrical end switch must be fix and properly laid in order to avoid mechanical damage.

Working temperature: -20 °C up to +70 °C

NOC/NCC contact

Cable length: 4 m, longer on request

Max. electrical load:

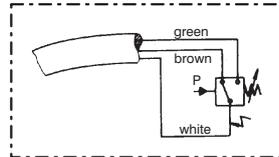
DC 250 V, 0,25 A

When separate earth is done by customer the end switch can be loaded with max. AC 250 V 5,0 A.

See certificate of conformity PTB 01 ATEX 1005X.

End switch type 07-2501-6.

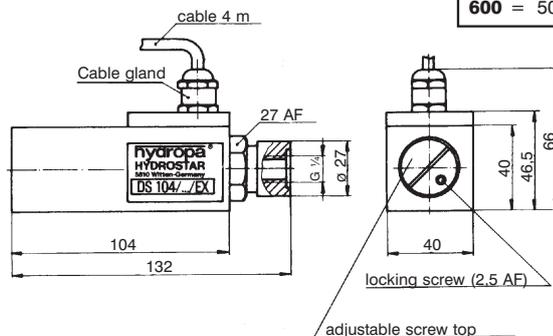
Symbol



**Earthing separately
e.g. by
pipeline**

pressure ranges:

55	= 5- 55 bar
100	= 10- 100 bar
150	= 20- 150 bar
240	= 40- 240 bar
350	= 20- 350 bar
420	= 50- 420 bar
600	= 50- 600 bar



Type	Description
DS-104/EX-***	Pressure switch, explosion-proof
DS-104/EX/V2-***	with scale and knurled knob ø 30 mm
DS-104/EX/V2/AS-H2-***	with scale, knurled knob ø 30 mm and lock E10 H2
DS-104/EX/SCH-***	panel mounting
DS-104/EX/SCH/V2-***	panel mounting and knurled knob ø 30 mm
DS-104/EX/SCH/V2/AS-H2-***	panel mounting, knurled knob ø 30 mm and lock E10 H2

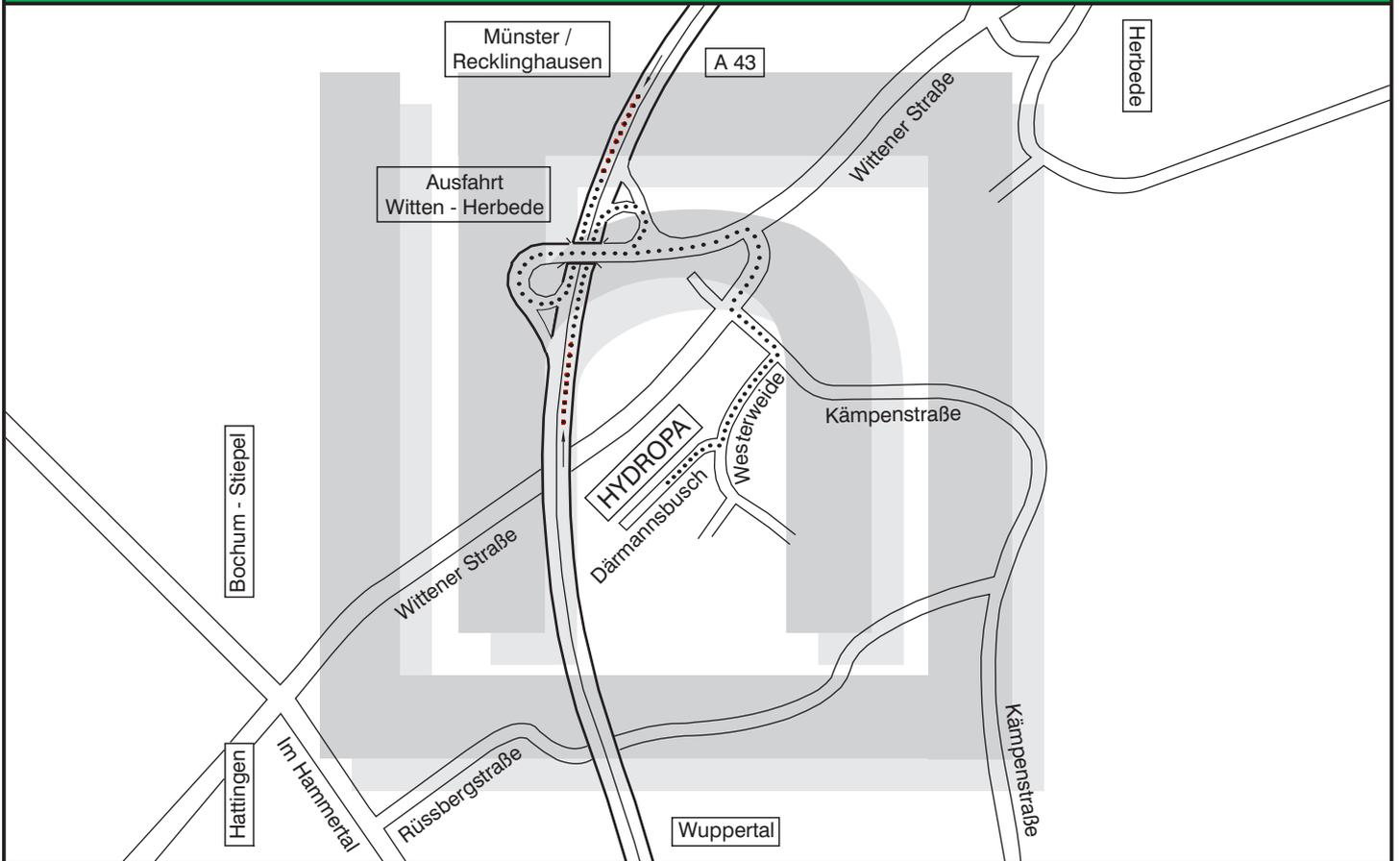


NOTE !

The unit may only be installed by technical specialists. Comply with the national and international regulations for the installation of electro-technical equipment. Voltage supply in compliance with EN 50178, SELV, PELV. Ensure that the equipment is not energized before connecting the unit.

For Accurate Switching- **hydropa®-HYDROSTAR**

Wie Sie uns finden! How to find us!



Anlagen / Power Packs

Druckschalter / Pressure Switches

Pumpen / Pumps



Blockventile / Blockvalves

Zylinder / Cylinder



**Innovativer Systempartner der Industrie - kompetent - flexibel - qualitätsorientiert !
Innovative systempartner of the industry - competent - flexible - quality oriented !**

hydropa[®]
GmbH & Cie. KG

Därmannsbusch 4, D-58456 Witten (Herbede)
Postfach / P.O. Box 31 65, D-58422 Witten (Herbede)
Telefon / Telephone (0 23 02) 70 12-0, Telefax (0 23 02) 70 12-47
Internet: www.hydropa.de - E-Mail: info@hydropa.de

hydropa[®]
GmbH & Cie. KG

Änderungen im Sinne des technischen Fortschrittes vorbehalten! / Rights of alteration reserved in sense of technical development!