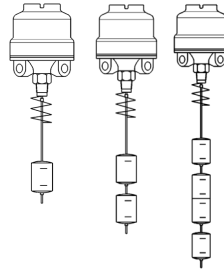


Installation, Operation & Maintenance Instructions

Displacer type Vertical Level Control
Models 11/12/13/18DS



SAFETY INSTRUCTIONS

Please refer to SAFETY MANUAL IP152/SI latest revision for installation.



Information ..points out useful tips, recommendations and information for efficient and trouble-free operation.



CAUTION! ..indicates a potentially dangerous situation that can result in light injuries or damage to equipment or the environment, if not avoided.



WARNING! ..indicates a potentially dangerous situation that can result in serious injury or death, if not avoided.



WARNING! ..identifies hazards caused by electric power. Should the safety instructions not be observed, there is a risk of serious or fatal injury.



WARNING! ..indicates a potentially dangerous situation that can result in burns, caused by hot surfaces or liquids, if not avoided.



WARNING! ..indicates a potentially dangerous situation in the hazardous area that can result in serious injury or death, if not avoided.



Ex applications ..special instructions for Ex applications.

CONTENTS

- Foreword
- Principle of Operation
- Marking
- Installation
 - Assembly
 - Special conditions of use
 - Wiring
 - Electrical rating
- Putting into operation
 - [Single switch \(11DS-Single Alarm\)](#)
 - [Single switch \(12DS - Pump Controls\)](#)
 - [Two switch \(13DS - 2 Pumps Controls\)](#)
 - [Two switch \(18DS - 2 Alarms\)](#)

General Warnings

Earthing

Commissioning

Inspection and maintenance

- Periodical visual inspection
- Periodical functional verification

Replacement parts

Warranty

Decommissioning

Disposal

Model code

Dimensions

Foreword

The unit is manufactured, checked and supplied in accordance with our published specification, and when installed and used in normal or prescribed applications, with the lid in place and within the parameters set for mechanical and electrical performance, will not cause danger or hazard to life or limb.



Warning: Units must be selected and installed by suitably trained and qualified personnel in accordance with appropriate codes of practice so that the possibility of failure resulting in injury or damage caused by misuse or misapplication is avoided.



Warning: before installation **check** that the instrument **characteristics** comply with process and plant requirements



Warning: The users attention is drawn to the fact that, when the unit is 'live' with respect to electrical or pressure supplies, a hazard may exist if the unit is opened or dismantled



Warning: where any special condition of the product has been required as identified by the last 4 digits of the part number, follow the necessary safety instruction for a correct installation.



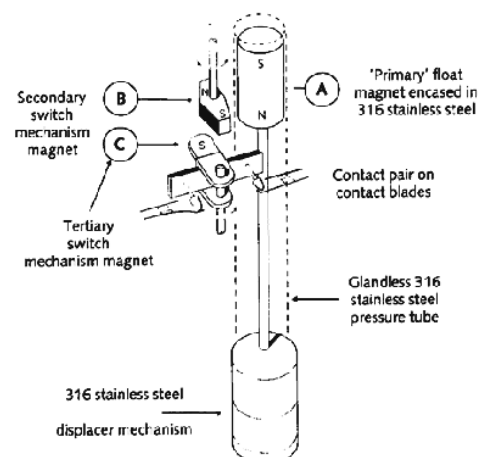
Warning: Max thickness of paint is 0.2mm

If the equipment is likely to come into contact with aggressive substances, suitable precautions should be taken that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised. Aggressive substances: e.g. acidic liquids or gases that may attack metals or solvents that may affect non-metallic materials. Suitable precautions: e.g. regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.

Principle of operation

All models utilise the displacer and spring principle. As the liquid level rises and progressively immerses the displacer element the effective weight suspended on the spring reduces and the consequent length of spring change is used to provide magnet movement and operate the switches). Vertical movement of the primary magnet A in a glandless pressure tube simultaneously actuates magnets B & C to switch the contacts (see Fig. 1).

Fig. 1 - Operating principle

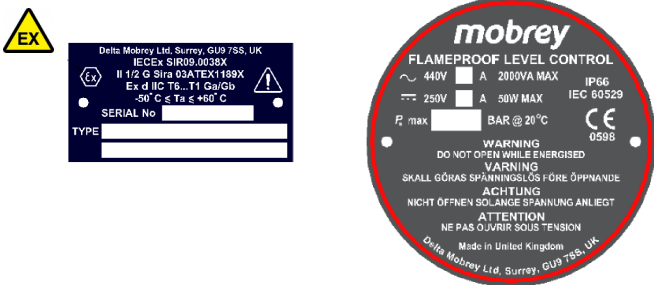


The “three- magnet” system enables the primary magnet to pass on and actuate switch mechanisms at other levels. Switch mechanisms already actuated cannot re-set until the return of the primary magnet actuates the magnet system once again.

Marking

Flameproof models carry the following labels markings as shown in Fig.2:

Fig. 2 Flameproof Nameplate



Contact rating and P max, value, as defined by the part number.

P4, P8, H4, H8 Switch Mechanisms - Simple Apparatus

These Switch Mechanisms in a standard switch housing are classified as “Simple Apparatus” when used in Intrinsically Safe circuits. They comply with the requirements of EN IEC EN 60079-0:2012/ A11:2013, EN 60079-1:2007, EN 60079-26:2015 ‘Simple Apparatus’ and are not considered as a potential source of ignition for an explosive atmosphere.

They do not fulfil the definition of equipment in Article 1 (3) of Directive 2014/34/EU (Equipment Explosive Atmospheres (ATEX) and are therefore outside the scope this Directive and do not have a Declaration of Conformity or CE mark related to this Directive.

When used as “Simple apparatus” within a hazardous atmosphere the following should be noted:

The product should be installed by suitably trained personnel, in accordance with the applicable code of practice.

As the product has no source of internal heating, the temperature classification is dependent on the ambient air temperature and the temperature of the process vessel to which it is attached.

Materials of construction : Refer to product catalogue or customer drawing for actual material of level switch concerned.

Housing and Cover: Carbon Steel, or Stainless Steel 316 type, or Aluminium Alloy, or Cast Iron

Pressure Tube & Union: Stainless Steel types 316, 321 or 304, or Alloy NA18, or Alloy C-276 (UNS N10276) or Alloy 625, or Alloy 825

Note : The metallic alloy used for the enclosure material may be at the accessible surface of this equipment; in the event of rare accidents, ignition sources due to impact and friction sparks could occur. This shall be considered when the switch is being installed in locations that specifically require group II, category 1G equipment.

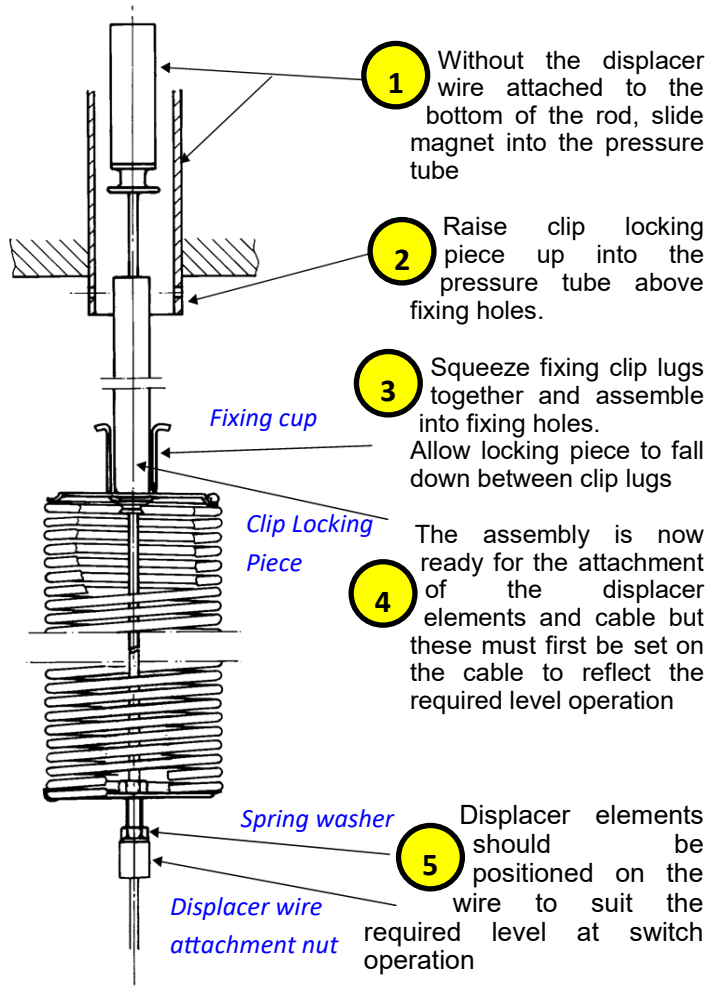
Installation

It is the responsibility of the user to ensure :

- Warning:** The joint requirements between the switch housing and vessel are compatible with the process media.
- Warning:** The joint tightness is correct for the joint material used.
- Warning:** suitable temperature rated cable is used. Note : The cable entry temperature may exceed 70°C
- Warning:** The float is protected from impact or friction, or static electrical build-up from fast flowing non-conductive fluids, that could generate an ignition source.

Assembly

Follow the below 5 procedures to assembly the instrument:



Specific condition of use

! Installation of the displacer must be carried out with extreme care in order to avoid damage to magnet rod or spring. This is best achieved using two persons, with one holding the switch head whilst the other lowers the displacer element.

! The displacer control should be sited vertically on the vessel such that any turbulence or movement of the vessel contents does not cause excessive movement of the elements. Be particularly aware of inlet and outlet points. If there is excessive movement, the displacer elements should be mounted within a stilling tube of 80mm minimum inside diameter, free from weld beads or other protrusions that may cause snagging.

If the displacer control is being fitted to a 1" NPT Mounting point, the displacer elements, spring and rod assembly must be mounted to the head from inside or the underside - refer to the drawing in previous page.

Use only the hexagonal union nut directly under the base to tighten the switch head to its flange or mounting point.

Remove all sealing tapes, tie strings and packing from the control prior to installation.

Remove switch head cover to reveal terminal block(s) to which electrical connections are to be made:-

EX **Flameproof models:** Locate and slacken off M5 socket head grub screw in side of cover adjacent to base joint. Place a bar across the top of the cover, locating in the castellations. The cover can now be unscrewed from the base using the bar as a lever.

! **Weatherproof models:** The cover can be removed by unscrewing the single hexagon bolt at the crown of the cover.

Connect electrical wiring via the conduit entries using a suitable cable gland.

! **Note that the base of the enclosure is rotatable on the pressure tube to allow the most convenient orientation of the conduit entry.**

The switch mechanisms are factory set on the pressure tube to ensure correct operation at the S.G. and temperature stated at the time of ordering, and should not be moved. If for any reason it is necessary to slacken the locking screw and move the switch mechanism, it's position on the pressure tube must first be clearly marked so that it can be re-set correctly.

The lugs of the tab washer directly underneath the base must now be bent over to locate on the most appropriate flats of the hexagon union. This prevents further rotation of the switch head, and is particularly important as it will prevent rotation when the cover is removed or re-fitted.

Replace cover, ensuring cover seals are in position. Ensure cover locking grub screw is replaced and tightened on flameproof models. The fibre sealing washer at the crown bolt of the weatherproof cover must be re-fitted to maintain weatherproof seal.

Wiring

! Disconnect all supply circuits before wiring. Wire in accordance with local and national codes. Use cables no larger than 2.5 mm² (14 AWG)

! **Warning:** Do not exceed electrical ratings stated in literature and on nameplates.

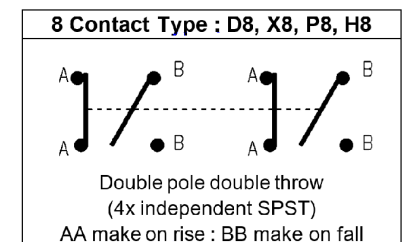
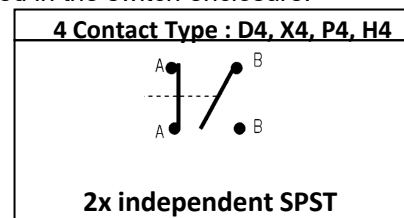
EX **Warning:** If the ambient temperature exceeds 60 °C it is recommended to use cables suitable for operating temperatures not less than 105 °C.

! **Caution:** Switches must not be used for the direct starting of motors. Contacts should be wired in series with the operating coils of relays, contactor starters or solenoid valves, and fused separately.

! **Caution** The temperature of the switch enclosure may at times approach the temperature of the process and suitable heat resisting cables should therefore be used, together with appropriate cable glands. A sufficient length of flexible cable should be fitted to allow easy removal of the switch head and displacer assembly at any time.

The instrument can be supplied with 1 or 2 switch mechanism. Refer to the leaflet for the description and difference between the type of mechanism..

Each switch mechanism has flying leads which are factory wired to ceramic terminal blocks fixed in the switch enclosure.



! **Note:** For DPDT operation, installer must common any one pair of A and B wires in the terminal block for each of the two ends of the switch mechanism.

Electrical rating

Type	Temp wetside °C	Low Temp use	AC max. values			DC max. values			
			VA	Volts	Amps	Watts	Volts	Resist. Amps	Induct. Amps
D4, D8	400	Amp.	2000	440	5	50	250	5	0.5
X4, X8	250	Amb.	2000	440	10	50	250	10	0.5
P4, P8	400	Amb.	6	250	0.25	3.6	250	0.25	0.1
H8, H8	250	-100°C	2000	400	10	50	250	10	0.5
			Power factor 0.4 mm			Time constant 40ms max.			

PUTTING INTO OPERATION

Every type of vertical displacer control is designed for different use: For accurate setting of displacers, it is necessary to know the liquid gravity, the required switch function (falling or rising) and the distance from the end of the pressure tube to the relevant switching levels (A & B).

The displacer element is positioned to provide the required operating level by holding the cable taut and measuring the distance X to the top of the displacer element, then locking the adjustable stop beneath the displacer element. Any excess cable should be coiled underneath the displacer or removed by cutting.

SINGLE SWITCH MODELS: Types 11DS (alarm)

Type 11DS: Stainless steel element

Displacer Type	S.G. Range		Operating Temp. Range	Maximum Pressure 20°C
	4 Contact	8 Contact		
11DS	0.6 to 1.2	0.75 to 1.2	-50°C to +300°C	102.1 bar

A) Application

These models are intended for single switch narrow differential applications such as High Level Alarm or Low Level Alarm

B) Operating & dimensional data

D = 200
Ø = 60.3

Fig. 2

A min = Adjustable distance to upper switching Level
E min = Differential

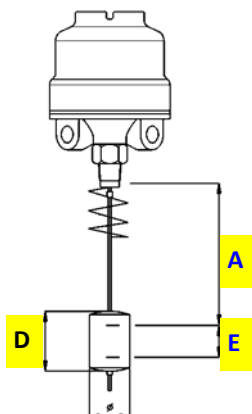


Table 1

Table 1 shows the minimum switching point according to the contact & fluid density.

Switch Types	4 Contact All type: D4, P4, X4, H4				8 Contact All type: D8, P8, X8, H8			
	S.G.	Min. 0.6	0.75	1.0	1.2	Min. 0.75	1.0	1.2
A min	400	425	450	460	350	390	415	
E min	90	70	60	55	135	105	90	

C) Setting the displacer elements on the cable

Figure 3 illustrates dimensions A & B, the relevant switching levels.

A dimension is the High Level Alarm / B.dimensio is falling

Dimension X can be determined selecting the dimension a & b from the Table 2 below and applying the below formula.

Fig. 3

FORMULA :
X = A - a
X = B - b

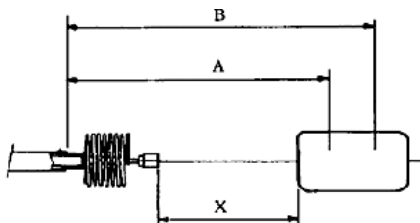


Table 2

S.G.		0.6	0.75	1.0	1.2
4 contact	a	400	425	450	460
Switch	b	475	485	495	505
4 contact	a		350	390	415
Switch	b		485	495	505

Single switch models: Types 12DS (pump control)

Type 12DS: Stainless steel element

Displacer Type	S.G. Range		Operating Temp. Range	Maximum Pressure 20°C
	4 Contact	8 Contact		
12DS	0.5 to 1.2	0.75 to 1.2	-50°C to +300°C	102.1 bar

A) Application

These models are intended for single switch wide differential applications such as pump control, where the differential can be site adjusted by re-positioning the displacer elements on the cable

B) Operating & dimensional data

D = 200
Ø = 60.3

Fig. 4

A min = Adjustable distance to upper switching Level
E min = Differential

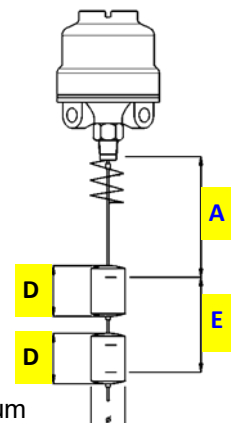


Table 3

Table 3 shows the minimum switching point according

Switch Types	4 Contact All type: D4, P4, X4, H4				8 Contact All type: D8, P8, X8, H8				
	S.G.	Min. 0.5	0.8	1.0	1.2	Min. 0.75	0.8	1.0	1.2
A min	415	430	430	425	390	390	400	400	
E min	165	110	95	80	205	200	165	140	

C) Setting the displacer elements on the cable

Figure 5 illustrates dimensions A & B, the relevant switching levels.

The switch operates at dimension A & B (Start & Stop of a pump).

Dimension X & Y can be determined selecting the dimension a & b from the Table 4 below and applying the below formula.

Fig. 5

FORMULA :
X = A - a
Y = B - b

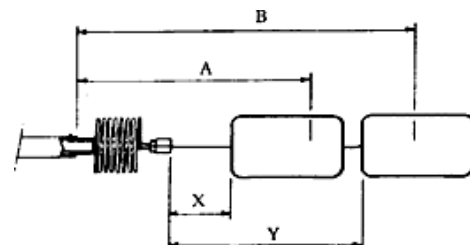


Table 4

S.G.		0.5	0.75	1.0	1.2
4 contact	a	415	430	430	425
Switch	b	370	310	295	275
4 contact	a		390	400	400
Switch	b		325	325	305

Two switch models: Types 13DS (2 pump control)
Type 13DS: Stainless steel element

Displacer Type	S.G. Range		Operating Temp. Range	Maximum Pressure 20°C
	4 Contact	8 Contact		
13DS	0.6 to 1.2	0.8 to 1.2	-50°C to +300°C	102.1 bar

A) Application

These models are intended for either two pump control or one pump and one alarm applications. A pump is controlled between the middle and the lower displacers positioned on the cable at the required levels. Should the level rise to the upper displacer this actuates the upper alarm switch which remains actuated until the level drops to the middle displacer. Alternatively the upper switch could control a second pump.

B) Operating & dimensional data

D = 145
 F = 286
 Ø = 60.3

Fig. 6

A min = Adjustable distance to upper Switching Level
 E min = Differential
 g min = Dead band

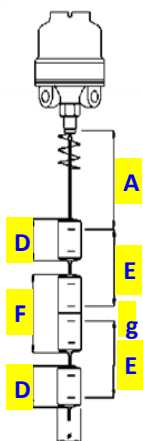


Table 5

Table 5 shows the minimum switching point according to the contact & fluid density

Switch Types	4 Contact				8 Contact		
	All type: D4, P4, X4, H4				All type: D8, P8, X8, H8		
S.G.	Min 0.6	0.8	1.0	1.2	Min.0.8	1.0	1.2
A min	390	385	375	365	355	350	345
E min	135	110	95	80	200	145	140
Deadband	220	255	285	310	165	215	250

C) Setting the displacer elements on the cable

Figure 7 illustrates dimensions A, B, C & D, the relevant switching levels.

A pump is controlled between the middle and lower displacer. Upper displacer can be used to set the High alarm or activate a second pump. Dimensions X, Y, W & Z can be determined from the table below. The displacer elements are positioned to provide the required differential by holding the cable taut and measuring the distances X, Y, W & Z to the top of the displacer elements,

then locking the adjustable stops beneath each element. Any excess cable should be coiled underneath or removed by cutting.

Dimensions X, Y, W, Z can be determined selecting the dimension a, b, c & d from the Table 6 below and applying the below formula.

Fig. 7

FORMULA :

X = A - a
 Y = B - b
 W = C - c
 Z = D - d

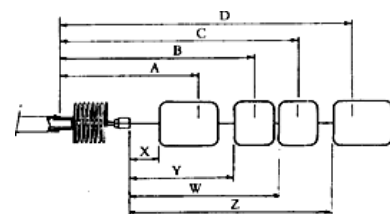


Table 6

S.G.		0.6	0.8	1.0	1.2
4 contact	a	380	375	365	355
Switch	b	375	345	320	295
	c	415	425	425	425
	d	395	375	365	350
8 contact	a		345	340	335
Switch	b		395	360	325
	c		375	385	395
	d		430	405	385

Two switch models: Types 18DS (2 alarm)
Type 18DS: Stainless steel element

Displacer Type	S.G. Range		Operating Temp. Range	Maximum Pressure 20°C
	4 Contact	8 Contact		
18DS	0.6 to 1.2	0.8 to 1.2	-50°C to +300°C	102.1 bar

A) Application

These models are intended for two alarm. One switch for High level alarm, one switch for Low Level Alarm.

B) Operating & dimensional data

D = 200
 Ø = 60.3

Fig. 8

A min = Adjustable distance to upper switching Level
 E min = Differential
 g min = Dead band

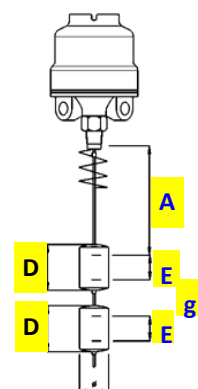


Table 7

Table 7 shows the minimum switching point according to the contact & fluid density.

Switch Types	4 Contact				8 Contact		
	All type: D4, P4, X4, H4				All type: D8, P8, X8, H8		
S.G.	Min. 0.6	0.8	1.0	1.2	Min. 0.8	1.0	1.2
A min	390	385	375	365	355	350	345
E min	165	110	95	80	135	105	90
Dead band	200	230	255	310	165	215	250

C) Setting the displacer elements on the cable

Figure 5 illustrates dimensions **A & B**, the relevant switching levels.

The two displacer element assemblies are positioned on the cable such that two alarm points may be given. This arrangement is typical of sump application). The upper switch operates between levels A & B (rising and falling level), and the lower switch operates between levels C & D

Dimension **X & Y** can be determined selecting the dimension **a & b** from the **Table 4** below and applying the below formula.

Fig. 9

FORMULA :

$$X = A - a$$

$$X = B - b$$

$$Y = C - c$$

$$Y = D - d$$

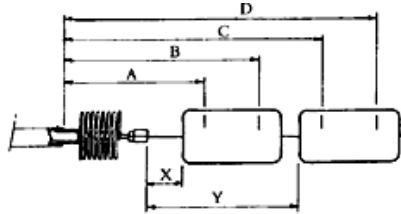


Table 8

S.G.		0.6	0.8	1.0	1.2
4 contact Switch	a	305	380	360	340
	b	490	455	425	395
	c	445	445	445	440
	d	540	520	510	495
8 contact Switch	a		355	340	320
	b		470	430	400
	c		420	425	425
	d		535	505	500

WARNINGS

The displacer is now ready for attachment to the displacer spring/rod using the spring washer provided. (Attached to the coil of wire for transport purposes).



Caution: The assembly and adjustments should be carried out with the displacer assembly laid on the ground where there is adequate free and clean space.



Caution : Take care that the weight of the elements does not hang at an angle to the head, thereby bending the rod. Any bending of the rod will cause sticking and possible malfunction. See Installation Paragraph for assembly details



Warning: Due to component tolerances values of a, b, E & S are approximate and may vary on each particular control by up to +20mm.

Setting the control to operate at the required levels can be finally achieved by adjusting the element up or down on the cable as necessary

Earthing connections



Warning: The instrument is supplied with two protective grounding connection, one inside and one outside the enclosure. The two connection provide effective connection of a conductor with a cross-sectional area of at least 4 mm².



Caution: In order to protect the instrument against extreme environmental conditions, a coating thicker than 0,2 mm should be applied. The grounding connection has to be adequately realized to prevent an electrostatic surcharge on the instrument surface.

CLEAN ONLY with a damp cloth

Commissioning



Warning: Ensure the enclosure is sealed and the cover locking set screw is screwed in fully before the switch is energized.

The instrument starts operating as soon as it is installed inside the tank as shown in previous chapters and energized.

Inspections and maintenance

The instrument is maintenance-free but is a good practices to proceed with periodical visual inspection every 6 months and a functional inspections at least once a year, These could be reduced according to environmental conditions and customer maintenance plan.



Caution: It is recommended that instruments used to provide an alarm or a shutdown safety related are operated *periodically* to ensure they are functioning correctly.

If maintenance or replacement of parts further than those listed under REPLACEMENTS OF PARTS is required, seek advice from Delta Mobrey before attempting repair or replace parts.

Periodical visual inspection

This inspection consist in verifying of the instrument shows visible evidence of corrosion and damage .

Isolate the unit from process and power.



Warning: The flame proof instruments installed in explosive atmospheres of the combustible dust, must be periodically cleaned up externally in order to remove any accumulation of dust.



Warning: Verify the integrity of the electrical unit using IEC 60079-17 as guide.

Verify the leakage of the process externally.

Slacken the lid lock screw and unscrew the lid



Warning: flameproof instrument. Before removing the lid or the cable gland check that no explosive atmosphere is present and that the instrument is de-energized.



Warning: isolate electrical circuits to control and disconnect wiring as necessary.



Warning: Ensure the vessel is vented to atmosphere, or isolate any chamber from the vessel by closing the isolating valves, and open the valve of the drain connection.

Remove nuts holding control to chamber or vessel.



Caution: Carefully withdraw switch head and displacer assembly taking extreme care NOT TO BEND THE ROD OR DAMAGE THE SPRING MECHANISM

- Check all terminals for tightness.
- Check enclosure for internal condensation.
- Check that the gasket is seated properly in the lid recess and is not worn.
- Check if the float is integral and does not show any external damage
- Check integrity of spring, cable and rod

Periodical functional verification

The verification consists in check the correct magnetic coupling of the switching mechanism This verification is done, usually, removing the instrument from the tank and manually actuate the switching unit perform the verification on a test room (see periodical calibration check paragraph).

EX **Warning:** The flame proof instruments installed in explosive atmospheres of the combustible dust, must be periodically cleaned up externally in order to remove any accumulation of dust.

EX **Warning:** Verify the integrity of the electrical unit using IEC 60079-17 as guide.

Verify the leakage of the process externally.

EX **Warning:** flameproof instrument. Before removing the lid or the cable gland check that no explosive atmosphere is present and that the instrument is de-energized.

! **Warning:** isolate electrical circuits to control and disconnect wiring as necessary.

! **Warning:** Ensure the vessel is vented to atmosphere, or isolate any chamber from the vessel by closing the isolating valves, and open the valve of the drain connection.

! Remove nuts holding control to chamber or vessel. Carefully withdraw switch head and displacer assembly taking extreme care NOT TO BEND THE ROD OR DAMAGE THE SPRING MECHANISM

Separate displacer assembly from switch head by removing spring clip. (See page 2).

Inspect the chamber or stilling tube and remove any deposits.

Check displacer element spring, rod and magnet for excessive wear, clean and replace as necessary.

Fit replacement joint and reassemble, taking care not to bend the rod. (See page 5).

! **Warning:** If the rod is bent, sticking will occur and the displacer control could malfunction.

! Remove the switch head cover and examine the switch mechanism body for any damage. Ensure that wiring is in good order and that all screws are tight. Dismantling of switch units is not recommended and replacement of the complete switch unit will be found to offer the quickest and most economical solution in event of faulty operation.

EX Check sealing gaskets/'O' ring and replace if necessary. Replace cover, ensuring cover seals are in position. Ensure cover locking grub screw is replaced and tightened on flameproof models. The fibre sealing washer at the crown bolt of the weatherproof cover must be re-fitted to maintain weatherproof seal.

Part replacement

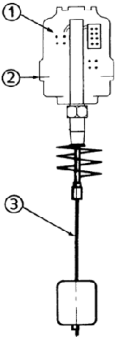
! Only original parts can be used as spare. Important note

If a spare switch mechanism is fitted at any time, it is vitally important that the magnet system is left in the correct mode.

! After installation of a replacement switch mechanism, always check that B-B contacts are made, assuming the chamber is empty of liquid. If the chamber is full of liquid, then A-A contacts should be checked to ensure they are made.

If it is found that a switch mechanism is not in the correct mode, then the liquid level in the chamber should be raised such that the primary displacer magnet passes through the switching point. Lowering the liquid level will then cause the displacer to fall back through the switching point, thus leaving the mechanism in the correct operating mode. (For a control operating as Low Level alarm, the liquid level should be first lowered then raised back to ensure the switch mechanism is in the correct operating mode).

Full Fitting instructions are supplied with each spare switch mechanism.



	Switch Mechanism Kit	Industrial Enclosure	Hazardous Area Enclosure
①	4 Contact 5 Amp	D4	SK 178
	4 Contact plated	P4	SK 179
	4 Contact 10 Amp	X4	SK 180
	4 Contact sealed	H4	SK 181
	8 Contact 5 Amp	D8	SK 186
	8 Contact plated	P8	SK 187
	8 Contact 10 Amp	X8	SK 188
	8 Contact sealed	H8	SK 189
	②	Seals kit	SK 190
③	Displacer Assembly	11,12,13,18DS.	In the event of damage to any part of the displacer, a complete replacement unit must be fitted. Please contact the factory for details specifying : - operating pressure - operating temperature - specific gravity

List of standard to which the product is

General

- LVD:

EN 60947-1:2007 + A1:2010 + A2:2014
EN60947-5-1:2004+ A1:2009

- PED 2014/68/EU:

module D, D1, E1 & H of Annexe III

- VDE 0470-1 / EN 60529 /

IEC 60529

Protection Degree IP66

- 2014/30/EU

Electromagnetic Compatibility

CSA

CSA C22.2 No.0-1975; CSA C22.2 No.14-1973; CSA C22.2 No.55; CSA C22.2 No.94

Hazardous Area related

IECEX

IEC 60079-0:2011
IEC 60079-1:2007-04
IEC 60079-26:2014-10

ATEX

EN 60079-26:2015
EN 60079-0:2012+ A11:2013
IEC 60079

UKEx

EN IEC 60079-0:2018
EN 60079-1:2014
EN 60079-26:2015

FM

FM Class 3810:2005, ANSI/ISA 61010-1:2004

CSA

C22.2 No.30-M1986; CSA C22.2 No.0; CSA C22.2

Warranty

See Standard Conditions of Sale.

Decommissioning

EX **Warning:** Ensure the vessel is vented to atmosphere, or isolate any chamber from the vessel by closing the isolating valves, and open the valve of the drain connection..

EX **Warning:** verify, in case of flameproof instrument, the absence of explosive atmosphere before removing the lid or the cable glands. Do not dispose the process fluid on environment if this cause pollution or personal injury.

EX **Warning:** In case of flame proof instruments, it is recommended to follow at least the standard IEC 60079-17 and for the withdrawal from service of electrical apparatus.

- Slacken the lid lock screw and unscrew the lid.
- Disconnect all the live terminals and insulate the cables.
- Disconnect the grounding.
- Remove the cable gland.
- Dismount the instrument from the process connection.

Warning: the process fluid can be hot or corrosive.



- Plug the process pipe.
- Reassembly the lid.

Disposal

The main parts of the instrument are mainly made of aluminium and stainless steel (see model number & part description for exotic materials used).

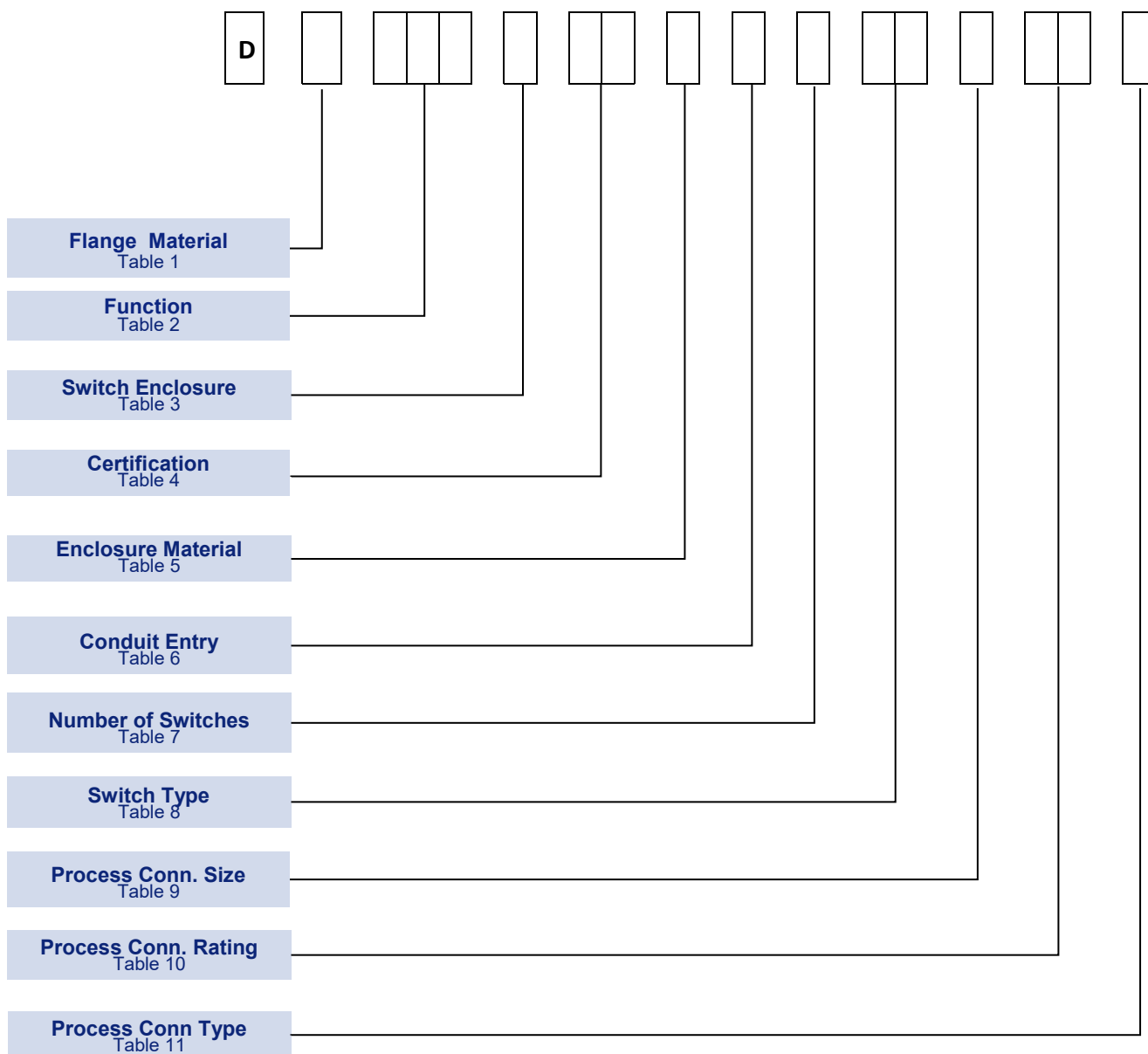
Remove the switching mechanism and clean the wetted parts before scrap the instrument. Follow the local regulation to dispose & recycle all the components.

Model code

Your control has a part number stamped on the nameplate, an example of which is shown below. From this number you can identify your control and turn to the relevant pages in this manual.

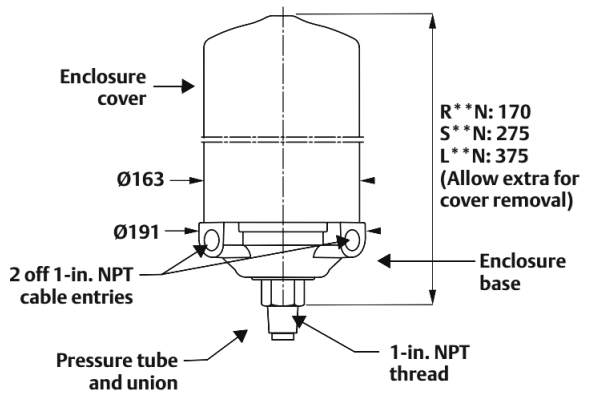
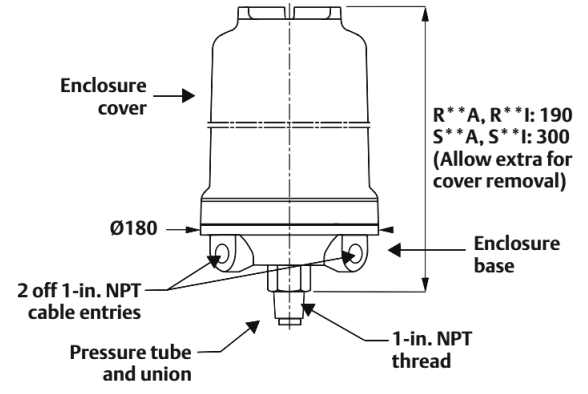
Please refer to the technical leaflet for explanation of each single digit of the part number

Example : DC13DSNANA2D83AAR

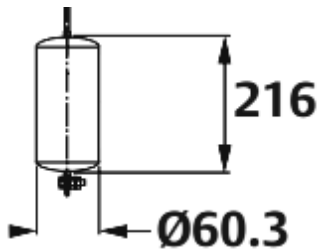


DIMENSIONS

Enclosure:

Weatherproof enclosures R**N, S**N, L**N	Hazardous area enclosures R**A, R**I, S**A, S**I
 <p>Enclosure cover</p> <p>Ø163</p> <p>Ø191</p> <p>2 off 1-in. NPT cable entries</p> <p>Pressure tube and union</p> <p>1-in. NPT thread</p> <p>Enclosure base</p> <p>R**N: 170 S**N: 275 L**N: 375 (Allow extra for cover removal)</p> <p>Dimensions for bases with a single 1-in. NPT cable entry are the same.</p>	 <p>Enclosure cover</p> <p>Ø180</p> <p>2 off 1-in. NPT cable entries</p> <p>Pressure tube and union</p> <p>1-in. NPT thread</p> <p>Enclosure base</p> <p>R**A, R**I: 190 S**A, S**I: 300 (Allow extra for cover removal)</p> <p>Enclosure type S**I has a different cover look (Figure 5 on page 13) but the dimensions shown here are the same.</p> <p>Dimensions for bases with a single 1-in. NPT cable entry are the same.</p>

Displacer type 11D, 12D, 18D



Displacer type 13D

