



# ROTARY PADDLE LEVEL SWITCHES

# HYCONTROL ROTARY PADDLE LEVEL SWITCH

**2 YEAR WARRANTY** on the motor assembly due to unique design features:-  
motor shuts off when paddle is impeded.  
triple shaft seal prevents dust ingress to housing.  
high specification motor ensures long life.

**ADJUSTABLE SENSITIVITY** settings for different materials.

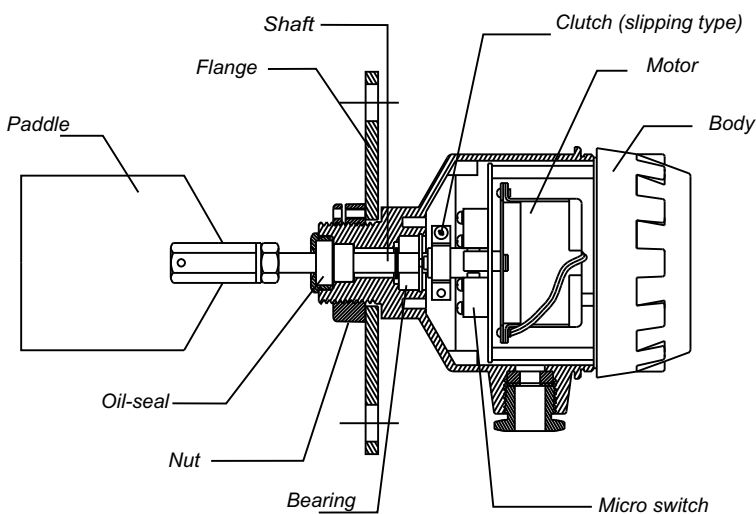
**REDUCED MAINTENANCE** costs with '3 minute' motor replacement while still on the silo.

**RUGGED CAST ALUMINIUM HOUSING** for demanding environments.

**CORROSION RESISTANT** stainless steel paddle and shaft assembly.

**HIGH TEMPERATURE** versions available in all variety of models.

## Robust Paddle Version RP10 Series

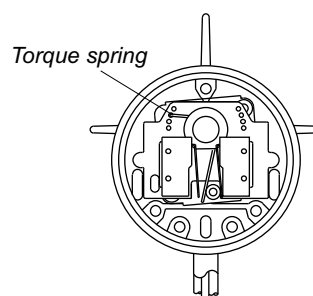
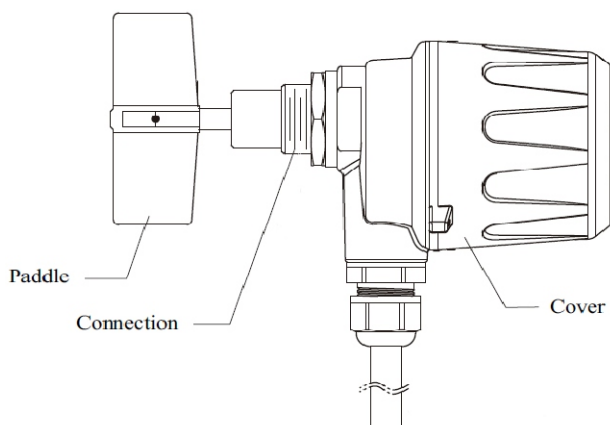


## PRINCIPLE

The RP Series operating principle is simple. A unit is usually located through the bin wall at the top, middle or low level of a bin. During normal operation (no material present) a synchronous motor rotates the paddle at 1 RPM. When this paddle rotation is impeded by the material surrounding the paddle, the motor will stall and cause the microswitch to change state and indicate an alarm or control condition.

The RP80 rotary paddle is composed by a clutch and a shaft connected with a rotating paddle. Its compact body and easy installation make it perfectly suitable for limited spaces. In addition, the unique dual color LED indicator benefits user to have a timely observation of the working condition.

## Mini paddle version RP80 series.



# INTRODUCTION

## OPERATING PRINCIPLE

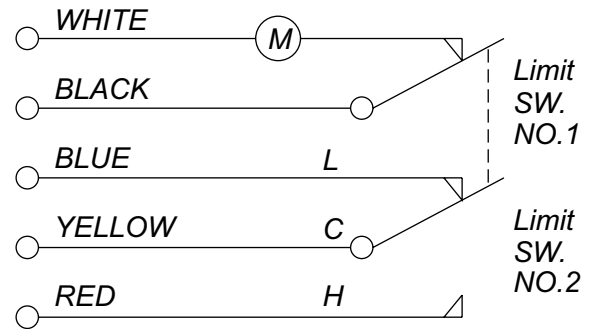
With no material touching the paddle the synchronous motor is turning and the switch circuit is through terminals **C** and **L**.

When material touches the paddle, the motor stops and the switch circuit is through **C** and **H**.

When the product falls away from the paddle, the motor starts turning again and the switch returns to **C** and **L**.

If the switch is to be used as a high alarm it is usual to wire the alarm circuit through terminals **C** and **H**.

If the switch is to be used as a low alarm it is usual to wire the alarm circuit through terminals **C** and **L**.

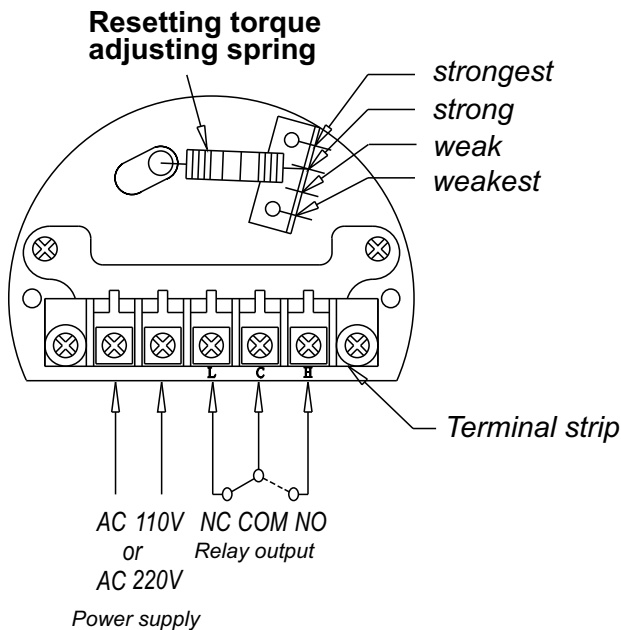


## TORQUE ADJUSTING MECHANISM

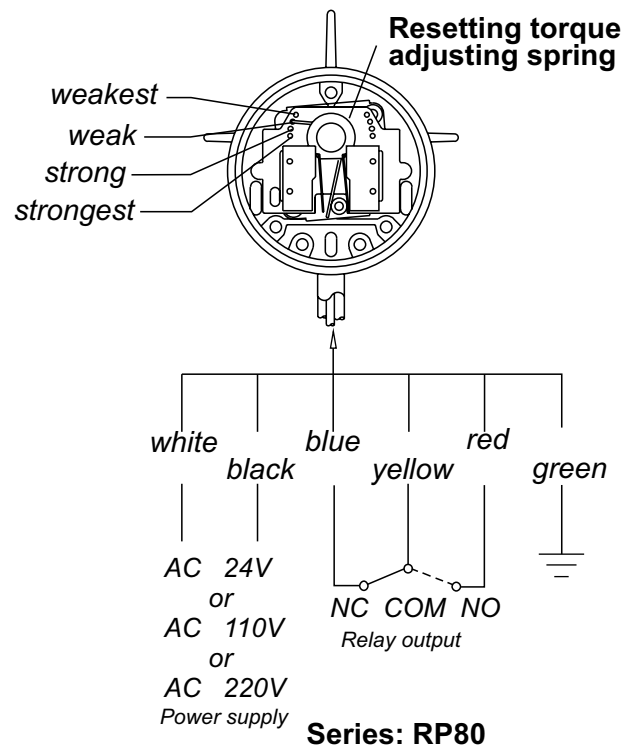
The switch leaves the factory set at the weakest torque setting. The weakest setting is suitable for all materials but is the most sensitive so it is recommended that the torque setting be adjusted to suit each application.

In general terms, the weakest setting should be used for the lightest powders and the strongest setting for the heaviest.

Adjustment is simply a matter of unhooking the torque adjustment spring from its current position and replacing it in its new position.



**Series : RP10, 20, 30, 40, 60, 70**



**Series: RP80**

# STANDARD SPECIFICATION

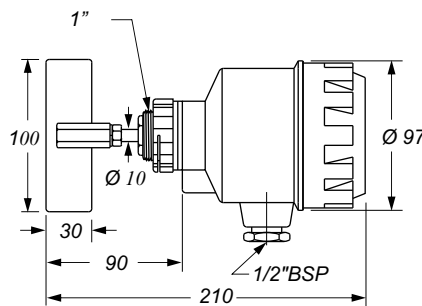
**Power source :** A-110VAC, B-220VAC, C-240VAC, 50/60Hz  
**Power consumption :** 3W  
**Contact capacity :** SPDT, 5A/250VAC  
**Rotary speed :** 1 R.P.M.  
**Insulation test voltage :** AC 1500Vx1minute

**Torque :** 0.5 ~1.0 kg-cm  
**Connection :** 1"BSPP screw or flange  
**Protection :** IP65 / Aluminium, Painted  
**Cable entry :** 1/2"BSP fitted with cable gland  
**Specific gravity :** 0.5g/cm<sup>3</sup> (30Lb/ft<sup>3</sup>)

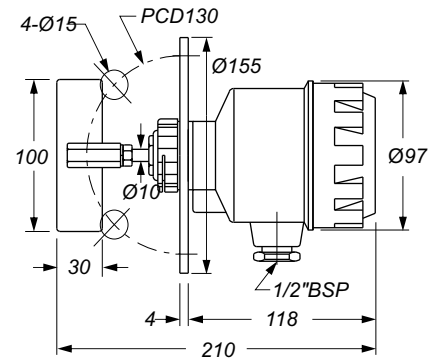
## RP10A/B/C SCREW MOUNT

- Horizontal mounting
- Temp. (-10°C ~ 70°C)
- Weight: 1.2 kg

**RP10A/B/C**



**RP11A/B/C**



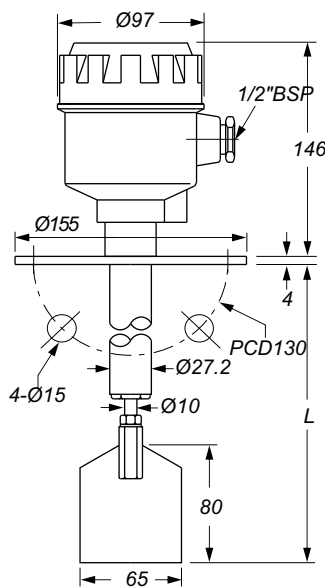
## RP11A/B/C FLANGE MOUNT

- Horizontal mounting
- Temp. (-10°C ~ 70°C)
- Weight: 1.7 kg

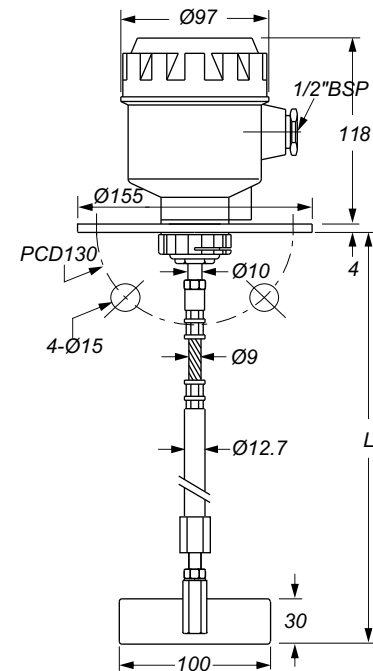
## RP20A/B/C SHAFT PROTECTED

- Horizontal /Vertical mounting
- Temp. (-10°C ~ 70°C)
- Weight: 1.2 kg
- The whole section from flange to paddle are made of 304SS
- Standard Length (option):  
 L--250mm (2.2 kg)  
 L--500mm (2.5 kg)  
 L--750mm (2.8 kg)
- Special lengths are available; please contact the office.

**RP20A/B/C**



**RP30A/B/C**



## RP30A/B/C SHAFT LENGTH ADJUSTABLE

- Vertical mounting
- Temp. (-10°C ~ 70°C)
- Standard Length (option):  
 L-- 500mm (2.5 kg)  
 L-- 1000mm (2.8 kg)  
 L-- 1500mm (3.0 kg)
- Special lengths are available; please contact the office.

# STANDARD SPECIFICATION

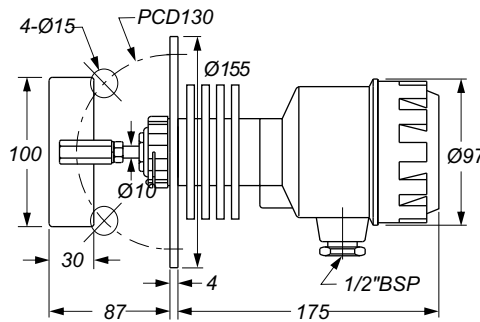
**Power source :** A-110VAC, B-220VAC, C-240VAC, 50/60Hz  
**Power consumption :** 3W  
**Contact capacity :** SPDT, 5A/250VAC  
**Rotary speed :** 1 R.P.M.  
**Insulation test voltage :** AC 1500Vx1minute

**Torque :** 0.5 ~1.0 kg-cm  
**Connection :** 1"BSPP screw or flange  
**Protection/ material :** IP65 / Aluminium,painted  
**Conduit :** 1/2"BSPP fitted with cable gland  
**Specific gravity :** 0.5g/cm<sup>3</sup> (30Lb/ft<sup>3</sup>)

## RP40A/B/C HI-TEMP TYPE SCREW / FLANGE MOUNT

- Horizontal mounting
- Temp. (Max.200°C)
- Weight: 2.1 kg

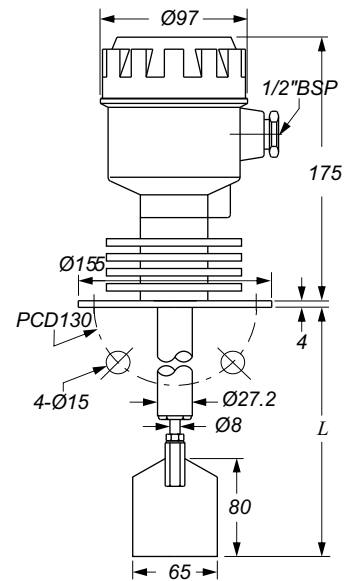
### RP40A/B/C



## RP41A/B/C HI-TEMP SHAFT PROTECTED

- Horizontal /Vertical mounting
- Temp. (Max.200°C)
- The whole section from flange to paddle is made of 304SS
- Standard Length (option):  
 L--250mm (2.6 kg)  
 L--500mm (2.9 kg)  
 L--750mm (3.2 kg)
- Special lengths can be made to order; please contact the office.

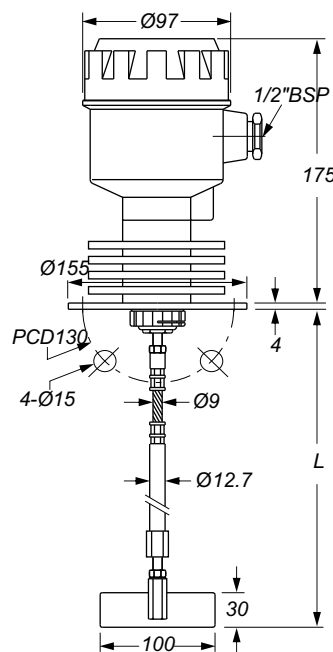
### RP41A/B/C



### RP46A/B/C

## RP46A/B/C HI-TEMP SHAFT LENGTH ADJUSTABLE

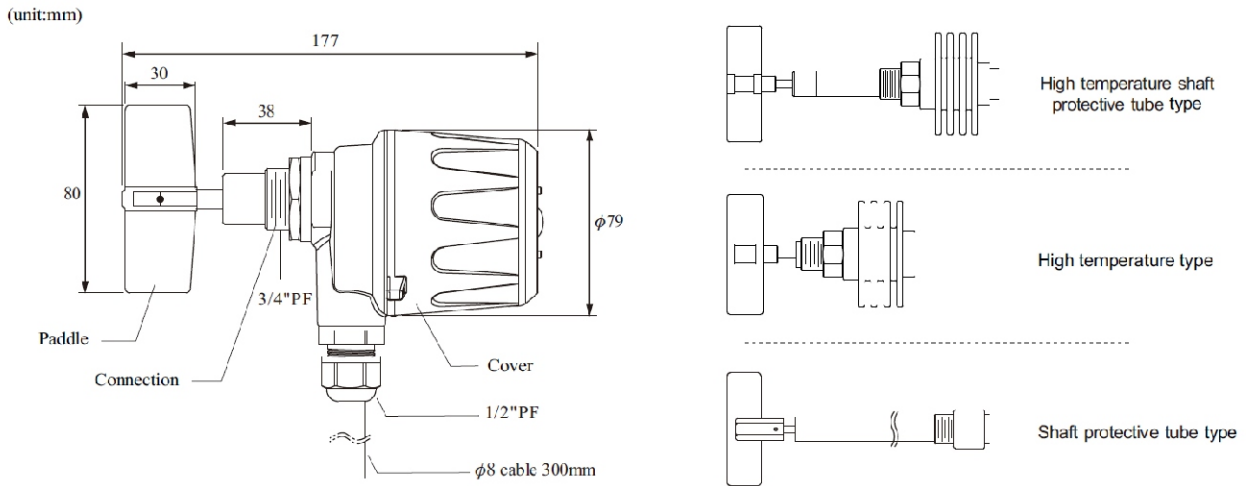
- Vertical mounting
- Temp. (Max.200°C)
- Standard Length (option):  
 L-- 500mm (3 kg)  
 L-- 1000mm (3.3 kg)  
 L-- 1500mm (3.5 kg)
- Special lengths can be made to order; please contact the office.



# MINI PADDLE RP80 SPECIFICATIONS

**Power source** : A-110VAC, B-220VAC, C-240VAC, D-24VAC 50/60Hz  
**Power consumption** : 1.5W  
**Contact capacity** : AC 250V 5A  
**Rotary speed** : 1 R.P.M.  
**Protection/ material** : IP65 / Aluminum alloy (ADC-12)

**Temp.** : -40°C + 85°C  
**Cable length** : 1.5 metre (Special lengths available)  
**Display** : Green - working / Red - stopped  
**Specific gravity** : 0.3 ~ 1g/cm<sup>3</sup>



**RP80**           (     )

**Housing type** \_\_\_\_\_  
 8: General type

**Housing cover** \_\_\_\_\_  
 0: Aluminum cover                      1: Aluminum cover with LED lamp  
 2: Plastic  
 ※1 and 2 are not available for SE37.

**Model** \_\_\_\_\_  
 0: Standard  
 2: Shaft protective tube  
 4: High temperature  
 5: High temperature shaft protective tube

**Supply voltage** \_\_\_\_\_  
 A: 110Vac, 50/60Hz    B: 220Vac, 50/60Hz    C: 240Vac, 50/60Hz  
 D: 24Vac, 50/60Hz    E: 24Vdc

**Connection** \_\_\_\_\_

Size for flange or screw		Specification	
C: 3/4"	I: 4"	M: 5kg/cm <sup>2</sup>	Z: PN40
D: 1"	J: 5"	N: 10kg/cm <sup>2</sup>	Q: PT
3: 1-1/4"	K: 6"	O: 150Lbs	R: PF(G)
E: 1-1/2"	S: Special	P: 300Lbs	T: BSP
F: 2"		W: PN10	U: NPT
G: 2-1/2"		X: PN16	S: Special
H: 3"		Y: PN25	

**Paddle shape (mm)** \_\_\_\_\_

G: Cross paddle                      H: Scimitar paddle  
 I: 100x30 (WxH)                      K: Folding paddle  
 S: Special  
 -: None

Material: PC                      Material: PC                      Material: Stainless steel                      Material: Stainless steel

**Cable length (mm)** \_\_\_\_\_

0500: below 500mm  
 1000: 501~1000mm  
 1500: 1001~1500mm  
 ⋮

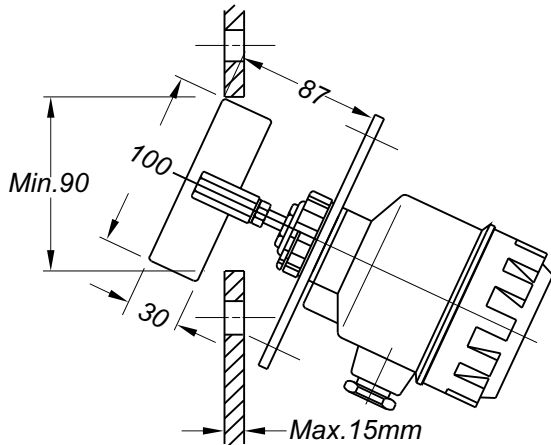
※500mm per unit  
 ※Standard length 300mm

## EXAMPLES OF MOUNTING

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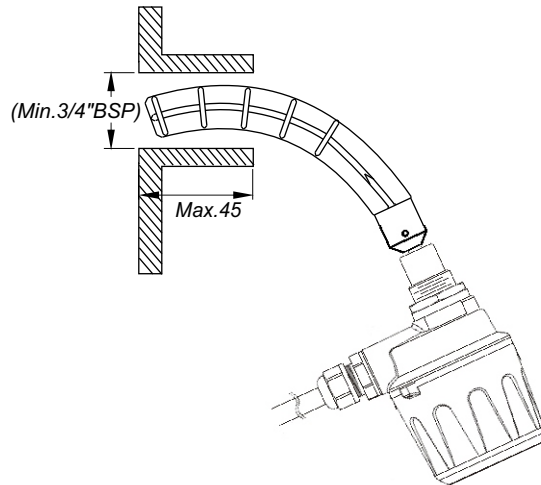
### RP10A

Where the RP10A type paddle cannot be attached to the main shaft from inside the storage tank. A 90mm opening is required to allow the paddle to be fixed to the shaft prior to installation. Dimensions as shown below:



### RP80 CRH

The scimitar paddle can be inserted through a 3/4" BSP inlet directly as shown on the drawing below.



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## TYPICAL PRODUCTS MEASURED

### FOOD & CONSUMER PRODUCTS

Chocolate powder  
Detergent  
Nuts, crushed & whole, peanuts  
Sugar  
Salt pellets and table salt  
Seeds & grains  
Feed stuffs  
Malts  
Grains  
Animal feed

### SAND & MINERALS

Coal fines  
Fluorspar  
Iron carbide  
Nickel powder  
Resin coated sand  
Silica, zircon & foundry sands  
Sand, gravel & aggregates  
Rocks  
Cement  
Clays  
Sand / saw dust  
Wood dust

### PLASTICS & RESINS

Abs  
Nylon pellets  
Pet pellets  
Polyethylene  
Polypropylene

### CHEMICALS

Limestone  
Calcium chloride  
Calcium fluoride  
Sodium bicarbonate  
Soda ash  
Tri-calcium phosphate  
Calcium dust

### FERTILISER

Ammonium nitrate  
Ammonium sulphate

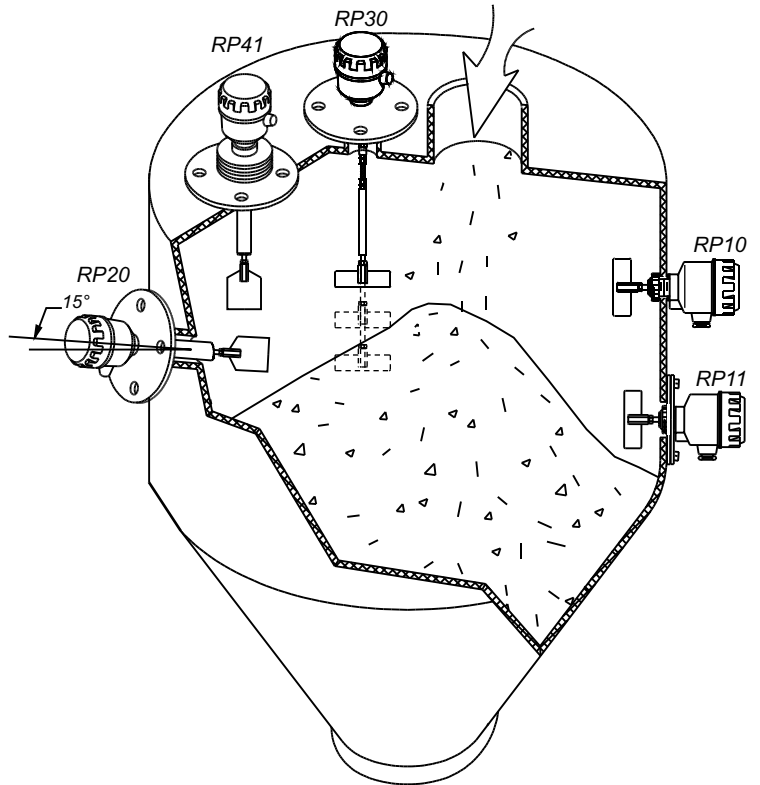
### MISCELLANEOUS PRODUCTS

Activated carbon  
Sludge pellets  
Pharmaceutical tablets

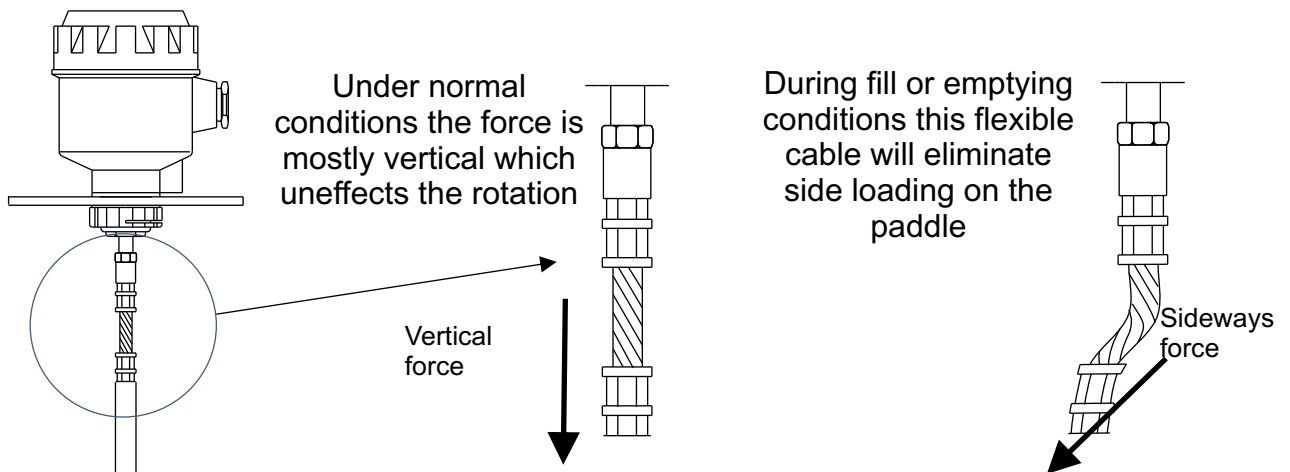
# MOUNTING OPTIONS

## INSTALLATION NOTES

1. Please incline side mounted paddle switches by 15°~20° for best performance as this limits product build up on the paddle shaft and paddle itself.
2. Please select RP40 series where tank internal operating temperatures are more than 60°C.
3. RP10~RP40 can be installed in a 1" BSP socket connection but please use the scimitar type paddle so it can be installed from outside of the vessel.
4. RP30, RP46 items are flexible with adjustable shaft length. Please state length required when ordering. This length is from the mounting connection to the end of the paddle blade. (see drawings)



## ANTI-SIDE LOAD PROTECTION CABLE



The RP30, 46 & 70 series are recommended for top mounted applications as they have a unique flexible coupling between the rod and the motor assembly. This design prevents damage to the extension rod and stops the premature wear on the motor and bearing. Side load conditions normally take place under filling or emptying conditions as the product either peaks or troughs as shown in the diagram above.



# ORDER INFORMATION

RP

**Model** \_\_\_\_\_

- |                                   |                           |
|-----------------------------------|---------------------------|
| 10 : Standard type                | 40 : Hi-temp type         |
| 20 : Shaft protective tube type   | 60 : Cable wire type      |
| 30 : Shaft length adjustable type | 70 : Explosion Proof type |

**Voltage** \_\_\_\_\_

- A : 110VAC B : 220VAC C : 240VAC D : 24VAC 50/60HZ

**Mounting** \_\_\_\_\_

Size for flange or screw	
D: 1"	I: 4"
E: 1-1/2"	J: 5"
F: 2"	K: 6"
G: 2-1/2"	S: Others
H: 3"	3: 1-1/4"

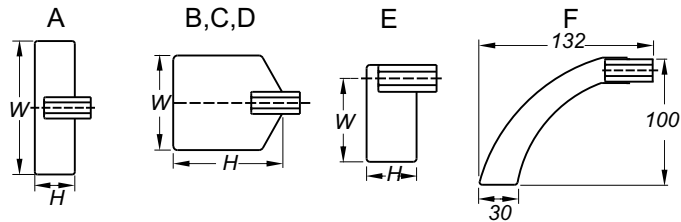
Pressure range or other
M: JIS 5kg/cm <sup>2</sup>
N: JIS 10kg/cm <sup>2</sup>
O: ANSI 150 Lbs
P: ANSI 300 Lbs
Q: PT
R: PF
T: BSP
S: Others

\* RP10~RP70 series: The size of connecting screw is 1".

**Paddle Shapes** \_\_\_\_\_

**RP10~RP70**

- A : 100x30 (WxH)
- B : 65x80 (WxH)
- C : 65x120 (WxH)
- D : 80x80 (WxH)
- E : 50x30 (WxH)
- F : Scimitar



**Length (mm)** \_\_\_\_\_

RP10~70 L: The distance from flange to paddle.  
The total length of the switch will have a tolerance of +/- 6mm.

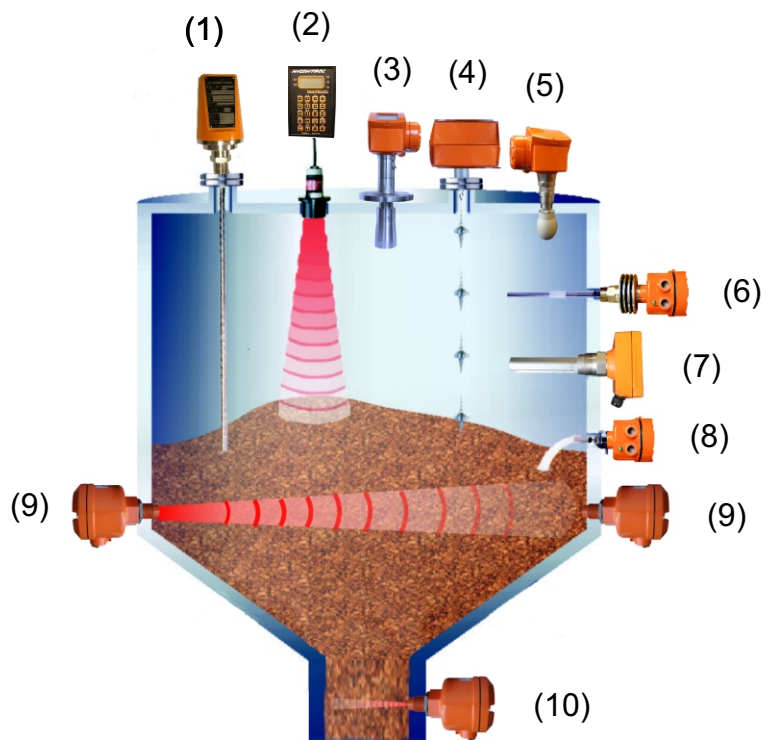
**\* Model selection notes**

1. Select Voltage 24VAC, 110VAC, 220VAC or 240VAC, 50/60 Hz.
2. Side or Top mounting.
3. Identify the bulk density of product to select correct unit.
4. If vibrating motor is installed onto the tank wall, select Hycontrol's capacitive sensor ME40.
5. Ensure the rotary paddle size selected will enter into the flange inlet available.

# HYCONTROL LEVEL TECHNOLOGIES

## Product Range For Solids :-

- (1) TDR Radar For Solids
- (2) Ultrasonic, 'Through Air'
- (2) 2 Wire Ultrasonic Transmitter
- (3) FMCW 2 Wire Radar
- (4) Continuous 'Servo' Level Indicator
- (5) FMCW 2 Wire Radar
- (6) Capacitance Level Switch
- (7) Vibrating Probe Level Switch
- (8) Rotating Paddle Level switch
- (9) Microwave Level Switch
- (10) Doppler Flow Switch



## Product Range For Liquids :-

- (1) By-Pass Level Indicator With Radar
- (2) TDR Radar For Liquids
- (3) 2 Wire Ultrasonic Transmitter
- (4) FMCW 'Horn' Radar 2 Wire
- (5) Magnetic Float Switches
- (6) FMCW 2 Wire Radar
- (7) Foam Level Switch
- (8) Capacitance Level Switch
- (9) RF Admittance Level Switch
- (10) Side Mounting 316 SS Float Switch
- (11) Tuning Fork Level Switch
- (11) Tuning Fork Level Switch
- (12) Ultrasonics 'Through Wall'
- (13) Mini Magnetic Float Level Switch

