Technical **Datasheet**

delta-mobrey

Paddle Level Switch
Solids Level Measurement
Series: Paddle

Key **Features**

- Failsafe option
- High temperature option
- 1½" BSP or 1¼" NPT threaded connection
- Side or top mounting
- Shaft or cable extensions
- Robust aluminium housing
- IP66 ingress protection
- AC or DC supply voltages
- Dust explosion protection

Series **Overview**

The paddle switch may be used as either a high or low level limit switch. It is easily mounted from above, or through a vessel wall. A small electric motor drives a paddle which rotates freely in the absence of material. When the paddle is impeded by the presence of material, a microswitch actuates an alarm signal. As soon as the paddle is completely stopped from rotating, power to the motor is cut, thus extending motor life. After the material level falls, the motor is returned to its normal position and the paddle begins to rotate again.

Failsafe models use a microcontroller for self-validating diagnostics and monitor both motor and shaft rotation to detect and indicate a fault condition on the fault relay.

Series PLS switches can be used with granular, pelletized, and powdered dry products. They may be used in high level applications with materials over 160 kg/m3 and low or intermediate applications with materials over 80 kg/m3.

Other products

Other products we can offer:

- Ultrasonic Level Transmitters

Product **applications**

- Powders
- Pellets
- Granulates
- Grains
- Cement and sand
- Coal, slag Aggregate
- Not intended for use with liquids

How can we **help you?**

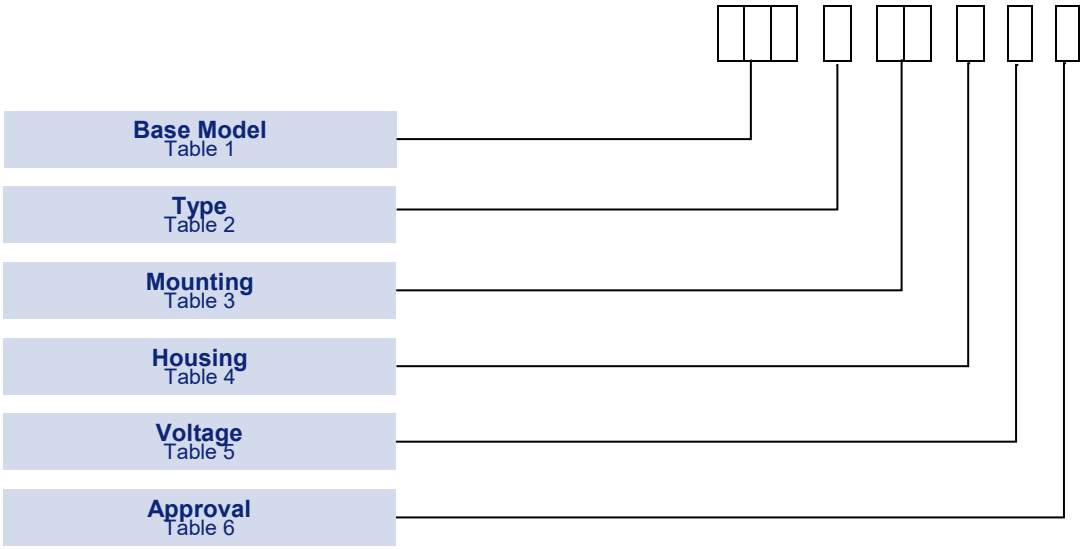
Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0)1252 729140

How to order

Paddle Level Switches can be configured by selecting codes representing the desired features from the tables that follow.

The table below, describes how the model code is built up. For assistance in configuring a transmitter that best suits your needs, please contact your local sales office.



Base Model

TABLE 1

	Code
Paddle Level Switch	PLS

Type

TABLE 2

	Code
Standard model, 2 x SPDT alarm relays	K
High temperature standard model, 2 x SPDT alarm relays	H
Failsafe Safepoint model with fault relay and 1 x SPDT alarm relay	P
High temperature failsafe Safepoint model with fault relay and 1 x SPDT alarm relay	T

Mounting

TABLE 3

	Code
R 1½" BSPT mounting (except high temperature)	B1
1¼" NPT mounting (all models)	N1

Housing

TABLE 4

	Code
Aluminium alloy housing	3

Voltage

TABLE 5

	Code
115 Vac motor voltage	0
240 Vac motor voltage	1
24 Vdc motor voltage	2

Approval

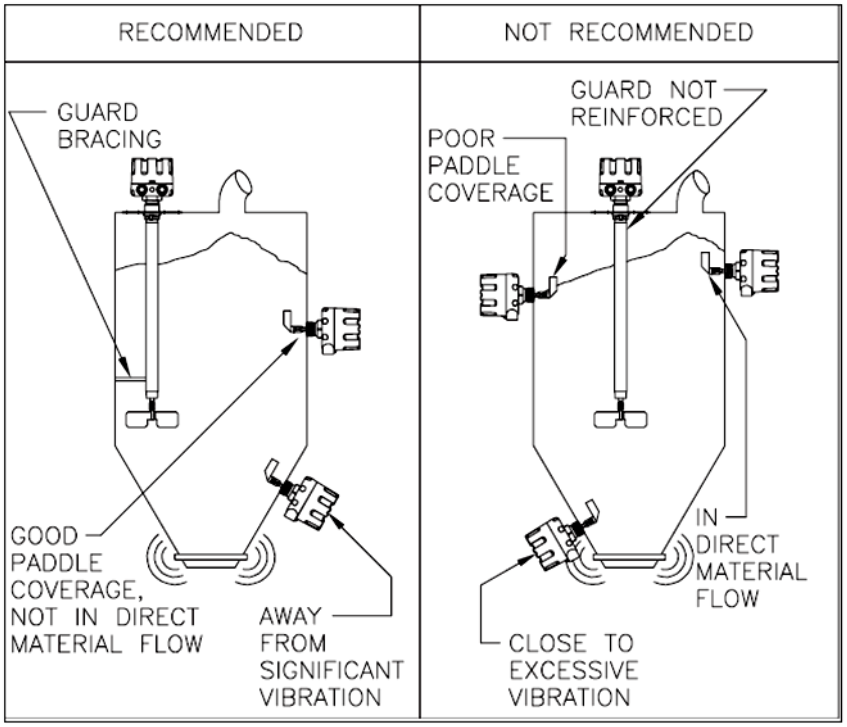
TABLE 6

	Code
ATEX Dust Certification II 1/2 D	A
No hazardous area approval	Z

Paddles and Accessories

Paddle selection		Scimitar	Single vane	3 vane std	3 vane large	2 vane	4 vane	Triangu-lar	Belt vane
									
Order part no.		P4193	P4145	P4146	P4141	P4135	P4156	P4144	P4137
Application									
Heavy material >2000 kg/m^3 >40 mm Ø	high								■ *1
	low								■ *1
Heavy material >2000 kg/m^3 <40 mm Ø	high		■ *1			■ *1	■ *1		
	low		■ *1			■ *1	■ *1		
Medium material 250 kg/m^3 to 1000 kg/m^3	high	■		■			■	■	
	low	■	■	■			■	■	
Light material up to 250 kg/m^3	high	■			■			■	
	low	■			■			■	
Mounting		Insertable	Insertable	Plate or flange	Plate or flange	Plate or flange	Plate or flange	Plate or flange	Plate or flange
Notes	*1 Flexible coupling required						■ = Recommended		

Installation Recommendations

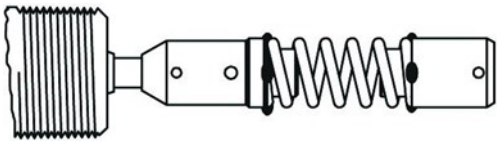


Paddle Level Switch	
Media density	> 80 kg/m^3
Process connection	1 ½" BSPT or 1 ¼" NPT
Conduit connection	2 x M20 (BSPT model) or 2 x 3/4" (NPT model)
Output	Standard model: 2 x SPDT relays, 15A at 250 Vac Safepoint model: 1 x SPDT signal relay, 5A at 250 Vac 1 x SPDT fault relay, 8A at 250VAC
Process temperature	Standard model: -40°C to 149°C (-40 to 300°F) Safepoint model: -40°C to 121°C (-40 to 250°F) High temperature model: -40°C to 399°C (-40 to 750°F)
Ambient temperature	Standard model: -40°C to 93°C (-40 to 199°F) Safepoint model: -40°C to 65°C (-40 to 149°F)
Operating pressure	2 bar maximum
Power supply	Order code 0: 115 Vac +/- 15% (50/60 Hz) Order code 1: 230 Vac +/- 15% (50/60 Hz) Order code 2: 24 Vdc +/- 15%
Housing material	Aluminium alloy, powder paint coated
Wetted materials	304 stainless steel
Housing rating	IP66
Weight	Approx. 4kg (standard model)
Approvals	ATEX II 1/2 D

Dimensions

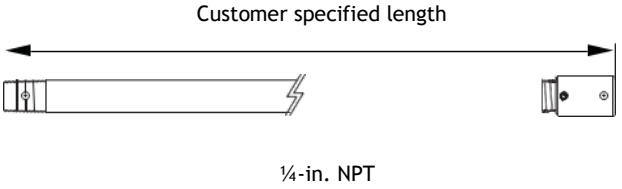
Flexible coupling (P3335)

The flexible coupling works to absorb heavy loads, side loads and loads caused by product surges. A flexible coupling should always be used in top mount installations where a solid shaft extension is used. Length is approximately 64mm,



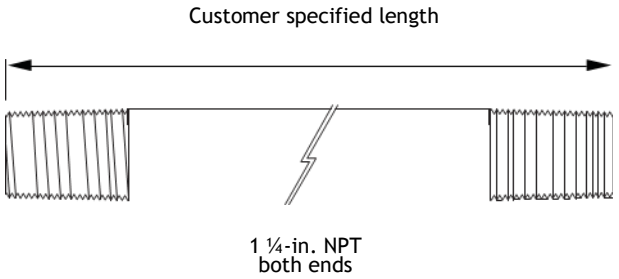
Solid (rigid) shaft extensions (P1175-2/****mm)

Many top mount installations require that the paddle extends into the vessel to a pre-determined level. Solid shaft extensions in stainless steel are available to customer order from 76mm up to 1800 mm in length. Multiple sections can be supplied to achieve lengths of up to 3600 mm. Always specify a flexible coupling and a shaft guard with a solid shaft extension.



Shaft guard (P1174-2/****mm)

A stainless steel shaft guard should be specified when a solid shaft extension is required. The shaft guard should be ordered as the same length as the shaft extension. Maximum length is 1800 mm for lengths of up to 3600 mm, and multiple sections can be supplied complete with assembly coupling. Contact sales office for details.

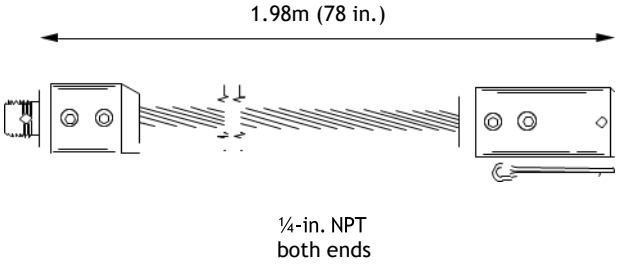


Shaft-guard coupling (P0038)

If it is necessary to use more than one shaft-guard in a single installation, they can be screwed together using shaft-guard couplings.

Flexible shaft extension (P1176-2)

Alternatively, a 2000 mm stainless steel flexible cable extension is available which may be cut to length on site and eliminates the need for the flexible coupling and shaft guard.



Mounting plate (see below for detail)

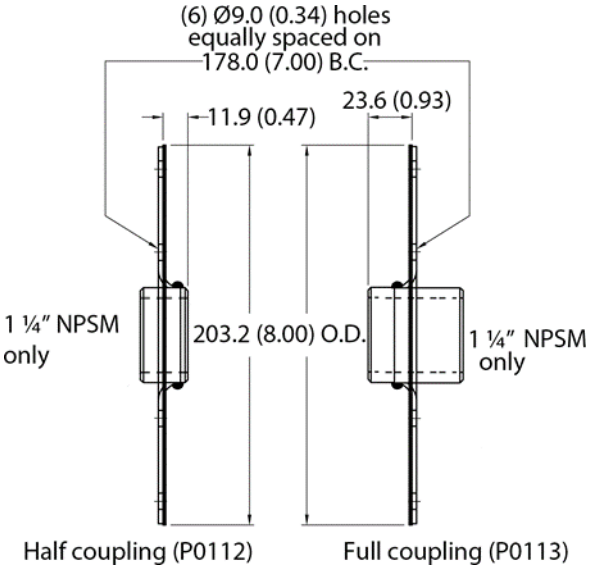
Half coupling: P0112; Full coupling: P0113

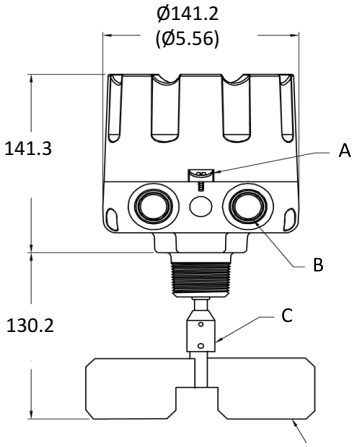
A mounting plate allows mounting to a curved or flat surface and is particularly advantageous if the paddle to be used is not an insertion type.

Two types are available: (Note: use only with NPT thread mounting paddle switches)

Full coupling (P0113) in stainless steel is necessary for use in top
-mount applications where a shaft extension and shaft guard is specified. (Included as standard on high temperature option.)

Half coupling (P0112) in stainless steel for use in side-mount applications.





A. Cover lock

B. 3/4-in. NPT threaded conduit entry

C. Threaded entry to accept flex coupling, extension, or paddle

D. Standard 3-vane paddle

Dimensions are in inches (mm).

Approvals

EUROPEAN DIRECTIVES

Electromagnetic Compatibility Directive (EMC) 2014/30/EU
Compliant to EMC directive

Low Voltage Directive (LVD) 2014/35/EU
Compliant to LVD directive

Pressure Equipment Directive (PED) 2014/68/EU:
This product is outside the scope of the PED directive

ATEX DIRECTIVE 2014/34/EU

Certificate No. Sira 19ATEX9225

EN 60079-0, EN 60079-11

For Zone 20/21 models (Code PLS*****A see Table 2)

Ex II 1/2 D Ex tD A20/A21 T100°C
(Ta -40°C to 93°C)

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