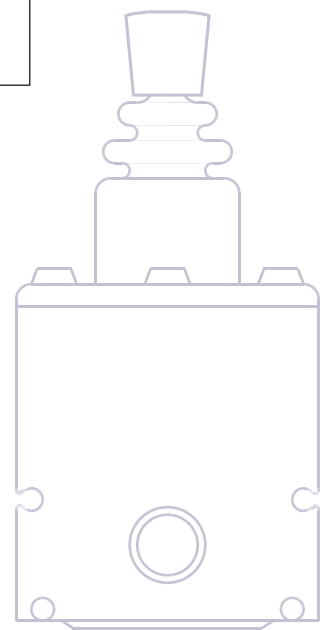
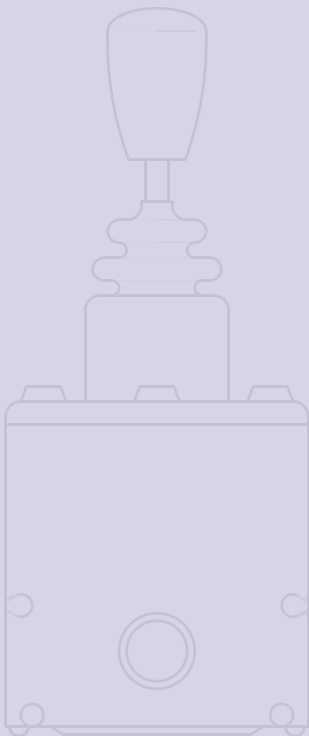
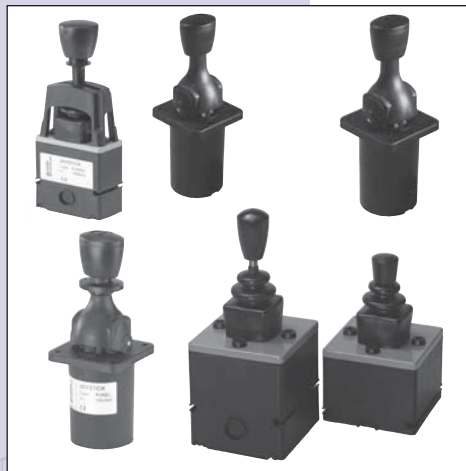
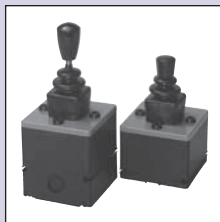


Technical  
Information



**Revision History**

*Table of Revisions*

Date	Page	Changed	Rev
Mar 2003	All	First edition	AA
May 2010	16	Japan location	AB
Sep 2010	16	New back page	AC
Dec 2010	15	Drawings	AD

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Front cover illustrations: F300641, , F300642, F300141, F300142  
 drawing: 155B577



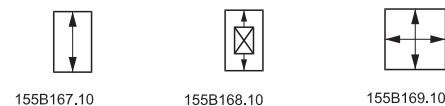
**General**

PVRES can be used individually or with PVRES accessories built together to form a complete operating panel. PVRES is particularly suited to panel mounting and characterised by:

- finger-tip control
- small dimensions
- low weight
- built-in flow regulation
- accessories such as emergency stop and lamps (see page 8)

**Two Proportional Functions**

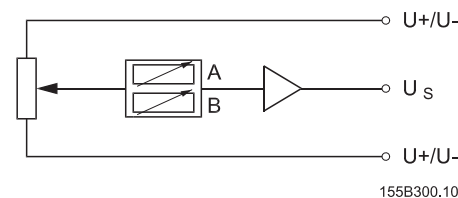
PVRES is supplied with one or two potentiometers. It is thus possible to regulate one function, or two functions at the same time.



**Flowadjustment**

Two further adjustments per function are built into PVRES. Independently of each other, these limit the signal voltage ( $U_s$ ) and thereby the flow from proportional valve ports A and B without the movement of the remote control lever being limited.

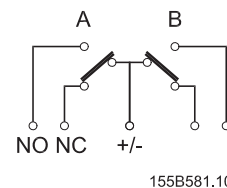
The oil flow can be infinitely reduced down to 25% of maximum flow.



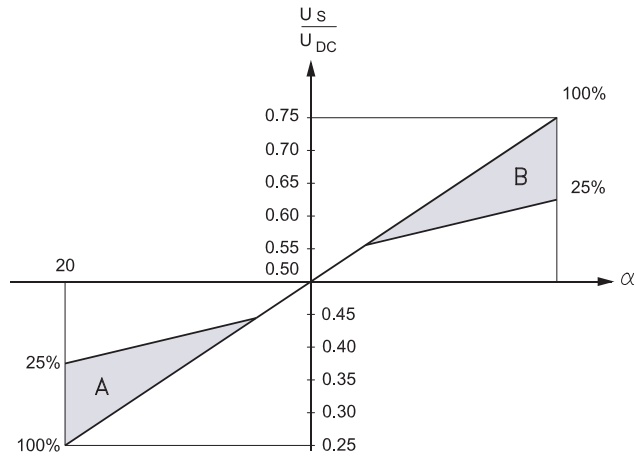
**On-off Function**

Instead of the proportional functions, PVRES can be supplied with built-in switches.

The contact functions can be either normally "ON" or normally "OFF" in neutral position.



**Characteristic**



2 way	5.7 N [1.28 lbf]	1.7 N [0.38 lbf]	1.7 N [0.38 lbf]	5.7 N [1.28 lbf]
4 way	6.9 N [1.55 lbf]			6.9 N [1.55 lbf]

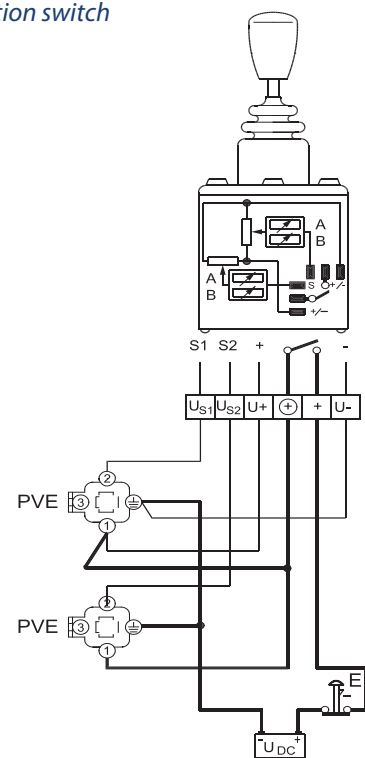
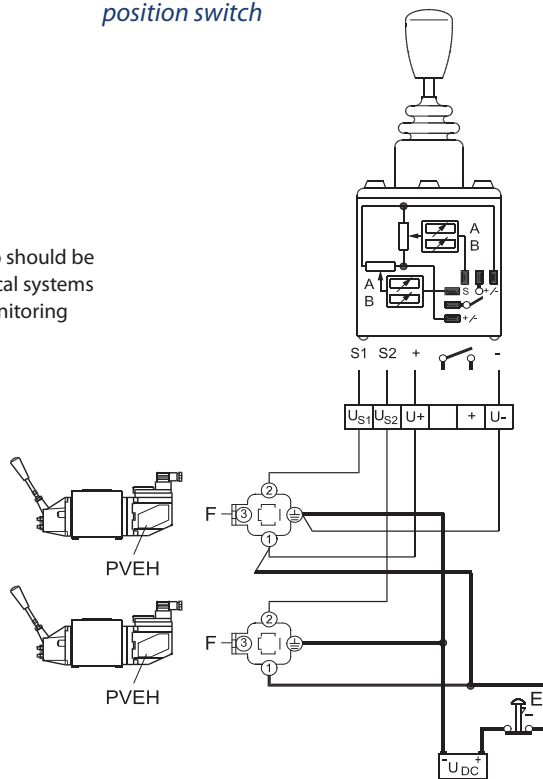
155B170.11

**Electrical System**

*2 proportional functions  
 without using neutral  
 position switch*

*2 proportional functions  
 with the use of neutral  
 position switch*

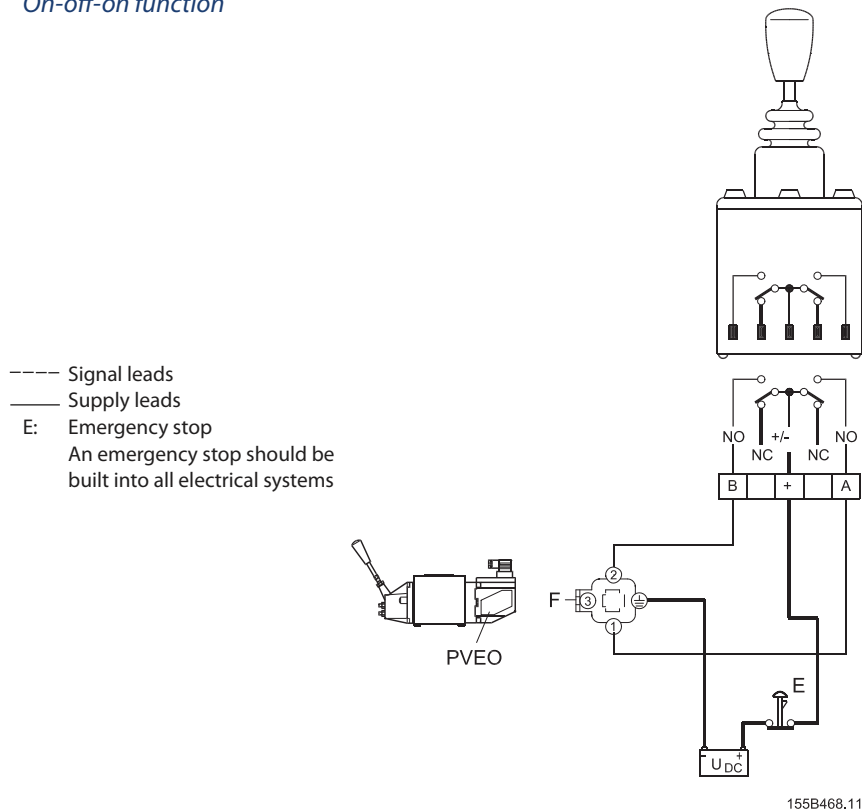
- Signal leads
- Supply leads
- E: Emergency stop  
 An emergency stop should be built into all electrical systems
- F: Lead from fault monitoring



155B467.11

#### Electrical System continued

#### On-off-on function



#### Technical Data

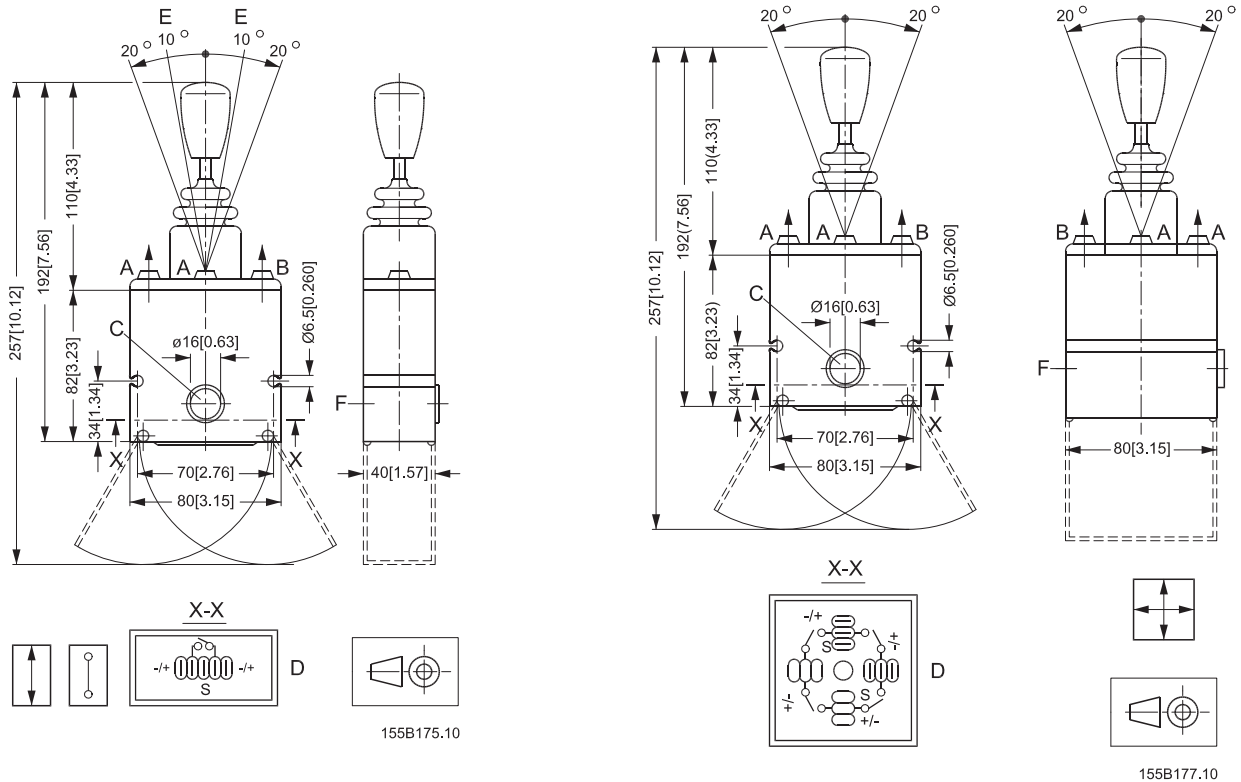
Supply voltage	$U_{DC}$	11- 30 $U_{DC}$
	Max. ripple	5%
Current consumption		< 80 mA
Max. force		50 N [11.24 lbf]
Output voltage ( $U_s$ )	$\frac{U_s}{U_{DC}}$	0.25 → 0.75
Neutral voltage ( $U_s$ )	$\frac{U_s}{U_{DC}}$	0.5
Output signal	Max. load	Two parallelconnected PVEs
	Min. load impedance to $0,5 \cdot U_{DC}$	6 k $\Omega$
Signal current max.	$U_{DC} = 12\text{ V}$	$\pm 0.6\text{ mA}$ (resistive)
	$U_{DC} = 24\text{ V}$	$\pm 1.2\text{ mA}$
Neutral position switch max. current	$U_{DC} = 12\text{ V}$	2 A
	$U_{DC} = 24\text{ V}$	1 A
On - off - on switch max. current	$U_{DC} = 12\text{ V}$	0.7 A
	$U_{DC} = 24\text{ V}$	0.35 A
Ambient temperature		- 30 to + 60°C [-22 to 140°F]
Enclosure to IEC 529	Over mounting flange	IP 44
	Under mounting flange	IP 23

PVRE and PVRET must be connected to supply voltage at the same point as PVE.

**Code Numbers and Weight**

Function	Symbol	Version	Code no	Dimension mm [in]	Weight kg [lb]
1 Proportional	 155B167.10	Standard	155B4210	40 x 80 x 192 [1.57 x 3.15 x 7.56]	0.27 [0.60]
		Short	155B4218	40 x 80 x 135 [1.57 x 3.15 x 5.31]	0.24 [0.53]
1 Proportional	 155B168.10	Standard	155B4211	40 x 80 x 235 [1.57 x 3.15 x 9.25]	0.40 [0.88]
2 Proportional	 155B169.10	Standard	155B4212	80 x 80 x 192 [3.15 x 3.15 x 7.56]	0.38 [0.84]
		Short	155B4219	80 x 80 x 135 [3.15 x 3.15 x 5.31]	0.32 [0.70]
1 On - off - on	 155B367.10	Standard	155B4206	40 x 80 x 192 [1.57 x 3.15 x 7.56]	0.25 [0.55]

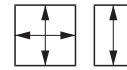
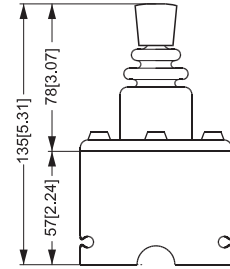
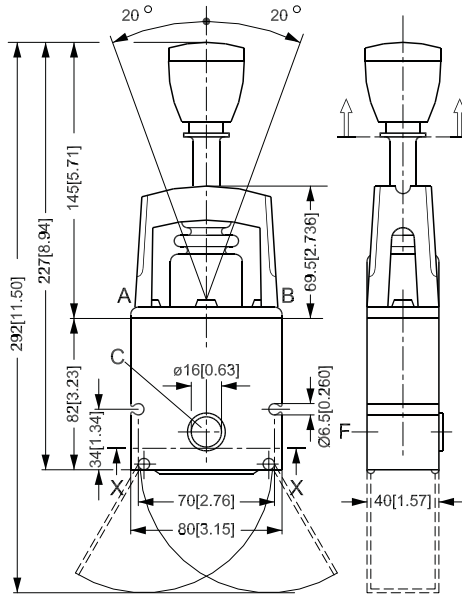
**Dimensions**



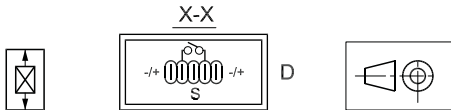
A, B : Oil flow adjustment  
 C : Deflection block  
 D : Flat pin A 6.3 - 0.8

E: Max. travel for on-off-on version  
 F:  $\varnothing 17$  hole for PG 11 screwed cable entry

**Dimensions**



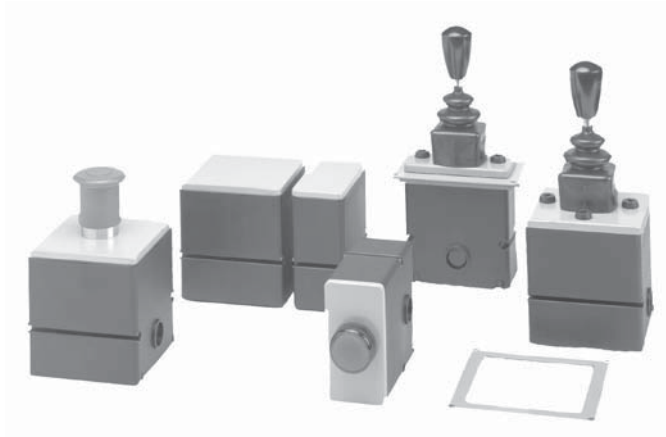
155B475.10



155B404.11

- A, B : Oil flow adjustment
- C : Deflection block
- D : Flat pin A 6.3 - 0.8
- E : Max. travel for on-off-on version
- F :  $\varnothing 17$  hole for PG 11 screwed cable entry

**General**



PVRES accessories meet the demand for simple installation, monitoring and safety. They also offer the possibility of mounting other components in connection with PVRES where uniform design is desirable.

**Emergency Stop Module**

The module contains an emergency stop switch of the impact key type  $I_{NOM} = 10 \text{ A}$



155B171.10

**Lamp Modul**

The module contains a green lamp. 12 V and 24 V bulbs are included.



155B172.10

**Spacing and Mounting Modules**

The modules are used between PVRES remote control units either as empty spacer modules or as mounting modules for switches, lamp indicators, starting keys, etc. The modules are available in widths 40 mm and 80 mm.



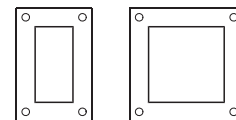
155B173.10



155B174.10

**Panel Mounting Rings**

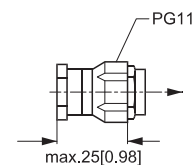
Panel mounting rings 40 mm and 80 mm are available for PVRES modules.



155B470.10

**PG 11 Screwed Cable Entry**

PG screwed cable entry and locknut, suitable for all PVRES modules.



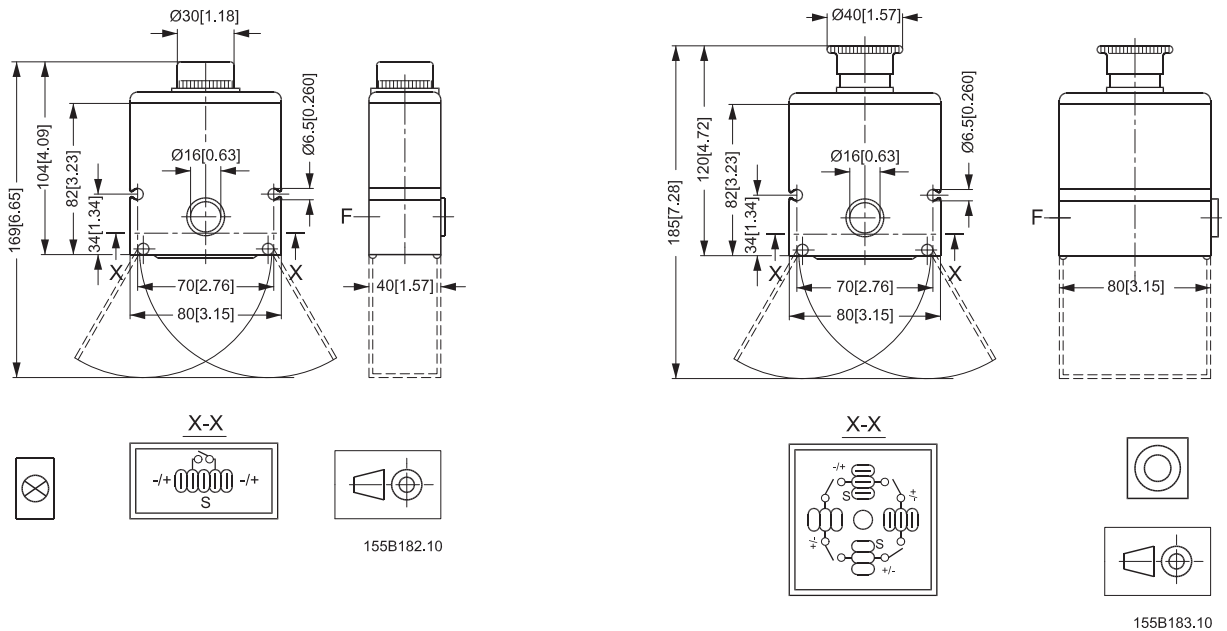
155B473.10



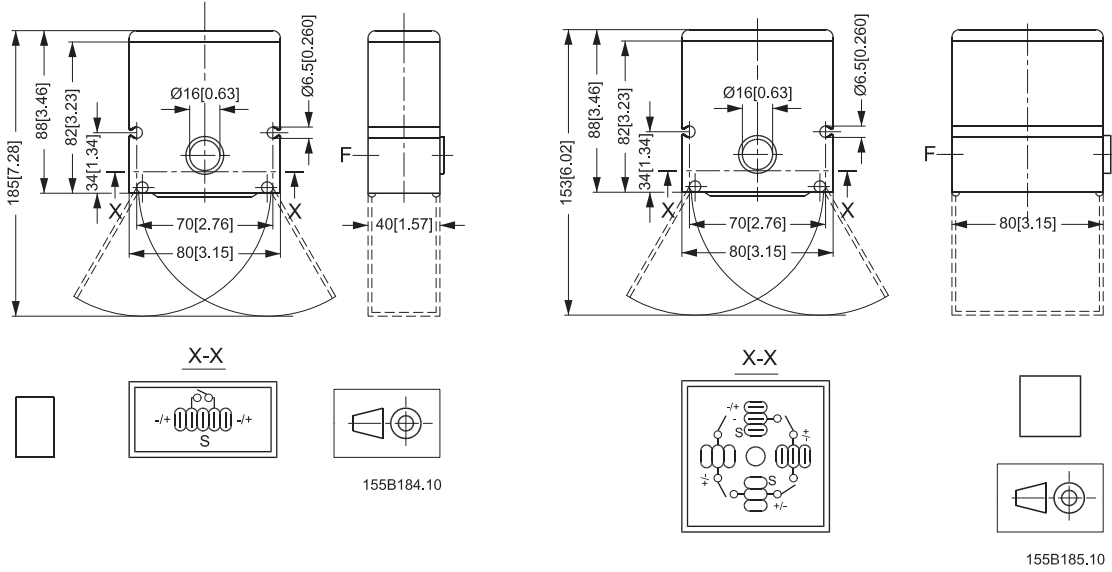
**Code Numbers and Weight**

Type	Symbol	Code number	Dimension	Weight	
			mm [in]	kg	[lb]
Lamp module	 155B172.10	155B4213	40 x 80 [1.57 x 3.15]	0.22	[0.48]
Emergency stop	 155B171.10	155B4216	80 x 80 [3.15 x 3.15]	0.33	[0.73]
Spacer and mounting module	 155B173.10	155B4214	40 x 80 [1.57 x 3.15]	0.15	[0.33]
	 155B173.10	155B4215	80 x 80 [3.15 x 3.15]	0.18	[0.40]
Panel mounting plate		155B4876	60 x 100 [2.36 x 3.94]	0.04	[0.09]
		155B4877	100 x 100 [3.94 x 3.94]	0.05	[0.11]
PG 11 screwed cable entry		155B4875		0.01	[0.02]

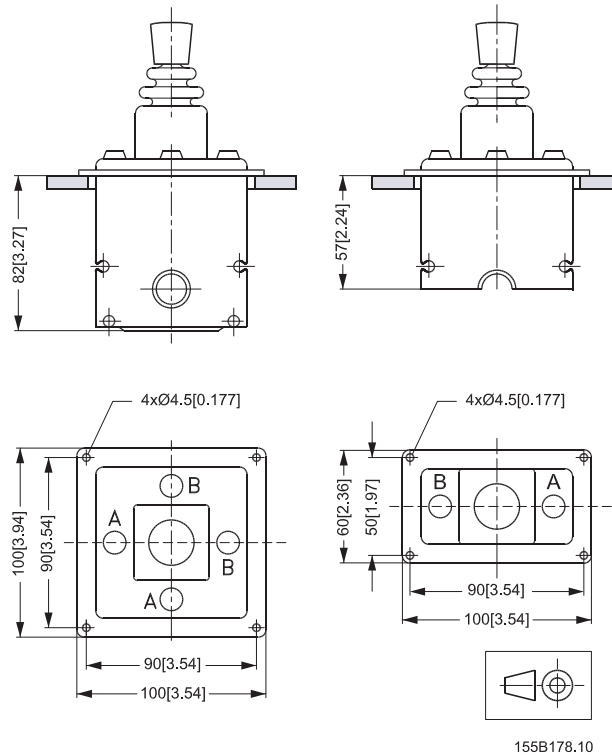
**Dimensions**



**Dimensions**



**PVRES Panel Mounting  
 Plate**



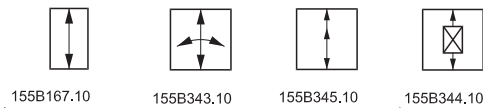
**General**



PVREL is an electric remote control lever made in weather-resistant plastic. PVREL is for easy mounting in operating panels. PVREL is characterised by:

- IP 67 enclosure
- low operating forces
- robust construction
- small dimensions

**Proportional Function**

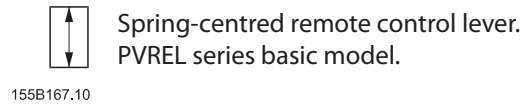


The PVREL remote control levers contains a potentiometer for the control of one proportional function.

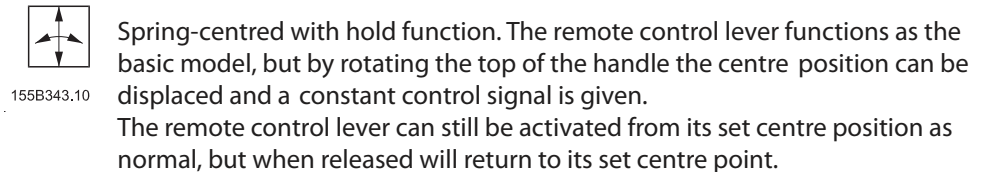
**Variants**

The PVREL series contains four variants. These can be ordered with or without neutral position switch.

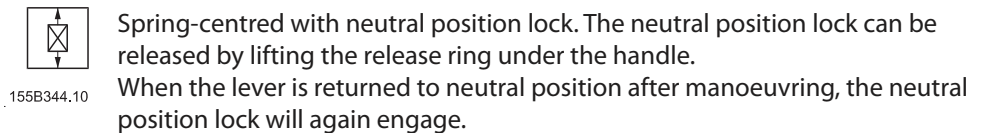
**Standard**



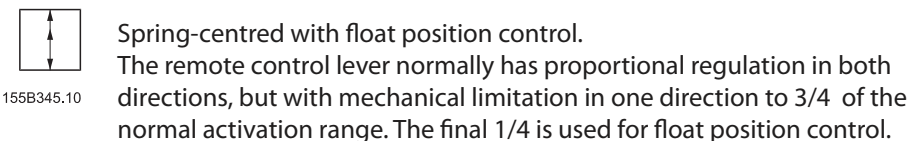
**Hold Function**



**Neutral Lock**



**Float Position**



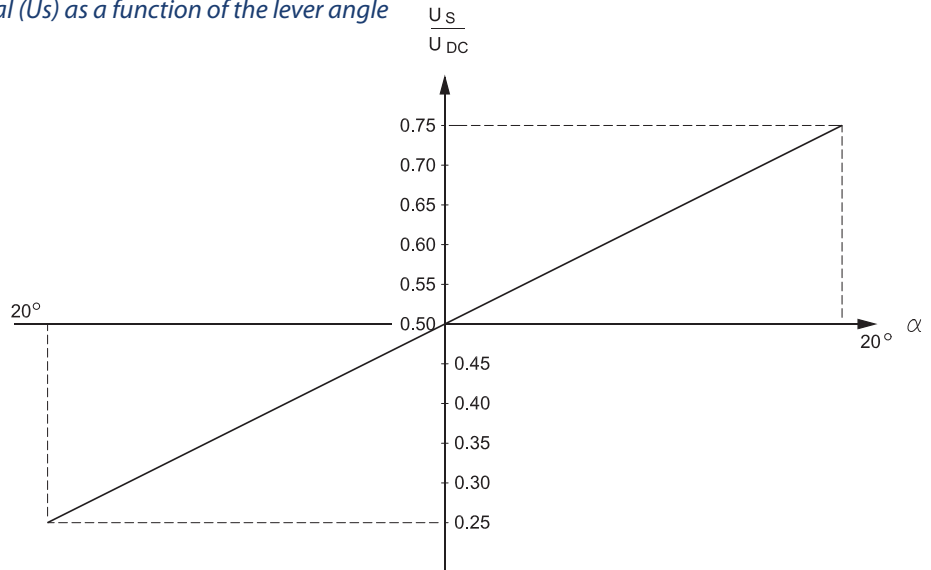
Access to the float position control is gained by lifting the release ring under the handle and moving the lever out to its float position. Here, on releasing the ring, the remote control lever becomes locked in float position. Return from float position is gained by again lifting the release ring and bringing the lever back to the proportional range.

**Installation**

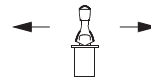
Correctly placed, the PVREL can comply with the grade of enclosure IP 67 above the mounting flange.

**Characteristic**

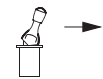
Signal ( $U_s$ ) as a function of the lever angle



4.0 N [0.899 lbf]  
 7.7 N [1.731 lbf]\*



2.4 N [0.540 lbf]  
 3.4 N [0.764 lbf]\*

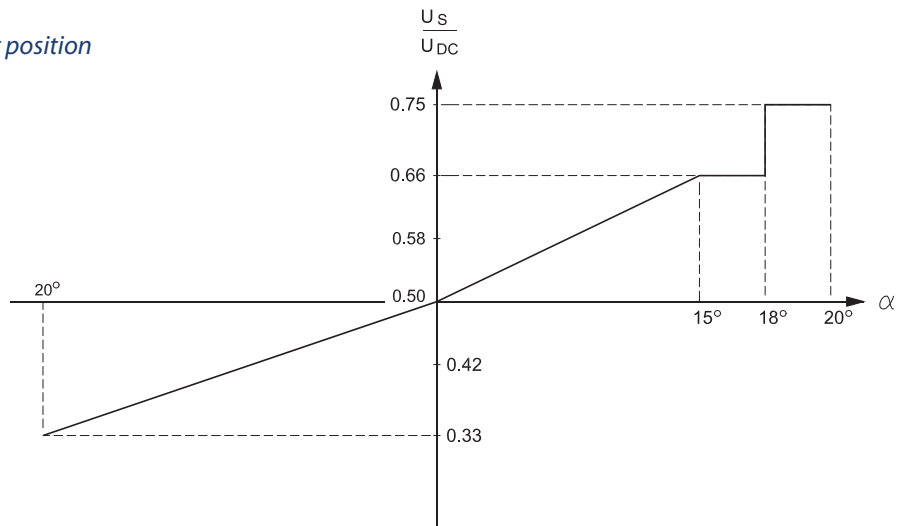


4.0 N [0.899 lbf]  
 7.7 N [1.731 lbf]\*

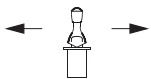
\* PVREL with hold function

155B346.10

Float position



4.5 N  
 [1.016 lbf]



2.4 N  
 [0.540 lbf]



4.0 N  
 [0.900 lbf]



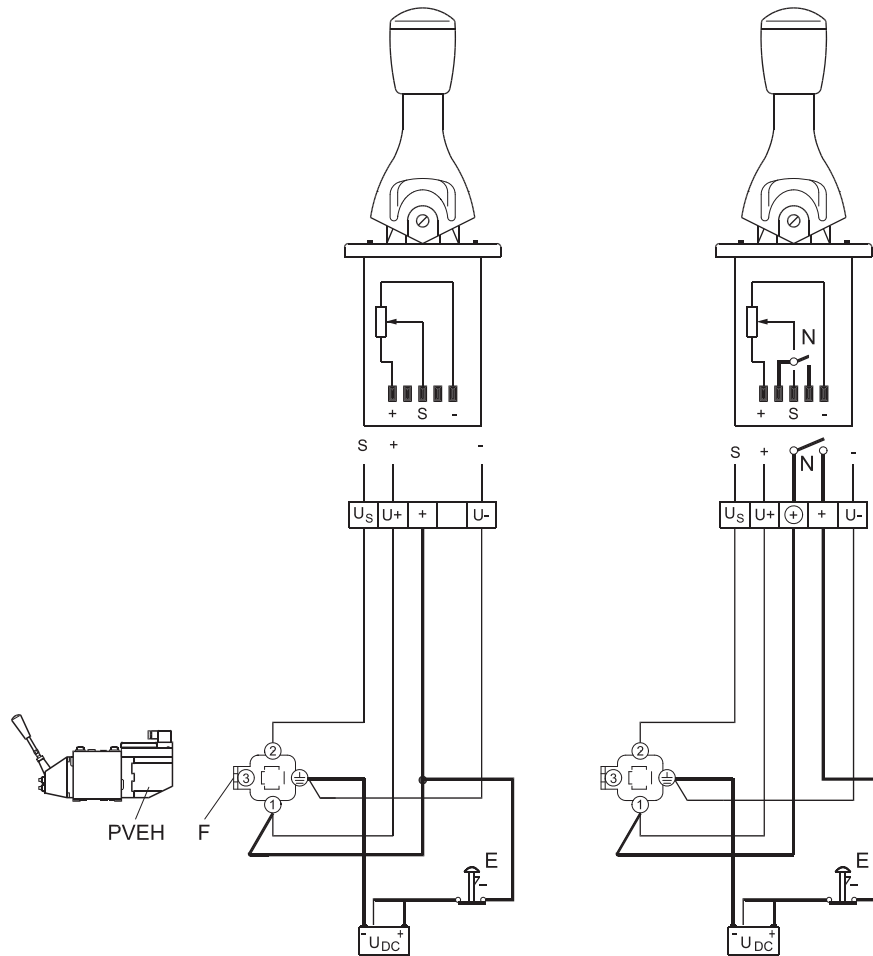
4.5 N  
 [1.016 lbf]

155B347.10

**Electrical System**

*1 proportional function  
 without using neutral  
 position switch*

*1 proportional function  
 with the use of neutral  
 position switch*







- Signal leads
- Supply leads
- E: Emergency stop
- F: Lead from fault monitoring

#### Technical Data

Supply voltage	$U_{DC}$	11- 30 $U_{DC}$
	Max. ripple	5%
Current consumption		< 80 mA
Max. force		100 N [22.5 lbf]
Output voltage ( $U_s$ )	$\frac{U_s}{U_{DC}}$	0.25 → 0.75
Neutral voltage ( $U_s$ )	$\frac{U_s}{U_{DC}}$	0.5
Output signal	Max. load	Two parallelconnected PVEs
	Min. load impedance to $0,5 \cdot U_{DC}$	6 k $\Omega$
Signal current max.	$U_{DC} = 12 V$	$\pm 0.6 mA$
	$U_{DC} = 24 V$	$\pm 1.2 mA$
Neutral position switch max. current	$U_{DC} = 12 V$	2 A
	$U_{DC} = 24 V$	1 A
Ambient temperature		- 30 to + 60°C [-22 to 140°F]
Enclosure to IEC 529	Over mounting flange	IP 67
	Under mounting flange with bottom cover 155U2600	IP 65

PVREL must be connected to supply voltage at the same point as PVE.

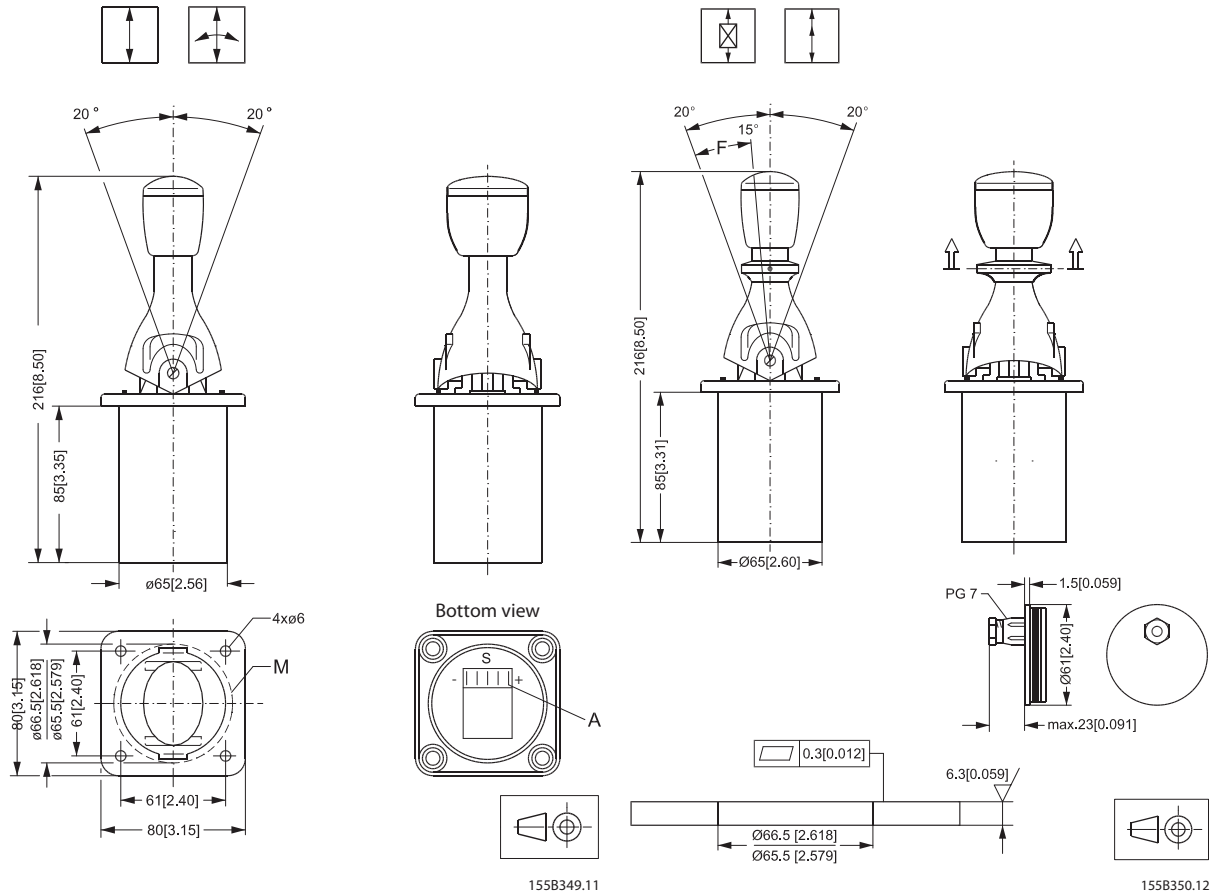
#### Code Numbers and Weight

Functions	Symbol	Code no. without neutral position switch	Code no. with neutral position switch	Weight	
				kg	[lb]
Spring centred	 155B342.10	155U2601	155U2605	0.32	[0.70]
With detent	 155B343.10	155U2602	155U2606	0.32	[0.70]
With neutral position lock	 155B344.10	155U2603	155U2607	0.36	[0.79]
For float position	 155B345.10	155U2604	155U2608	0.36	[0.79]

For installation, all PVREL remote control levers are supplied with O-rings and bolt sets. The bottom cover is not included in the above mentioned code number.

Accessories	Code no.	Weight	
		kg	[lb]
Bottom cover , including PG-screwed connections for IP 65 under the assembly flange	155U2600	0.025	[0.055]

Dimensions



- F : Float position
- A : Socket A 6.3-0.8
- M : Assembly aperture



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