Tecfluid s.a.

Instrumentation for fluids

Target disk flowmeter Series DP

Instructions manual

DP65

DP500

R-MI-DP Rev.: 4 English version

PREFACE

Thank you for choosing the flowmeter series DP from Tecfluid S.A.

This instruction manual allows the installation and operation of the target disk flowmeter series DP. It is recommended to read it before using the equipment.

WARNINGS

- This document shall not be copied or disclosed in whole or in any part by any means, without the written permission of Tecfluid S.A.
- Tecfluid S.A. reserves the right to make changes as deemed necessary at any time and without notice, in order to improve the quality and safety, with no obligation to update this manual.
- Make sure this manual goes to the end user.
- Keep this manual in a place where you can find it when you need it.
- In case of loss, ask for a new manual or download it directly from our website www.tecfluid.com Downloads section.
- Any deviation from the procedures described in this instruction manual, may cause user safety risks, damage of the unit or cause errors in the equipment performance.
- Do not modify the equipment without permission. Tecfluid S.A. is not responsible for any problems caused by a change not allowed. If you need to modify the equipment for any reason, please contact us in advance.

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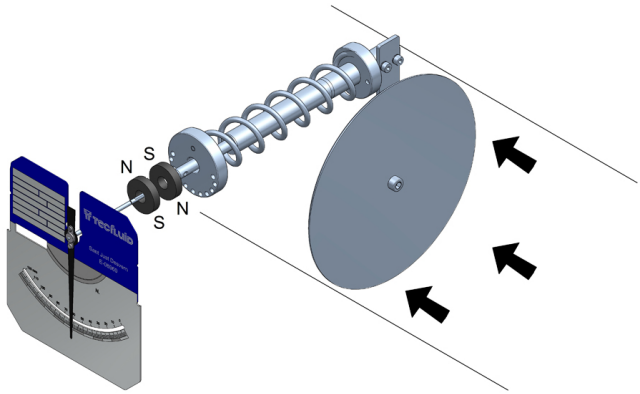
1 WORKING PRINCIPLE

A target disk flowmeter is based on the indirect measurement of the force which is exerted on a disk suspended in the trajectory where a fluid flows at a certain speed.

The disk is held by a shaft which is perpendicular to the fluid direction, so that the force applied by it affects the shaft rotation. At the same time, a spring attached to the shaft is opposed to its turn. When the force applied on the spring is equal to the force exerted by the fluid, an equilibrium point of the turn angle of the disk, which is equivalent to a flow rate, is achieved.

The flow reading is made by means of magnetic coupling with the housing indication system, thus avoiding fluid leakage to it.



2 RECEPTION

The target flowmeters Series DP are supplied already calibrated, ready to be mounted and put into operation.

The meters are conveniently packaged for transportation together with their instruction manual for installation and operation. The target disk securing elements used for transport should be removed before mounting

2.1 Unpacking

Unpack the instrument carefully, removing any remains of the packing from the inside of the sensor. The target disk must be checked manually to see if the spring shows an even resistance and that the indicator needle moves freely over the graduated scale and returns to 0.

2.2 Storage temperatures

-20ºC ... +60ºC

3 HANDLING

It should always be done with care and without knocks.

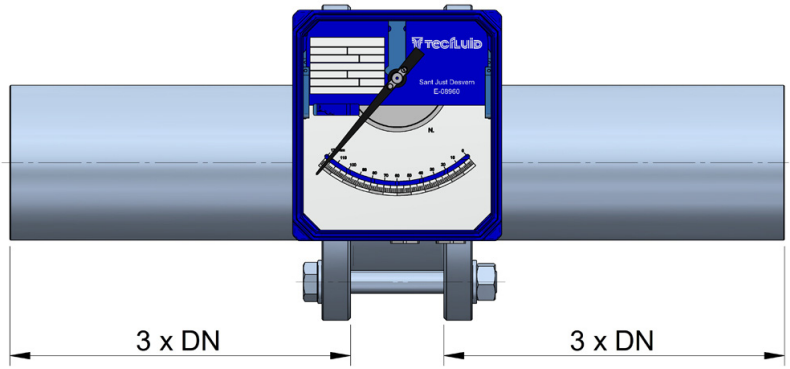
4 INSTALLATION

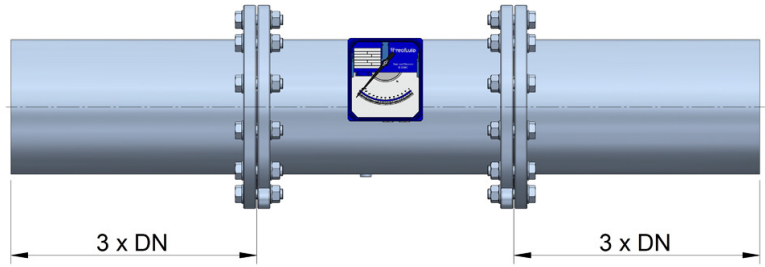
For the model DP65, until DN300, the installation is between flanges (wafer).

the model DP500, from DN250 to DN500 includes flanges.

4.1 Straight pipe run

The minimum requirement of straight pipe, free of disturbing elements before and after the flowmeter must be kept. For liquids these distances are equivalent to 3 times the DN and for gases 8 times the DN.





4.2 Gaskets

The gaskets should be suitable for the product and they must be carefully centered.

It is recommended that the gaskets have an internal diameter of about 5 to 10 mm bigger than the nominal flowmeter diameter. This will avoid reducing the free area when tightening the flange screws, squeezing the seal.

Any non-suitable gasket can cause reading errors or interfere with the target disk movement.

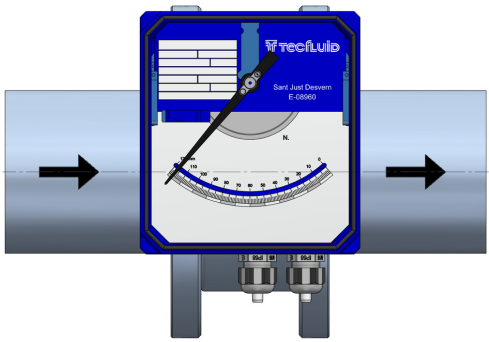
4.3 Internal diameter

The internal diameter of the pipe and the flowmeter should match. Otherwise, deviations in the flow measurement may occur.

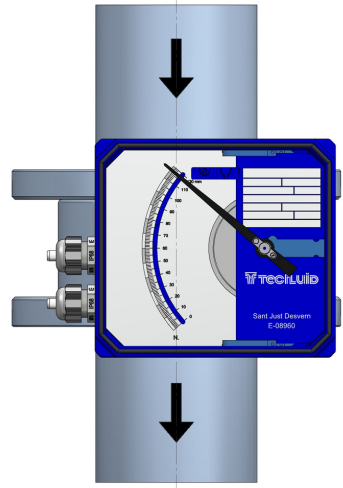
4.4 Flow direction

The flow direction should be the same as indicated on the scale plate. The following four flow directions are available:

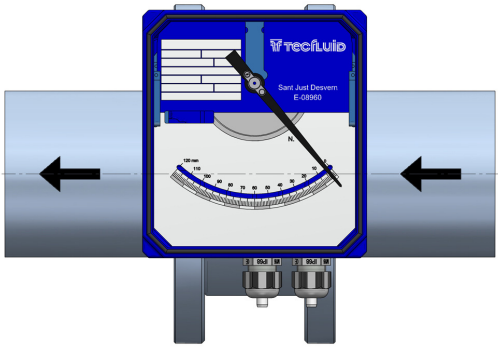
ED



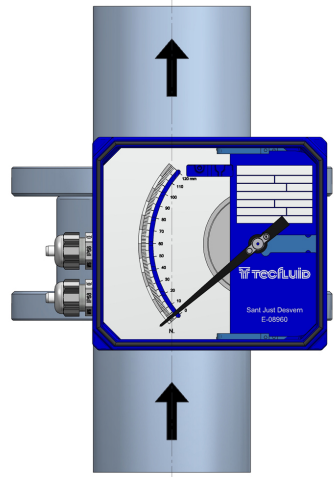
DAB



DES



BD



Mounting positions or flow directions different from those indicated on the scale plate can cause important reading errors or there will be no reading if the flow direction is in the opposite direction.

5 MAINTENANCE

5.1 Of the indicator housing

In order to open the housing, remove the four “Allen” screws M5 (1) and the plastic washers (2), at the back of the indicator housing.

If operating anomalies are detected on meter reception, the following points should be checked:

a) The indicator needle (4) is rubbing on the scale plate (3).

This normally happens if the meter is hit or dropped.

Simply straighten it out by bending it slightly until it is separated by between 2 to 3 mm from the scale plate surface (3).

b) The indicator needle (4) does not point 0 on the scale.

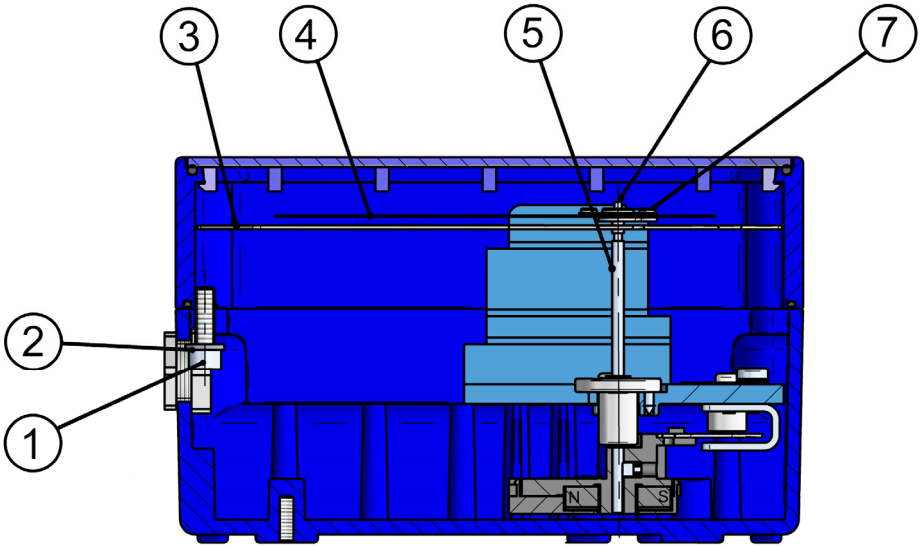
Place the flowmeter on a non-magnetic surface in its normal working position. If when the target disk is moved the needle moves but does not return to 0, check that the bushing (6) is well fixed to the shaft (5). If this is not so, proceed to fix the bushing (6) to the conical end of the shaft using a careful and gentle blow.

Then match the indicating needle with the zero of the scale using the indicating needle’s adjusting front screw (7), turning left or right as required.

Attention, hold the shaft (5) so that it can not be bent or damaged.

Check that there is no contact between the mobile system of the needle and connecting cables for limit switches or transmitters.

Close the housing with the four washers and screws.



5.2 Of the metering body

The following faults may be appear:

- Magnetic coupling deterioration,
- Deterioration of the torsion or reading spring,
- Wearing out of torsion shaft bearings,
- Wearing out or deterioration of the lever and target disk.

If any of these breakdowns occurs, it is preferable to repair it in TECFLUID S.A. workshops, as a new calibration will be normally necessary.

6 CLEANING

In line

Pass the normal cleaning agent through the installation.

In the workshop

It should be done with soft brushes. Never use sharp objects or metal brushes.

7 TECHNICAL CHARACTERISTICS

Accuracy: DP65: ± 2.5% full scale
DP500: ± 4% full scale

Rangeability: 10:1

Scale length: ~100 mm.

Scales: Direct according to fluid to be measured or in %.

Operation: Vertical with upwards flow (BD)
Vertical with downwards flow (DAB)
Horizontal with right to left flow (DES)
Horizontal with left to right flow (ED)

Connections: DP65 Between flanges.
DP500 EN 1092-1, ANSI, JIS flanges.
Other flange standards on request.

Materials: Body: Plastic coated steel, EN 1.4404 (AISI 316L)
Indicator housing: IP65 in coated aluminium (standard)
EN 1.4404, PP, others on demand

Working pressure:

PN40 DN40 … DN80
PN16 DN100 … DN300
PN10 DN250 … DN500 (DP500)
Other pressure ratings available on request.

Process temperature:

- Body in plastic coated steel: -20ºC … +130ºC.
- Body in EN 1.4404 (AISI 316L), PTFE bearings: -20ºC … +150ºC.
- Body in EN 1.4404 (AISI 316L): bronze bearings: -20ºC … +300ºC.

Mounting length:

DP65:	65 mm	DN40 … DN300
DP500:	500 mm	DN250 … DN300
	600 mm	DN350 … DN400
	700 mm	DN500

Optional limit switches in the indicator housing:

DP-AMM

1 or 2 micro-switches with potential free contacts

Maximum current: 3A

Máximum voltage: 250 VAC

DP-AMD

1 or 2 slot inductive sensors, acording to EN60947–5-6 (NAMUR)

Power supply: 8.2 VDC

Optional transmitters:

TH5

Position transducer, with analog output. 2-wire connection.

Power supply: 12 ... 36 VDC

Output signal: 4-20 mA

TH5T

Position transducer, with totalizer and analog output. 2-wire connection.

Power supply: 12 ... 36 VDC

Output signal: 4-20 mA

TH5H

Position transducer, with analog output. 2-wire connection.

Power supply: 18 ... 36 VDC

Output signal: 4-20 mA

HART protocol

TH5TH

Position transducer, with totalizer and analog output. 2-wire connection

Power supply: 18 ... 36 VDC

Output signal: 4-20 mA

HART protocol

Conforms with the Pressure Equipment Directive 97/23/EC

This equipment is considered as being a pressure accessory and **NOT** a safety accessory as defined in the 97/23/CE directive, Article 1, paragraph 2.1.3.

Conforms with Directive 2006/95/EC (Low Voltage)

Conforms with Directive 2004/108/EC (Electromagnetic compatibility)

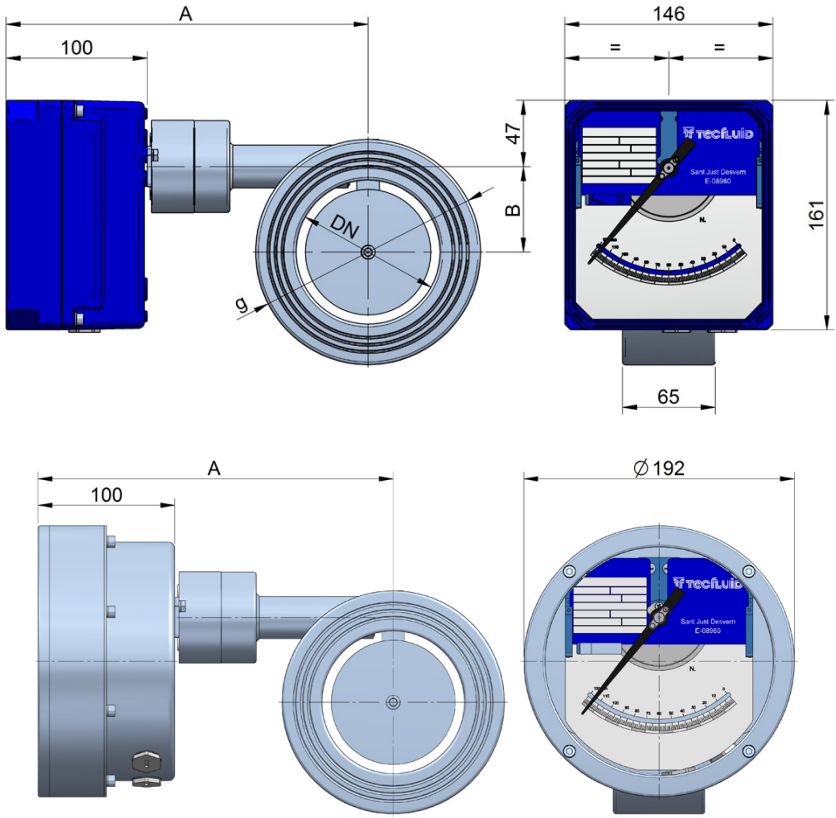
Conforms with Directive 2002/96/EC (Waste electrical and electronic equipment)

All the limit switches and transmitters can be optionally supplied for use in potentially explosive atmospheres.

ATEX certification **II 1 GD** **Ex ia IIC T4 or T6**

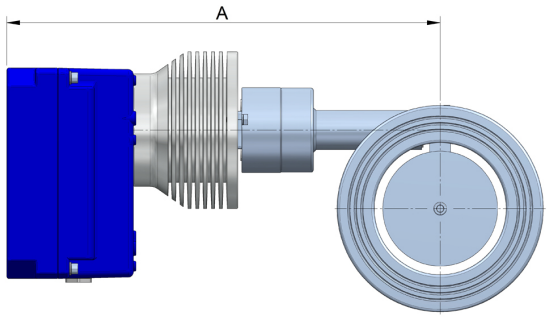
8 DIMENSIONS

Dimensions DP65 (DN40 to DN300)



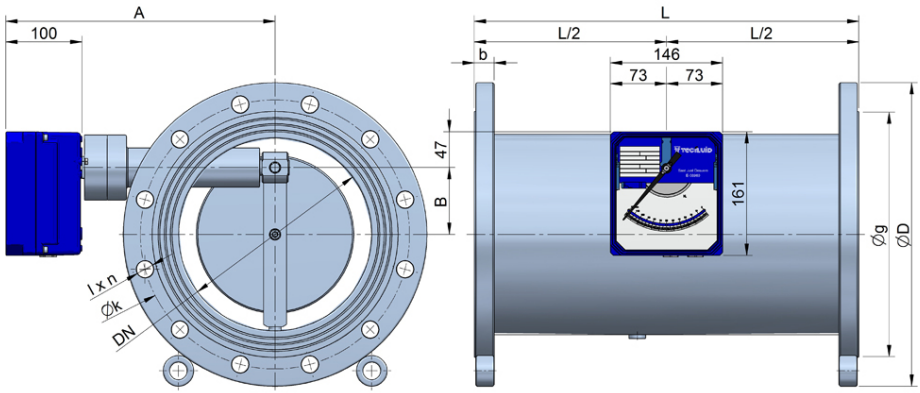
DN	g	B	A	Weight (kg)
40	88	28	250	5
50	102	33	250	6
65	122	40	250	7
80	138	50	250	8
100	158	60	250	10
125	188	70	280	12
150	212	78	280	14
200	268	90	320	20
250	320	102	350	29
300	370	115	370	35

Dimensions in mm



DN	L
40	325
50	325
65	325
80	325
100	**325**
125	355
150	**355**
200	395
250	**425**
300	443

Dimensions DP500 (DN250 to DN500)



DN	L	A	B	ØD	k	g	b	l x n	Weight (kg)
250	500	330	90	395	350	320	26	23 x 12	70
300	500	330	115	445	400	370	26	23 x 12	78
350	600	350	124	505	460	430	26	23 x 16	86
400	600	350	142	565	515	482	26	27 x 16	97
500	700	430	160	670	620	585	28	27 x 20	115

Dimensions in mm

WARRANTY

Tecfluid S.A. guarantees all the products for a period of 24 months from their sale, against all faulty materials, manufacturing or performance. This warranty does not cover failures which might be imputed to misuse, use in an application different to that specified in the order, the result of service or modification carried out by personnel not authorized by Tecfluid S.A., wrong handling or accident.

This warranty is limited to cover the replacement or repair of the defective parts which have not damaged due to misuse, being excluded all responsibility due to any other damage or the effects of wear caused by the normal use of the devices.

Any consignment of devices for repair must observe a procedure which can be consulted in the website www.tecfluid.com, “After-Sales” section.

All materials sent to our factory must be correctly packaged, clean and completely exempt of any liquid, grease or toxic substances.

The devices sent for repair must enclose the corresponding form, which can be filled in via website from the same “After-Sales” section.

Warranty for repaired or replaced components applies 6 months from repair or replacement date. Anyway, the warranty period will last at least until the initial supply warranty period is over.

TRANSPORTATION

All consignments from the Buyer to the Seller´s installations for their credit, repair or replacement must always be done at freight cost paid unless previous agreement.

The Seller will not accept any responsibility for possible damages caused on the devices during transportation.

Tecfluid
The art of measuring

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ATEX European Directive 94/9/CE certified by LOM

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