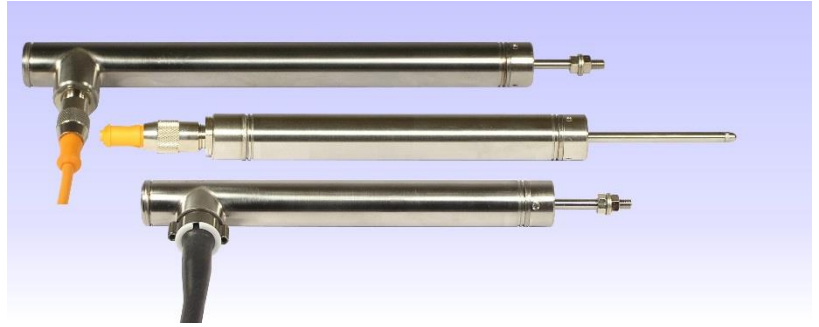


## DCWH Submersible DC to DC LVDT Displacement Transducer

- High accuracy
- High cycle life
- Submersible
- Stainless steel
- Infinite resolution
- Supply  $\pm 12$  to  $\pm 20V$ , Output  $\pm 5V$



These transducers are for displacement / position measurement. They make an accurate position measurement of the movement of the armature (the sliding part) relative to the body of the displacement transducer.

This transducer uses the Linear Variable Differential Transformer (LVDT) principle which means that it is probably the most robust and reliable position sensor type available. The strength of the LVDT sensor's principle is that there is no electrical contact across the transducer position sensing element which for the user of the sensor means clean data, infinite resolution and a very long life.

Our DC to DC LVDT transducer has all of the benefits of the LVDT sensor principle with the added convenience of built-in LVDT electronics enabling a dc supply and dc output.

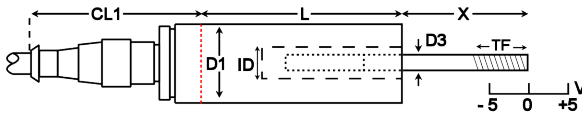
Our submersible displacement transducers are designed to make measurements whilst submerged in suitable liquids. Fluids which are non-magnetic can be allowed to flood the armature tube without affecting the operation of the transducer.

This series of displacement transducer is available as either an unguided, captive or spring return version.

### Unguided version.

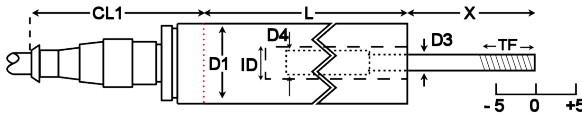
On our DCWH unguided LVDTs the armature assembly is a separate component, to make a measurement the user must guide the armature inside the body without touching the sides. Our DCWH unguided position measurement transducers are appropriate where external guidance is available and give truly non-contact operation

#### DCWH100 to DCWH400



- CL1=62mm
- D1=20.6mm  $\pm 0.12$ mm
- D3=2.0mm
- ID=2.50mm
- TF=M3x0.5, 18mm
- X=Centre of range

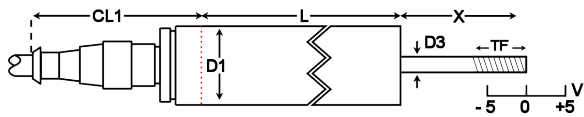
#### DCWH500 to DCWH8000



- CL1=62mm
- D1=20.6mm  $\pm 0.12$ mm
- D3=4.75mm
- D4=5.97mm
- ID=6.80mm
- TF=M5x0.8, 15mm
- X=Centre of range

Type	Range	Linearity error (% F.S.)	L	X (nom)	Total weight	Armature weight	Inward over-travel
DCWH100	$\pm 2.5$ mm	$\pm 0.5/\pm 0.25$	68mm	33mm	125g	1.4g	9.6mm
DCWH200	$\pm 5$ mm	$\pm 0.5/\pm 0.25$	68mm	33mm	125g	1.8g	7.1mm
DCWH300	$\pm 7.5$ mm	$\pm 0.5/\pm 0.25$	68mm	33mm	125g	1.8g	4.6mm
DCWH400	$\pm 10$ mm	$\pm 0.5/\pm 0.25$	68mm	33mm	125g	1.9g	2.1mm
DCWH500	$\pm 12.5$ mm	$\pm 0.5/\pm 0.25/\pm 0.1$	203mm	38mm	243g	19g	10mm
DCWH1000	$\pm 25$ mm	$\pm 0.5/\pm 0.25/\pm 0.1$	231mm	63mm	300g	26g	23mm
DCWH2000	$\pm 50$ mm	$\pm 0.5/\pm 0.25/\pm 0.1$	354mm	76mm	399g	40g	10mm
DCWH3000	$\pm 75$ mm	$\pm 0.5/\pm 0.25/\pm 0.1$	470mm	114mm	527g	57g	23mm
DCWH4000	$\pm 100$ mm	$\pm 0.5/\pm 0.25/\pm 0.1$	503mm	127mm	655g	71g	10mm
DCWH6000	$\pm 150$ mm	$\pm 0.5/\pm 0.25$	707mm	178mm	882g	104g	10mm
DCWH8000	$\pm 200$ mm	$\pm 0.5/\pm 0.25$	909mm	254mm	1.3kg	142g	36mm

## Captive guided version.



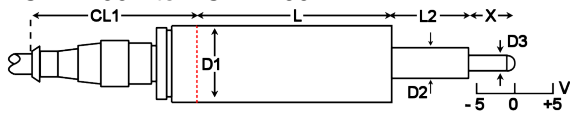
CL1=62mm  
 D1=20.6mm ±0.12mm  
 D3=4.75mm  
 TF=M5x0.8, 15mm  
 X=Centre of range

Our DCWH captive guided displacement transducer has bearings to guide the armature inside the measurement sensor. Our DCWH captive LVDTs are for position measurement applications where guidance may be poor and end bearings may be required.

Type	Range	Linearity error (% F.S.)	L	X (nom)	Total weight	Inward over-travel	Outward over-travel
DCWH500B	±12.5mm	±0.5/±0.25/±0.1	203mm	38mm	370g	10mm	28mm
DCWH1000B	±25mm	±0.5/±0.25/±0.1	231mm	63mm	428g	17mm	25mm
DCWH2000B	±50mm	±0.5/±0.25/±0.1	354mm	76mm	541g	10mm	28mm
DCWH3000B	±75mm	±0.5/±0.25/±0.1	470mm	114mm	655g	23mm	28mm
DCWH4000B	±100mm	±0.5/±0.25/±0.1	503mm	127mm	797g	10mm	28mm
DCWH6000B	±150mm	±0.5/±0.25	707mm	178mm	1.1kg	10mm	35mm
DCWH8000B	±200mm	±0.5/±0.25	909mm	254mm	1.5kg	36mm	41mm
DCWH10000B	±250mm	±0.5/±0.25	1094mm	305mm	1.7kg	36mm	47mm
DCWH15000B	±380mm	±0.5	1493mm	406mm	2.2kg	10mm	28mm
DCWH18500B	±470mm	±0.5	1766mm	508mm	2.6kg	23mm	35mm

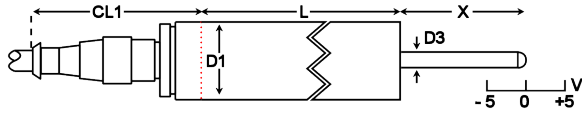
## Spring return version.

DCWH100A to DCWH400A



CL1=62mm  
 D1=20.6mm ±0.12mm  
 D2=8.0mm  
 D3=4mm  
 L2=36mm  
 X=Centre of range

DCWH500A to DCWH3000A



CL1=62mm  
 D1=20.6mm ±0.12mm  
 D3=4.75mm  
 X=Centre of range

Our DCWH spring displacement transducer has bearings to guide the armature inside the measurement sensor and a spring which pushes the armature to the fully out position. Our DCWH spring return LVDTs are appropriate where it is not possible to connect the transducer armature to the moving component being measured.

Type	Range	Linearity error (% F.S.)	L	X (nom)	Total weight	Spring force at X	Spring rate	Inward over-travel	Outward over-travel
DCWH100A	±2.5mm	±0.5/±0.25	68mm	11mm	135g	0.9N	0.9N/cm	2.3mm	1.4mm
DCWH200A	±5mm	±0.5/±0.25	68mm	13mm	136g	0.9N	0.8N/cm	0.3mm	1.4mm
DCWH300A	±7.5mm	±0.5/±0.25	68mm	18mm	137g	1.3N	0.6N/cm	1.5mm	1.4mm
DCWH400A	±10mm	±0.5/±0.25	68mm	22mm	138g	1.7N	0.8N/cm	1.5mm	1.4mm
DCWH500A	±12.5mm	±0.5/±0.25/±0.1	203mm	38mm	257g	1.2N	0.2N/cm	6mm	28mm
DCWH1000A	±25mm	±0.5/±0.25/±0.1	231mm	63mm	314g	1.9N	0.3N/cm	4mm	25mm
DCWH2000A	±50mm	±0.5/±0.25/±0.1	354mm	76mm	428g	4.1N	0.4N/cm	6mm	28mm
DCWH3000A	±75mm	±0.5/±0.25/±0.1	470mm	114mm	541g	5.4N	0.4N/cm	15mm	28mm

## Options And Accessories

Rod-end bearings for captive-guided position transducers



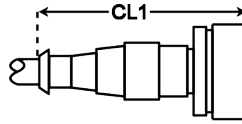
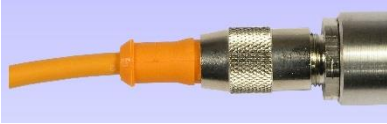
Mounting block



Torque  
 Position  
 Pressure  
 Load Cells  
 Displacement  
 Instrumentation

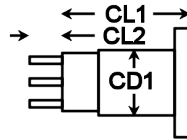
# Electrical termination options

Standard cable - End exit connector with cable fitted



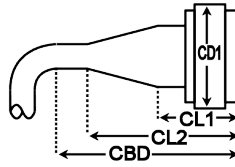
Cable length = 5m  
 Operating temperature range\* = -25°C to 90°C  
 Maximum static pressure\* = 1000kPa  
 CL1 = 62mm

Cable Option 1 - End exit solder pins for customer to fit their own cable



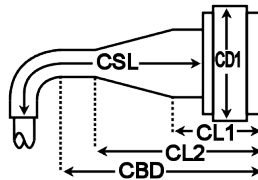
Operating temperature range\* = -40°C to 125°C  
 CL1 = 21mm  
 CL2 = 6.4mm  
 CD1 = 12.7mm

Cable Option 2 - End exit fully sleeved integral cable



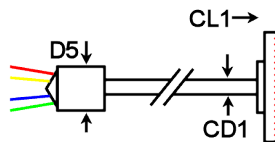
Cable length = 600mm to 7m  
 Operating temperature range\* = -40°C to 100°C  
 Maximum static pressure\* = 3MPa  
 CL1 = 25mm  
 CD1 = 25mm  
 CL2 = 51mm  
 CBD = 184mm

Cable Option 3 - End exit part-sleeved integral cable



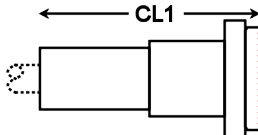
Cable length = 1m to 100m  
 Cable sleeve length = 600mm  
 Operating temperature range\* = -40°C to 90°C  
 Maximum static pressure\* = 2MPa  
 Cable sleeve length = 600mm  
 CL1 = 25mm  
 CL2 = 51mm  
 CD1 = 25mm  
 CBD = 184mm

Cable Option 5 - End exit integral MI (mineral insulated) stainless steel cable



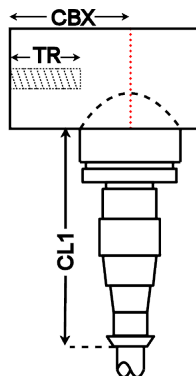
Cable length = 100mm to 70m  
 Operating temperature range\* = -40°C to 200°C  
 Maximum static pressure\* = 21MPa  
 CL1 = 4mm  
 CD1 = 3.0mm  
 D5 = 11.7mm

Cable Option 6 - End exit connector with customer defined cable length fitted



Cable length = 0mm to 1000m  
 Operating temperature range\* = -25°C to 125°C  
 Maximum static pressure\* = 800kPa  
 CL1 = 64mm

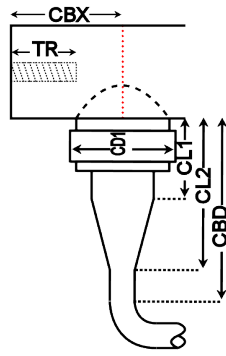
Cable Option 7 - Side exit connector with cable fitted



Cable length = 5m  
 Operating temperature range\* = -25°C to 90°C  
 Maximum static pressure\* = 1000kPa  
 TR = M5x0.8, 11mm  
 CL1 = 64mm  
 CBX = 25mm

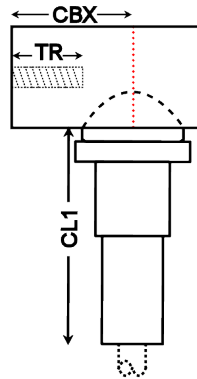
# Electrical termination options

Cable Option 8 - Side exit fully sleeved integral cable



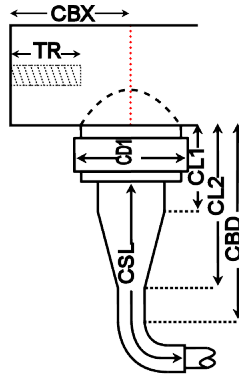
- Cable length = 600mm to 7m
- Operating temperature range\* = -40°C to 100°C
- Maximum static pressure\* = 3MPa
- TR = M5x0.8, 11mm
- CBD = 184mm
- CBX = 25mm
- CD1 = 25mm
- CL1 = 30mm
- CL2 = 55mm

Cable Option 9 - Side exit connector with customer defined cable length fitted



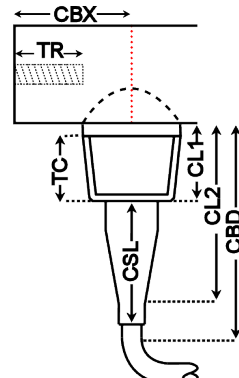
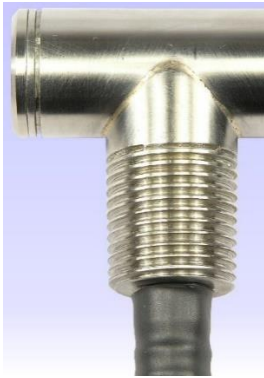
- Cable length = 0mm to 1000m
- Operating temperature range\* = -25°C to 125°C
- Maximum static pressure\* = 800kPa
- TR = M5x0.8, 11mm
- CBX = 25mm
- CL1 = 72mm

Cable Option 10 - Side exit part-sleeved integral cable



- Cable length = 600mm to 1000m
- Cable sleeve length = 150mm
- Operating temperature range\* = -40°C to 90°C
- Maximum static pressure\* = 2MPa
- TR = M5x0.8, 11mm
- CBD = 184mm
- CBX = 25mm
- CD1 = 25mm
- CL1 = 30mm
- CL2 = 55mm

Cable Option 11 - Side exit part-sleeved integral cable and conduit fitting



- Cable length = 1m to 1000m
- Cable sleeve length = 150mm
- Operating temperature range\* = -40°C to 90°C
- Maximum static pressure\* = 2MPa
- TR = M5x0.8, 11mm
- TC = 1/2"-14 NPT, 20mm
- CBD = 184mm
- CBX = 25mm
- CL1 = 25mm
- CL2 = 50mm
- CSL = 150mm

<b>Specification</b> *Transducer and cable option specifications should be compared and the worst figures used	
Supply voltage (dual)	±12V to ±20V
Change in output for change in supply	5mV/V
Supply Current	30mA (typical)
Output	±5V (+0% - 5%)
Output ripple	30mV (peak-to-peak typical)
Analogue output bandwidth	200Hz
Linearity error (Standard)	±0.5% F.S.
Linearity error (Optional on some models)	±0.25% F.S.
Linearity error (Optional on some models)	±0.1% F.S.
Temperature coefficient (span)	±0.03% F.S. /°C (typical)
Operating temperature range	-40°C to 80°C*
Maximum static pressure	21MPa*



Due to our policy of on-going development, DCWH specifications may change without notice. Any modification to our DCWH may affect some or all of the specifications for our equipment. All DCWH dimensions and specifications are nominal.

#### DCWH - WARNING - PERSONAL INJURY

Do not use our DCWH as safety, emergency stop or feedback devices in any application where the failure of this product could result in damage to equipment, personal injury or death.

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 Position  
 Pressure  
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 Displacement  
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