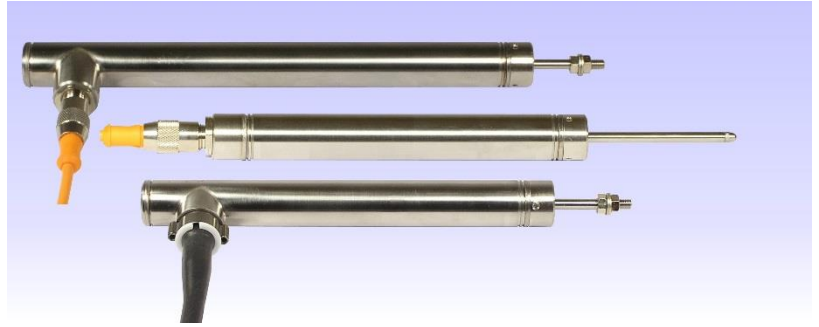


DCWH Submersible DC to DC LVDT Displacement Transducer

- High accuracy
- High cycle life
- Submersible
- Stainless steel
- Infinite resolution
- Supply ± 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.

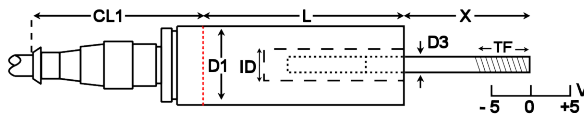
Our submersible displacement transducers are designed to make measurements whilst submerged in suitable liquids. Fluids which are non-magnetic can be allowed to flood the armature tube without affecting the operation of the transducer.

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

Unguided version.

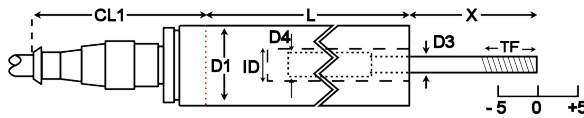
On our DCWH unguided LVDTs the armature assembly is a separate component, to make a measurement the user must guide the armature inside the body without touching the sides. Our DCWH unguided position measurement transducers are appropriate where external guidance is available and give truly non-contact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

DCWH100 to DCWH400



- CL1=62mm
- D1=20.6mm ± 0.12 mm
- D3=2.0mm
- ID=2.54mm
- TF=M3x0.5, 18mm
- X=Centre of range

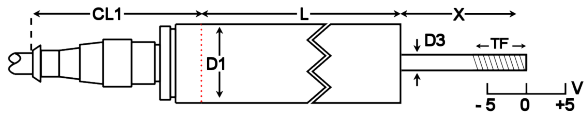
DCWH500 to DCWH8000



- CL1=62mm
- D1=20.6mm ± 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 | ± 2.5 mm | $\pm 0.5/\pm 0.25$ | 68mm | 33mm | 125g | 1.4g | 9.6mm |
| DCWH200 | ± 5 mm | $\pm 0.5/\pm 0.25$ | 68mm | 33mm | 125g | 1.8g | 7.1mm |
| DCWH300 | ± 7.5 mm | $\pm 0.5/\pm 0.25$ | 68mm | 33mm | 125g | 1.8g | 4.6mm |
| DCWH400 | ± 10 mm | $\pm 0.5/\pm 0.25$ | 68mm | 33mm | 125g | 1.9g | 2.1mm |
| DCWH500 | ± 12.5 mm | $\pm 0.5/\pm 0.25/\pm 0.1$ | 203mm | 38mm | 243g | 19g | 10mm |
| DCWH1000 | ± 25 mm | $\pm 0.5/\pm 0.25/\pm 0.1$ | 231mm | 63mm | 300g | 26g | 23mm |
| DCWH2000 | ± 50 mm | $\pm 0.5/\pm 0.25/\pm 0.1$ | 354mm | 76mm | 399g | 40g | 10mm |
| DCWH3000 | ± 75 mm | $\pm 0.5/\pm 0.25/\pm 0.1$ | 470mm | 114mm | 527g | 57g | 23mm |
| DCWH4000 | ± 100 mm | $\pm 0.5/\pm 0.25/\pm 0.1$ | 503mm | 127mm | 655g | 71g | 10mm |
| DCWH6000 | ± 150 mm | $\pm 0.5/\pm 0.25$ | 707mm | 178mm | 882g | 104g | 10mm |
| DCWH8000 | ± 200 mm | $\pm 0.5/\pm 0.25$ | 909mm | 254mm | 1.3kg | 142g | 36mm |

Captive guided version.



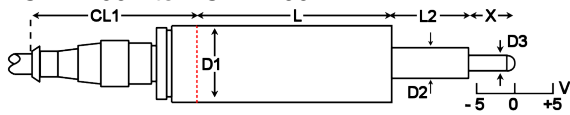
CL1=62mm
 D1=20.6mm ±0.12mm
 D3=4.75mm
 TF=M5x0.8, 15mm
 X=Centre of range

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 |

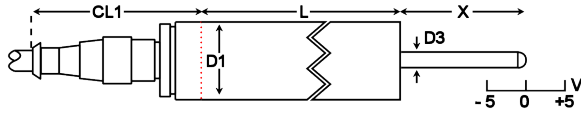
Spring return version.

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.

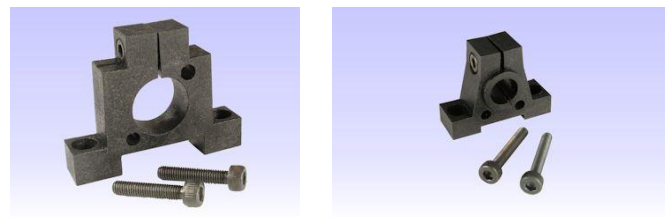
| Type | Range | Linearity error (% F.S.) | L | X (nom) | Total weight | Spring force at X | Spring rate | Inward over-travel | Outward over-travel |
|-----------|---------|--------------------------|-------|---------|--------------|-------------------|-------------|--------------------|---------------------|
| 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



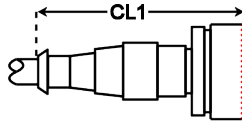
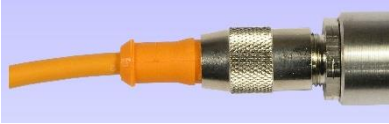
Mounting block



Torque
 Position
 Pressure
 Load Cells
 Displacement
 Instrumentation

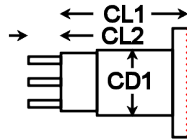
Electrical termination options

Standard cable - End exit connector with cable fitted



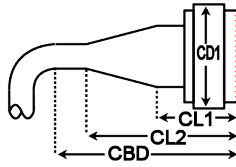
Cable length = 5m
 Operating temperature range* = -25°C to 90°C
 Maximum static pressure* = 1000kPa
 CL1 = 62mm

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



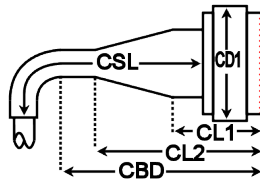
Operating temperature range* = -40°C to 125°C
 CL1 = 21mm
 CL2 = 6.4mm
 CD1 = 12.7mm

Cable Option 2 - End exit fully sleeved integral cable



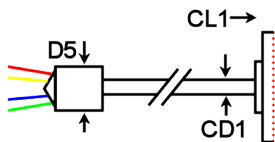
Cable length = 600mm to 7m
 Operating temperature range* = -40°C to 100°C
 Maximum static pressure* = 3MPa
 CL1 = 25mm
 CD1 = 25mm
 CL2 = 51mm
 CBD = 184mm

Cable Option 3 - End exit part-sleeved integral cable



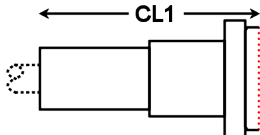
Cable length = 1m to 100m
 Cable sleeve length = 600mm
 Operating temperature range* = -40°C to 90°C
 Maximum static pressure* = 2MPa
 Cable sleeve length = 600mm
 CL1 = 25mm
 CL2 = 51mm
 CD1 = 25mm
 CBD = 184mm

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



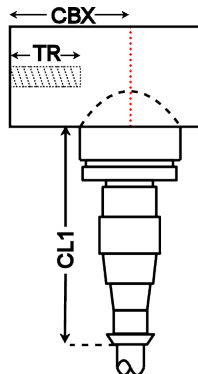
Cable length = 100mm to 70m
 Operating temperature range* = -40°C to 200°C
 Maximum static pressure* = 21MPa
 CL1 = 4mm
 CD1 = 3.0mm
 D5 = 11.7mm

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

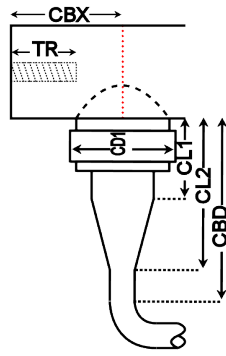
Cable Option 7 - Side exit connector with cable fitted



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

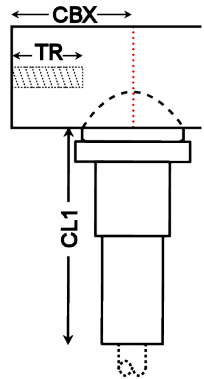
Electrical termination options

Cable Option 8 - Side exit fully sleeved integral cable



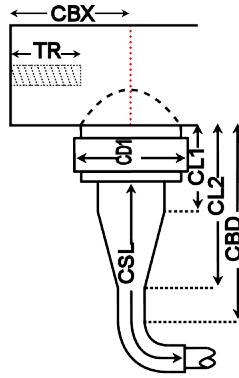
- Cable length = 600mm to 7m
- Operating temperature range* = -40°C to 100°C
- Maximum static pressure* = 3MPa
- TR = M5x0.8, 11mm
- CBD = 184mm
- CBX = 25mm
- CD1 = 25mm
- CL1 = 30mm
- CL2 = 55mm

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



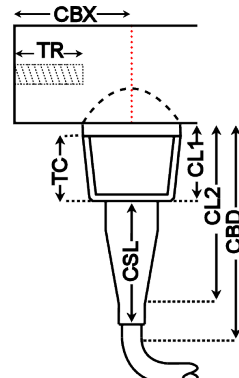
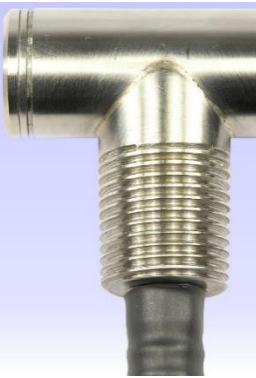
- Cable length = 0mm to 1000m
- Operating temperature range* = -25°C to 125°C
- Maximum static pressure* = 800kPa
- TR = M5x0.8, 11mm
- CBX = 25mm
- CL1 = 72mm

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

| Specification *Transducer and cable option specifications should be compared and the worst figures used | |
|--|-----------------------------|
| Supply voltage (dual) | ±12V to ±18V |
| 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 | -25°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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 Load Cells
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 Instrumentation