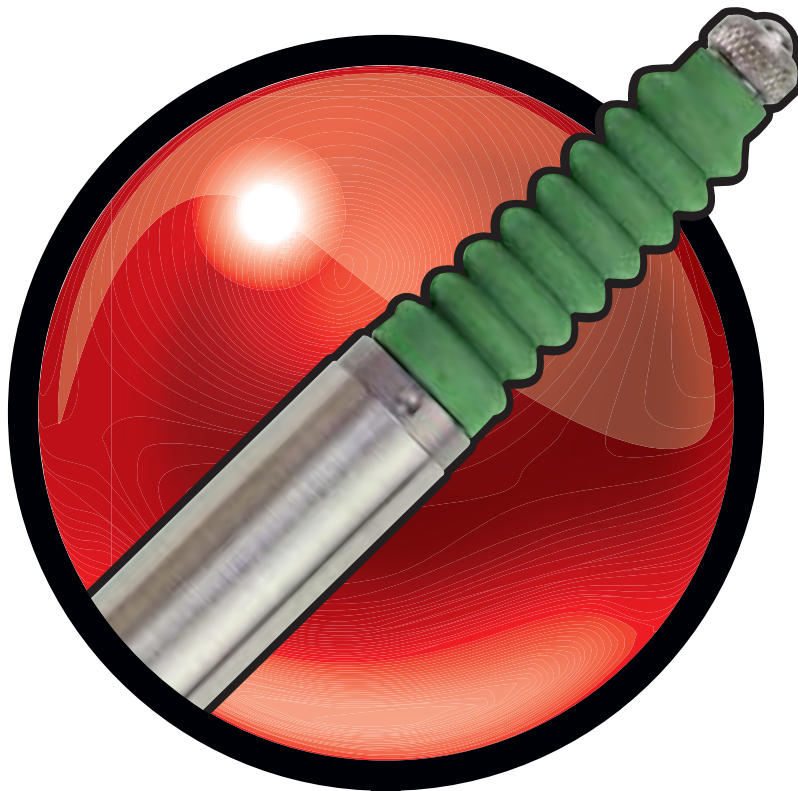


# Gauge probes

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**Solartron is the world's largest manufacturer of 'pencil' style electronic gauging probes.**

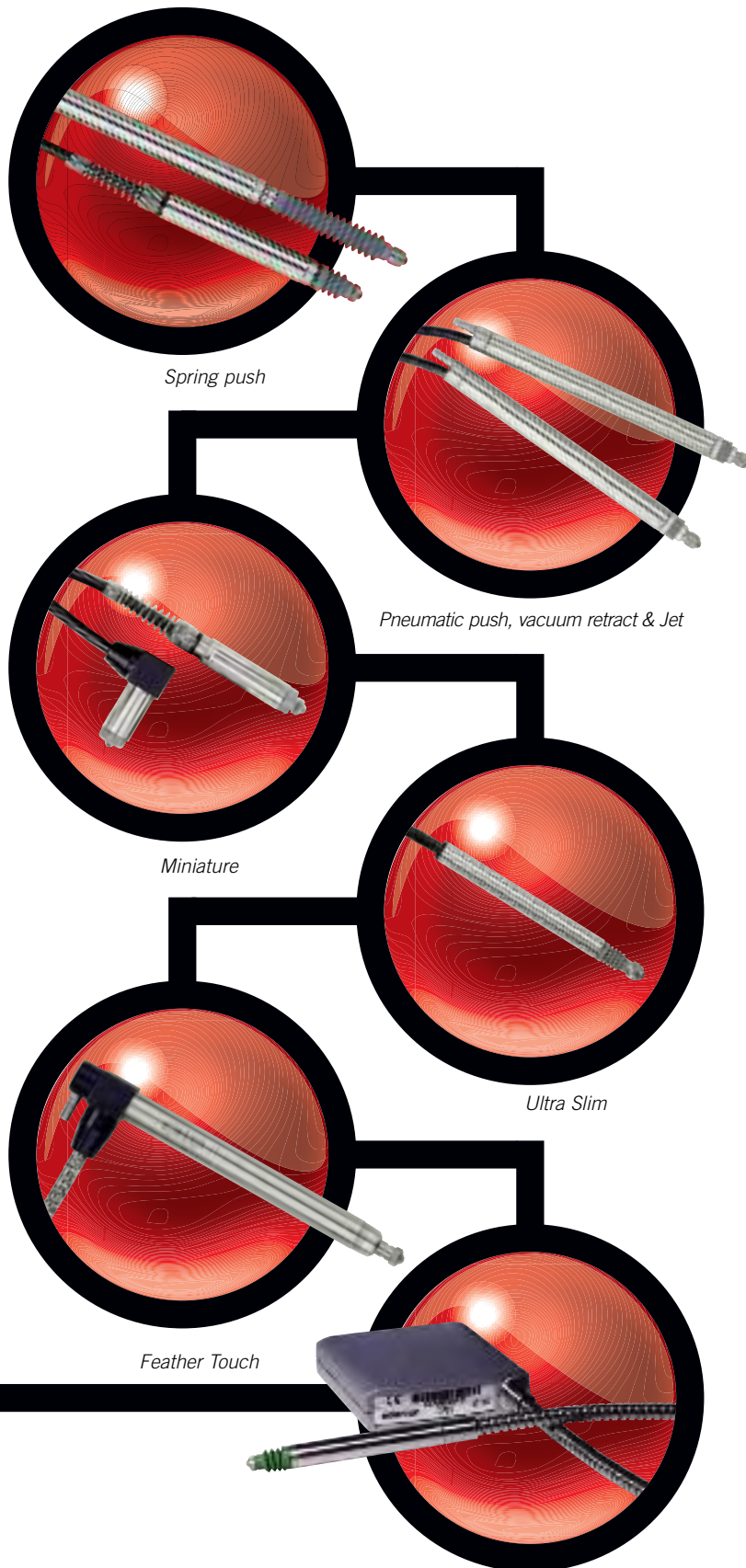
Probes are either spring or pneumatically actuated with Feather Touch (low tip force) variants available.

The extensive range includes Analogue Probes (LVDT & Half Bridge), Digital Probes and probes with integrated electronics.

- > Wide range of measurement ranges; 0.5mm to 20mm
- > Traceability to NPL (National Physical Laboratory, UK)
- > Spring push; standard or with vacuum retract
- > Pneumatic push; standard, Feather Touch and Jet range
- > Spring push with integral DC:DC electronics
- > Special application probes
- > LVDT, Half Bridge or Digital (Orbit Network) interface
- > Tungsten Carbide, Nylon, Ruby or Silicon Nitride tips
- > Accuracy to 0.1% of reading
- > Precision linear bearings



# Finest quality...



## Spring Push, Pneumatic Push or Vacuum Retract (AX & DP)

In a conventional 'pencil' probe the tip pushes outwards under the influence of an internal spring. When installed in a fixture it is frequently required to design a mechanism to bring the probe into contact with the piece part being gauged.

In contrast, pneumatic operation (pneumatic push or vacuum retract) allows the number of moving parts in a fixture to be reduced, resulting in improved reliability and reduced fixture costs. It also enables fast and safe automatic loading of components into a gauge when required. Probe types AX/5/1 and DP/10/2 feature an extended movement of 9 mm before entering the total measurement range of 2 mm.

## Feather Touch Probes (AT & DT)

Feather Touch probes have been designed especially to gauge delicate surfaces such as car windscreens, TV tubes, pharmaceutical bottles, electro-mechanical components and plastic parts. Whereas a traditional probe exerts a tip force of approximately 0.7N, the Feather Touch exerts a mere 0.18N when used in the horizontal position. This reduction is achieved by replacing the naturally elastic traditional gaiter with a close tolerance gland. On pneumatic versions the air leakage through the gland is restricted to less than 2.5 millilitres per second at 1 bar to minimise the possibility of contamination to the surface being gauged. Despite the low volume of air flow the bearing within the probe is constantly purged, avoiding the build up of dust (use of filtered air is recommended).

Replaceable nylon tips are used to guard against surface damage, although, for measuring hot glass, tungsten carbide tips can be fitted. Woven steel braid covering on the cable provides additional protection for applications where down time is critical. For ultimate low force, Feather Touch probes can be supplied without a spring. Forward and return movements are activated by pneumatic/vacuum retract, but adjustment of air pressure allows all probes to have identical tip force, constant over the entire measurement range. If the probe is mounted vertically (tip up), retraction is by the dead weight of the moving parts, eliminating the need for vacuum.

# ...widest choice

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## Special Application Probes

When space is at a premium the extremely compact dimensions of the AX/0.25, DP/0.5, AX/0.5 and DP/1 can be exploited whilst retaining standard 8 mm diameter fixings. Also, when it is required to stack a number of probes close to each other, the A6G/1 and D6P/2 are only 6 mm in diameter, but still incorporate a precision linear ball bearing.

## New Jet range Pneumatic Gauging Probes (AJ & DJ)

With conventional pneumatic transducers, the air pressure is contained within the gaiter. The new Jet range pneumatic gauging transducers are designed so that the gaiter is not pressurised. This has the advantage that gaiter damage will not effect transducer performance, resulting in less down-time and reduced cost of ownership

## Environmental Protection

A6G/1, D6P/2 and the AX and DP series of probes are all fitted with Viton® gaiters to exclude moisture and dust. Viton® is chemically inert and does not degrade when subjected to cutting fluids. Probes in the Feather Touch range (AT, DT series) have glands instead of gaiters, and therefore should only be used in a dry environment.

## Absolute Measurement

All Solartron gauge probes are absolute measuring devices, which means that when switched on they return the correct output, regardless of movements during the off period.

## Multi-dimensional gauging

An LVDT or Half Bridge gauge probe delivers its best performance close to its null point, requiring dedicated fixtures for each size of component being gauged. In contrast, the Digital Probe can be used at any point over its entire measuring range. This permits different sizes of components to be gauged in one fixture

## Customer Specials

Other options are available  
Please contact us with your requirements.

Machined from solid, hardened stainless steel (400 series).

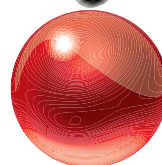
Titanium core carrier: inert and able to withstand lateral shock

Anti rotation device designed to be strong yet give good non repeat with probe tip off centre

All gauging transducer cables feature a polyurethane (PUR) sheath with a foil screen layer for better electrical screening. Improved mechanical properties include reduced 'memory' effect and superior resistance to scuffs and cuts

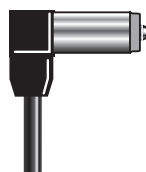
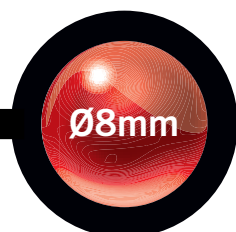
A multi-chambered coil helps improve efficiency by increasing the gain as the core moves along the coil

Tight tolerance cartridge type bearing with carbon/chrome balls provides good non repeat and long life (type tested to over 13 million cycles)





## 20 Specification Spring push



| Product type                                  | Analogue                           |          | Digital | Analogue           |            | Digital  | Analogue           |           | Digital | Analogue           |          | Digital |
|---|------------------------------------|----------|---------|--------------------|------------|----------|--------------------|-----------|---------|--------------------|----------|---------|
|   | LVDT                               | H/B      |         | LVDT               | H/B        |          | LVDT               | H/B       |         | LVDT               | H/B      |         |
| Axial cable outlet: Standard Spring           | A6G/1/S                            | A6G/1/SH | D6P/2/S | AX/0.25/S          | AX/0.25/SH | DP/0.5/S | AX/0.5/S           | AX/0.5/SH | DP/1/S  | AX/1/S             | AX/1/SH  | DP/2/S  |
| Feather Touch                                 | -                                  | -        | -       | -                  | -          | -        | -                  | -         | -       | AT/1/S             | AT/1/SH  | DT/2/S  |
| Vacuum  | -                                  | -        | -       | -                  | -          | -        | -                  | -         | -       | AX/1/V             | AX/1/VH  | -       |
| Radial cable outlet: Standard Spring          | -                                  | -        | -       | -                  | -          | -        | -                  | -         | -       | AXR/1/S            | AXR/1/SH | -       |
| Feather Touch                                 | -                                  | -        | -       | -                  | -          | -        | -                  | -         | -       | ATR/1/S            | ATR/1/SH | DTR/2/S |
| Measurement                                   |                                    |          |         |                    |            |          |                    |           |         |                    |          |         |
| Measurement Range (mm)                        | ±1                                 |          | 2       | ±0.25              |            | 0.5      | ±0.5               |           | 1       | ±1                 |          | 2       |
| Accuracy <sup>1</sup> (% of reading or µm)    | 0.5, 1µm                           |          | 0.1     | 0.5, 0.5µm         |            | 0.1      | 0.5, 1µm           |           | 0.1     | 0.5, 1µm           |          | 0.1     |
| Resolution                                    | Analogue: Dependent on electronics |          |         |                    |            |          |                    |           |         |                    |          |         |
| Repeatability (µm)                            | 0.15                               |          |         | 0.1                |            |          | 0.15               |           |         | 0.15               |          |         |
| Pre-travel (mm)                               | 0.15                               |          |         | 0.03               |            |          | 0.15               |           |         | 0.15               |          |         |
| Post-travel (mm)                              | 0.35                               |          |         | 0.05               |            |          | 0.35               |           |         | 0.35               |          |         |
| Pre-travel Adjustment range (mm)              | None                               |          |         | None               |            |          | 0.5                |           | None    | 1                  |          | None    |
| Tip Force: Standard/Vacuum ±20% (N)           | 0.7 @ mid position                 |          |         | 0.7 @ mid position |            |          | 0.7 @ mid position |           |         | 0.7 @ mid position |          |         |
| Tip Force: Feather Touch ±20% (N)             | 0.3 @ mid position                 |          |         | 0.3 @ mid position |            |          | 0.3 @ mid position |           |         | 0.3 @ mid position |          |         |
| Temperature Coefficient %FS/°C                | 0.02                               |          |         | 0.03               |            |          | 0.03               |           |         | 0.01               |          |         |
| Mechanical                                    |                                    |          |         |                    |            |          |                    |           |         |                    |          |         |
| Body Diameter (mm)                            | 6h6                                |          |         | 8h6                |            |          | 8h6                |           |         | 8h6                |          |         |
| Electrical Interface (Plugged) <sup>2</sup>   |                                    |          |         |                    |            |          |                    |           |         |                    |          |         |
| Sensitivity (mV/V/mm ±5%)                     | 200                                | 73.5     | -       | 200                | 73.5       | -        | 200                | 73.5      | -       | 200                | 73.5     | -       |
| Energising Current (mA/V±5%)                  | 3                                  | 1.2      | -       | 2.2                | 1.2        | -        | 2.2                | 1.2       | -       | 1.8                | 1        | -       |
| Electrical Interface (Unplugged) <sup>2</sup> |                                    |          |         |                    |            |          |                    |           |         |                    |          |         |
| Sensitivity (mV/V/mm ±5%)                     | 269                                | 88       | -       | 262                | 82         | -        | 262                | 82        | -       | 210                | 83       | -       |

### Materials

|                       |                            |
|-----------------------|----------------------------|
| Case:                 | Stainless Steel            |
| Tip:                  | Nylon or Tungsten Carbide* |
| Gaiter <sup>3</sup> : | Viton®                     |
| Cable <sup>4</sup> :  | PUR                        |

\*Other options available

### Environmental (Probe Head Only)

|  |             |
|--|-------------|
| Storage Temp (°C):                               | -40 to +100 |
| Operating Temp <sup>6</sup> with gaiter (°C):    | +5 to +80   |
| Operating Temp <sup>6</sup> without gaiter (°C): | -10 to +80  |
| IP rating:                                       | IP65        |






IP rating not applicable to Feather Touch

### Operating Pressure Range

Vacuum operation: 0 to 0.27 Bar absolute

### Digital Probe Interface Electronics<sup>5</sup>

|                      |  |
|----------------------|--|
| Reading Rate:        | Up to 3906 readings/second   |
| Bandwidth:           | Up to 460Hz dependent on noise performance required                |
| Output:              | Serial communication-RS485 signal level (Solartron Orbit Protocol) |
| Power:               | 5 ±0.25 VDC @ 0.06A (includes power for probe)                     |
| Storage Temp (°C):   | -20 to +70   |
| Operating Temp (°C): | 0 to +60   |
| IP Rating:           | IP43   |

|  |          |          |  |            |         |  |                    |         |  |                    |          |  |                    |          |  |
|---|----------|----------|---|------------|---------|---|--------------------|---------|---|--------------------|----------|---|--------------------|----------|--|
| Analogue  |          | Digital  | Analogue  |            | Digital | Analogue  |                    | Digital | Analogue  |                    | Digital  | Analogue  |                    | Digital  |  |
| LVDT  | H/B      |          | LVDT  | H/B        |         | LVDT  | H/B                |         | LVDT  | H/B                |          | LVDT  | H/B                |          |  |
| AX5/1/S   | AX5/1/SH | DP10/2/S | AX/1.5/S  | AX/1.5/SH  | -       | AX/2.5/S  | AX/2.5/SH          | DP/5/S  | AX/5/S  | AX/5/SH            | DP/10/S  | AX/10/S   | AX/10/SH           | DP/20/S  |  |
| -   | -        | -        | AT/1.5/S  | AT/1.5/SH  | -       | AT/2.5/S  | AT/2.5/SH          | DT/5/S  | AT/5/S  | AT/5/SH            | DT/10/S  | AT/10/S   | AT/10/SH           | DT/20/S  |  |
| -   | -        | -        | AX/1.5V   | AX/1.5VH   | -       | AX/2.5V   | AX/2.5VH           | -       | AX/5V   | AX/5VH             | -        | AX/10V  | AX/10VH            | -        |  |
| -   | -        | -        | -   | -          | -       | -   | -                  | -       | -   | -                  | -        | -   | -                  | -        |  |
| -   | -        | -        | ATR/1.5/S   | ATR/1.5/SH | -       | ATR/2.5/S   | ATR/2.5/SH         | DTR/5/S | ATR/5/S   | ATR/5/SH           | DTR/10/S | ATR/10/S  | ATR/10/SH          | DTR/20/S |  |
|   |          |          |   |            |         |   |                    |         |   |                    |          |   |                    |          |  |
| ±1  |          | 2        | ±1.5  |            | -       | ±2.5  |                    | 5       | ±5  |                    | 10       | ±10   |                    | 20       |  |
| 0.5, 1µm  |          | 0.1      | 0.5, 1.5µm  |            | -       | 0.5, 2.5µm  |                    | 0.2     | 0.5, 5µm  |                    | 0.2      | 0.7, 10µm   |                    | 0.2      |  |
| Digital: User selectable to <0.1µm  |          |          |   |            |         |   |                    |         |   |                    |          |   |                    |          |  |
| 0.15  |          |          | 0.15  |            |         | -   | 0.15               |         |   | 0.15               |          |   | 0.15               |          |  |
| 0.15  |          |          | 0.15  |            |         | -   | 0.15               |         |   | 0.15               |          |   | 0.15               |          |  |
| 0.85  |          |          | 0.85  |            |         | -   | 0.85               |         |   | 0.85               |          |   | 0.85               |          |  |
| None  |          |          | 1.5   |            |         | -   | 1.5                |         | None  | 1.5                |          | None  | None               |          |  |
| 0.7 @ mid position  |          |          | 0.7 @ mid position  |            |         | -   | 0.7 @ mid position |         |   | 0.7 @ mid position |          |   | 0.7 @ mid position |          |  |
| 0.3 @ mid position  |          |          | 0.3 @ mid position  |            |         | -   | 0.3 @ mid position |         |   | 0.3 @ mid position |          |   | 0.3 @ mid position |          |  |
| 0.01  |          |          | 0.01  |            |         | -   | 0.01               |         |   | 0.01               |          |   | 0.01               |          |  |
|   |          |          |   |            |         |   |                    |         |   |                    |          |   |                    |          |  |
| 8h6   |          |          | 8h6   |            |         | -   | 8h6                |         |   | 8h6                |          |   | 8h6                |          |  |
|   |          |          |   |            |         |   |                    |         |   |                    |          |   |                    |          |  |
| 200   | 73.5     | -        | 133   | 49         | -       | 80  | 29.4               | -       | 40  | 14.7               | -        | 20  | 7.35               | -        |  |
| 1.8   | 1        | -        | 2   | 1          | -       | 2   | 1                  | -       | 2   | 1.2                | -        | 1   | 1.2                | -        |  |
|   |          |          |   |            |         |   |                    |         |   |                    |          |   |                    |          |  |
| 210   | 83       | -        | 150   | 82         | -       | 150   | 82                 | -       | 105   | 51                 | -        | 33  | 33                 | -        |  |

**1 Probe Accuracy**

The accuracy of the LVDT and Half Bridge probes is quoted as % of reading or µm, whichever is greater.

The accuracy of the Digital Probe range is quoted as [(resolution) + (accuracy %)] x D] where D is the distance from the setting master.

(Please refer to the Glossary for definitions)

**2 LVDT and Half Bridge Probe Performance**

Accuracy, sensitivity and energising current are valid for the following calibration conditions: LVDT probes calibrated at 3 V, 5 kHz frequency into a 10 kΩ load or 100 kΩ for the unplugged versions. Half Bridge probes calibrated at 3 V, 10 kHz frequency into a 2 kΩ load or 1 kΩ for the unplugged versions. The probes will operate with energising voltages in the range 1 V to 10 V and with frequencies in the range 2 kHz to 20 kHz but the performance is not specified.

**3 Viton** is a trademark of DuPont Dow Elastomers.

**4 Cables**

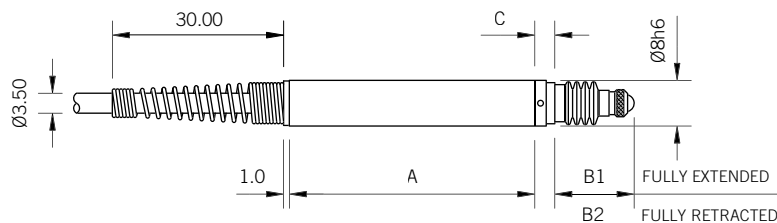
All probes are supplied with 2 m of PUR cable as standard. Other lengths and options such as nylon braided, metal braided and armoured are available on request.

**5 Digital Probe Termination**

Digital Probes are terminated with Solartron's Probe Interface Electronics (PIE) module. Please refer to the Orbit Network for details on this module and methods of integration for Digital Probes.

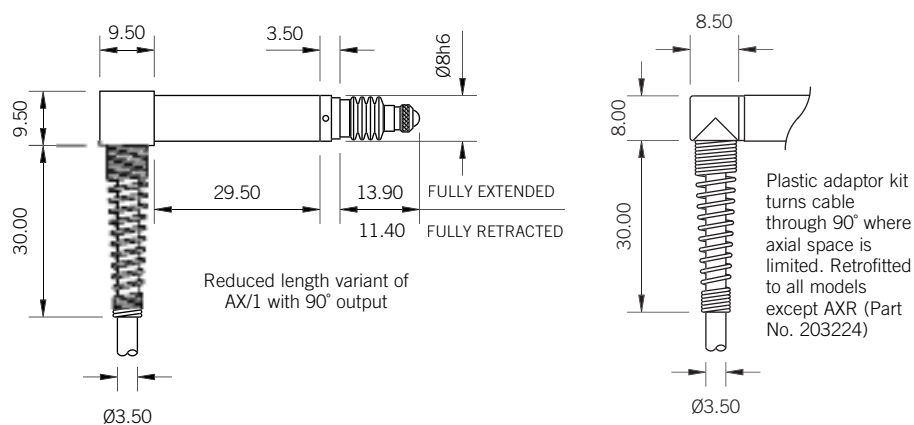
**6 Below 0°C** environment must be dry

### Standard Spring Push (AX/S and DP/S)

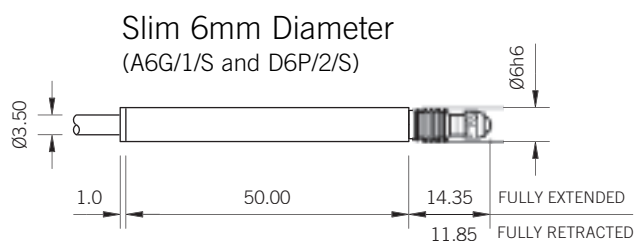
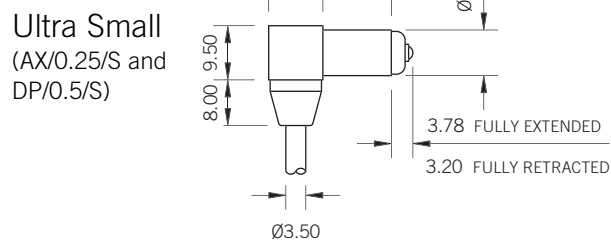
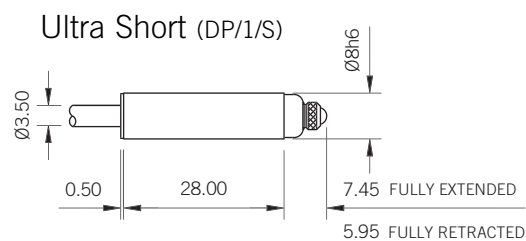
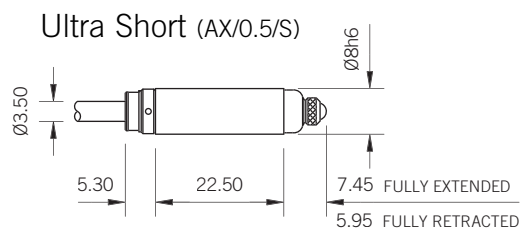


|           | AX/1/S | DP/2/S | AX/1.5/S | AX5/1/S  | AX/2.5/S | DP/5/S | AX/5/S | DP/10/S | AX/10/S |
|-----------|--------|--------|----------|----------|----------|--------|--------|---------|---------|
|           |        |        |          | DP10/2/S |          |        |        |         | DP/20/S |
| <b>A</b>  | 43.00  | 46.00  | 58.00    | 75.00    | 63.00    | 65.00  | 87.00  | 89.00   | 127.00  |
| <b>C</b>  | 3.5    | 2.00   | 4.00     | 4.00     | 4.00     | 2.00   | 4.00   | 2.00    | 3.00    |
| <b>B1</b> | 13.9   | 13.9   | 15.40    | 25.40    | 17.40    | 17.40  | 25.40  | 25.40   | 44.90   |
| <b>B2</b> | 11.4   | 10.9   | 11.40    | 14.40    | 11.40    | 11.40  | 14.40  | 14.40   | 23.90   |

### Right Angle Spring Push (AXR and DPR)

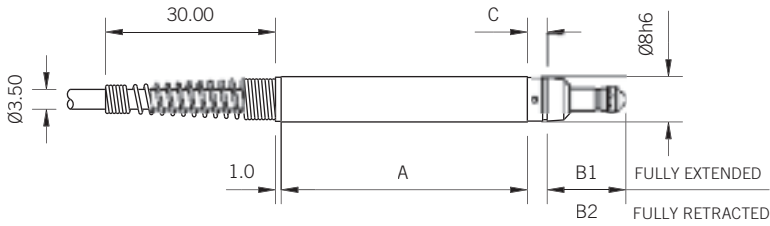


### Special Spring Push Probes



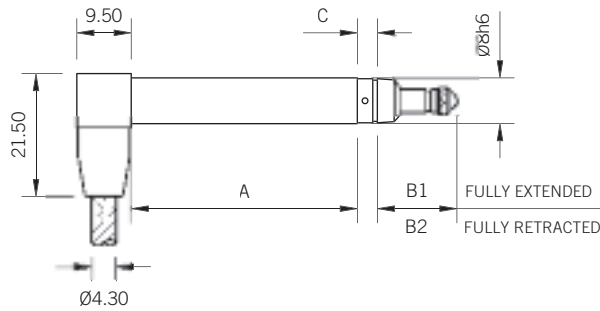


## Feather Touch Spring Push (AT/S and DT/S)



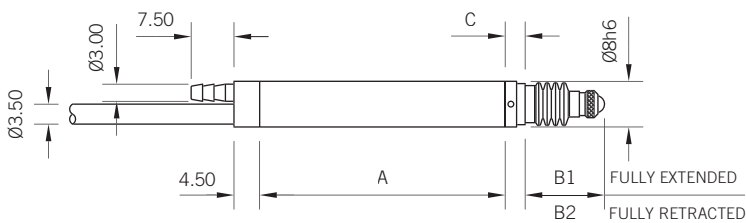
|           | AT/1/S | DT/2/S | AT/1.5/S | AT/2.5/S | DT/5/S | AT/5/S | DT/10/S | AT/10/S |
|-----------|--------|--------|----------|----------|--------|--------|---------|---------|
|           |        |        |          |          |        |        |         | DT/20/S |
| <b>A</b>  | 43.00  | 46.00  | 58.00    | 63.00    | 65.00  | 87.00  | 89.00   | 127.00  |
| <b>C</b>  | 3.50   | 2.00   | 4.00     | 4.00     | 2.00   | 4.00   | 2.00    | 3.00    |
| <b>B1</b> | 13.90  | 13.90  | 15.40    | 17.40    | 17.40  | 25.40  | 25.40   | 33.90   |
| <b>B2</b> | 11.40  | 10.90  | 11.40    | 11.40    | 11.40  | 14.40  | 14.40   | 12.90   |

## Right Angle Feather Touch Spring Push with braided cable (ATR/S and DTR/S)



|           | ATR/1/S | DTR/2/S | ATR/1.5/S | ATR/2.5/S | DTR/5/S | ATR/5/S | DTR/10/S | ATR/10/S |
|-----------|---------|---------|-----------|-----------|---------|---------|----------|----------|
|           |         |         |           |           |         |         |          | DTR/20/S |
| <b>A</b>  | 29.50   | 33.50   | 44.50     | 49.50     | 52.50   | 73.50   | 76.50    | 113.50   |
| <b>C</b>  | 3.50    | 2.00    | 4.00      | 4.00      | 2.00    | 4.00    | 2.00     | 3.00     |
| <b>B1</b> | 13.90   | 13.90   | 15.40     | 17.40     | 17.40   | 25.40   | 25.40    | 33.90    |
| <b>B2</b> | 11.40   | 10.90   | 11.40     | 11.40     | 11.40   | 14.40   | 14.40    | 12.90    |

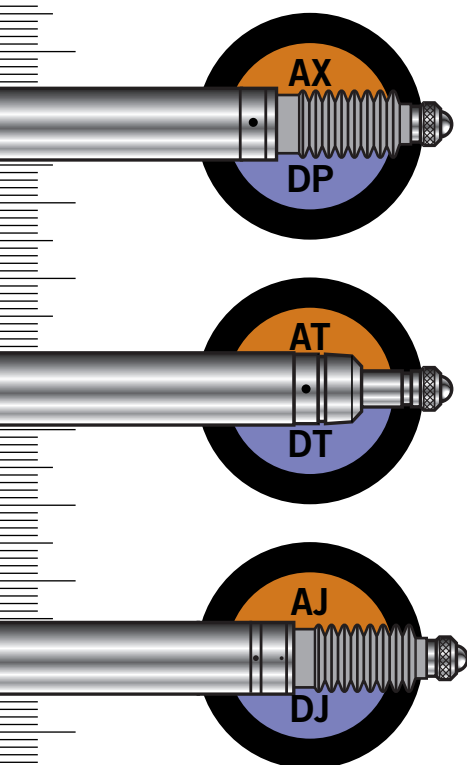
## Vacuum Retract (AX/V and DP/V)



|           | AX/1/V | DP/2/V | AX/5/1/V | AX/1.5/V | AX/2.5/V | DP/5/V | AX/5/V | DP/10/V | AX/10/V |
|-----------|--------|--------|----------|----------|----------|--------|--------|---------|---------|
|           |        |        |          |          |          |        |        |         | DP/20/V |
| <b>A</b>  | 43.00  | 46.00  | 84.00    | 58.00    | 63.00    | 65.00  | 87.00  | 96.00   | 127.00  |
| <b>C</b>  | 3.50   | 2.00   | 4.00     | 4.00     | 4.00     | 2.00   | 4.00   | 2.00    | 3.00    |
| <b>B1</b> | 13.90  | 13.90  | 25.40    | 15.40    | 17.40    | 17.40  | 25.40  | 25.40   | 44.90   |
| <b>B2</b> | 11.40  | 11.40  | 14.40    | 11.40    | 11.40    | 11.40  | 14.40  | 14.40   | 23.90   |



## 24 Specification Pneumatic push



| Product type                                  |                    | Analogue                           |          | Digital | Analogue                    |          | Digital  |
|---|--------------------|------------------------------------|----------|---------|-----------------------------|----------|----------|
|   |                    | LVDT                               | H/B      |         | LVDT                        | H/B      |          |
| Axial cable outlet:                           | Standard Pneumatic | AX/1/P                             | AX/1/PH  | DP/2/P  | AX5/1/P                     | AX5/1/PH | DP10/2/P |
|   | Jet Pneumatic      | AJ/1/P                             | AJ/1/PH  | DJ/2/P  | AJ5/1/P                     | AJ5/1/PH | DJ10/2/P |
|   | Feather Touch      | AT/1/P                             | AT/1/PH  | DT/2/P  | -                           | -        | -        |
| Radial cable outlet:                          | Feather Touch      | ATR/1/P                            | ATR/1/PH | DTR/2/P | -                           | -        | -        |
| Measurement                                   |                    |                                    |          |         |                             |          |          |
| Measurement Range (mm)                        |                    | ±1                                 |          | 2       | ±1                          |          | 2        |
| Accuracy <sup>1</sup> (% of reading or µm)    |                    | 0.5, 1µm                           |          | 0.1     | 0.5, 1µm                    |          | 0.1      |
| Resolution                                    |                    | Analogue: Dependent on electronics |          |         |                             |          |          |
| Repeatability (µm)                            |                    | 0.15                               |          |         | 0.15                        |          |          |
| Pre-travel (mm)                               |                    | 0.3                                |          | 0.15    | 0.3                         |          | 0.15     |
| Post-travel (mm)                              |                    | 0.7                                |          | 0.85    | 8.7                         |          | 8.85     |
| Tip Force: Standard Vacuum ±20% (N)           |                    | 0.8 @ 0.4 Bar, 2.8 @ 1 Bar         |          |         | 0.8 @ 0.4 Bar, 2.8 @ 1 Bar  |          |          |
| Tip Force: Feather Touch ±30% (N)*            |                    | 0.18 @ 0.3 Bar, 1.1 @ 1 Bar        |          |         | 0.18 @ 0.3 Bar, 1.1 @ 1 Bar |          |          |
| Tip Force: Jet ±20% (N)                       |                    | 0.85 @ 1 Bar                       |          |         | 0.85 @ 1 Bar                |          |          |
| Temperature Coefficient %FS/°C*               |                    | 0.01                               |          |         | 0.01                        |          |          |
| Mechanical                                    |                    |                                    |          |         |                             |          |          |
| Body Diameter (mm)                            |                    | 8h6                                |          |         | 8h6                         |          |          |
| Electrical Interface (Plugged) <sup>2</sup>   |                    |                                    |          |         |                             |          |          |
| Sensitivity (mV/V/mm ±5%)                     |                    | 200                                | 73.5     | -       | 200                         | 73.5     | -        |
| Energising Current (mA/V ±5%)                 |                    | 1.8                                | 1        | -       | 1.8                         | 1        | -        |
| Electrical Interface (Unplugged) <sup>2</sup> |                    |                                    |          |         |                             |          |          |
| Sensitivity (mV/V/mm ±5%)                     |                    | 210                                | 83       | -       | 210                         | 83       | -        |

\*(at mid position)




| Materials             |                            |
|-----------------------|----------------------------|
| Case:                 | Stainless Steel            |
| Tip:                  | Nylon or Tungsten Carbide* |
| Gaiter <sup>3</sup> : | Viton®                     |
| Cable <sup>4</sup> :  | PUR                        |

\*Other options available

| Environmental (Probe Head Only)                  |             |
|--|-------------|
| Storage Temp (°C):                               | -40 to +100 |
| Operating Temp <sup>6</sup> with gaiter (°C):    | +5 to +80   |
| Operating Temp <sup>6</sup> without gaiter (°C): | -10 to +80  |
| IP rating:                                       | IP65        |

IP rating not applicable to Feather Touch or Jet



|  |                                     |                            |  |                               |                               |  |                           |                         |
|---|-------------------------------------|----------------------------|---|-------------------------------|-------------------------------|--|---------------------------|-------------------------|
| Analogue  |                                     | Digital                    | Analogue  |                               | Digital                       | Analogue   |                           | Digital                 |
| LVDT  | H/B                                 |                            | LVDT  | H/B                           |                               | LVDT   | H/B                       |                         |
| AX/2.5/P<br>AJ/2.5/P<br>AT/2.5/P  | AX/2.5/PH<br>AJ/2.5/PH<br>AT/2.5/PH | DP/5/P<br>DJ/5/P<br>DT/5/P | AX/5/P<br>AJ/5/P<br>AT/5/P  | AX/5/PH<br>AJ/5/PH<br>AT/5/PH | DP/10/P<br>DJ/10/P<br>DT/10/P | AX/10/P<br>-<br>AT/10/P  | AX/10/PH<br>-<br>AT/10/PH | DP/20/P<br>-<br>DT/20/P |
| ATR/2.5/P   | ATR/2.5/PH                          | DTR/5/P                    | ATR/5/P   | ATR/5/PH                      | DTR/10/P                      | ATR/10/P   | ATR/10/PH                 | DTR/20/P                |
|   |                                     |                            |   |                               |                               |  |                           |                         |
| ±2.5  |                                     | 5                          | ±5  |                               | 10                            | ±10  |                           | 20                      |
| 0.5, 2.5µm  |                                     | 0.2                        | 0.5, 5µm  |                               | 0.2                           | 0.7, 10µm  |                           | 0.2                     |
| Digital: User selectable to <0.1µm  |                                     |                            |   |                               |                               |  |                           |                         |
| 0.15  |                                     |                            | 0.15  |                               |                               | 0.15   |                           |                         |
| 0.3   |                                     | 0.15                       | 0.3   |                               | 0.15                          | 0.3  |                           | 0.15                    |
| 0.7   |                                     | 0.85                       | 0.7   |                               | 0.85                          | 0.7  |                           | 0.85                    |
| 0.85 @ 0.4 Bar, 2.5 @ 1 Bar   |                                     |                            | 0.70 @ 0.4 Bar, 2.5 @ 1 Bar   |                               |                               | 0.70 @ 0.4 Bar, 2.5 @ 1 Bar  |                           |                         |
| 0.18 @ 0.3 Bar, 1.1 @ 1 Bar   |                                     |                            | 0.18 @ 0.3 Bar, 1.1 @ 1 Bar   |                               |                               | 0.18 @ 0.3 Bar, 1.1 @ 1 Bar  |                           |                         |
| 0.85 @ 1 Bar  |                                     |                            | 0.85 @ 1 Bar  |                               |                               | 0.85 @ 1 Bar   |                           |                         |
| 0.01  |                                     |                            | 0.01  |                               |                               | 0.01   |                           |                         |
|   |                                     |                            |   |                               |                               |  |                           |                         |
| 8h6   |                                     |                            | 8h6   |                               |                               | 8h6  |                           |                         |
|   |                                     |                            |   |                               |                               |  |                           |                         |
| 80  | 29.4                                | -                          | 40  | 14.5                          | -                             | 20   | 7.35                      | -                       |
| 2   | 1                                   | -                          | 1   | 1.2                           | -                             | 0.6  | 1.2                       | -                       |
|   |                                     |                            |   |                               |                               |  |                           |                         |
| 150   | 82                                  | -                          | 105   | 51                            | -                             | 33   | 33                        | -                       |

**Operating Pressure Range**

|                |                       |
|----------------|-----------------------|
| Standard:      | 0.4 to 1 Bar relative |
| Feather Touch: | 0.3 to 2 Bar relative |
| Jet:           | 0.6 to 2 Bar relative |

Pneumatic actuation: For continual reliable operation and to maximise working life, the air supply should be clean and dry, 60% maximum relative humidity, filtered to better than 5µm particle size.

**Digital Probe Interface Electronics<sup>5</sup>**

|                      |  |
|----------------------|--|
| Reading Rate:        | Up to 3906 readings/second   |
| Bandwidth:           | Up to 460Hz dependent on noise performance required                |
| Output:              | Serial communication-RS485 signal level (Solartron Orbit Protocol) |
| Power:               | 5 ±0.25 VDC @ 0.06A (includes power for probe)                     |
| Storage Temp (°C):   | -20 to +70   |
| Operating Temp (°C): | 0 to +60   |
| IP Rating:           | IP43   |

**1 Probe Accuracy**

The accuracy of the LVDT and Half Bridge probes is quoted as % of reading or µm, which ever is greater. The accuracy of the Digital Probe range is quoted as [(resolution) + (accuracy %) x D] where D is the distance from the setting master.

(Please refer to the Glossary for definitions)

**2 LVDT and Half Bridge Probe Performance**

Accuracy, sensitivity and energising current are valid for the following calibration conditions: LVDT probes calibrated at 3 V, 5 kHz frequency into a 10 kΩ load or 100 kΩ for the unplugged versions. Half Bridge probes calibrated at 3 V, 10 kHz frequency into a 2 kΩ load or 1 kΩ for the unplugged versions. The probes will operate with energising voltages in the range 1 V to 10 V and with frequencies in the range 2 kHz to 20 kHz but the performance is not specified.

**3 Viton** is a trademark of DuPont Dow Elastomers.

**4 Cables**

All probes are supplied with 2 m of PUR cable as standard. Other lengths and options such as nylon braided, metal braided and armoured are available on request.

**5 Digital Probe Termination**

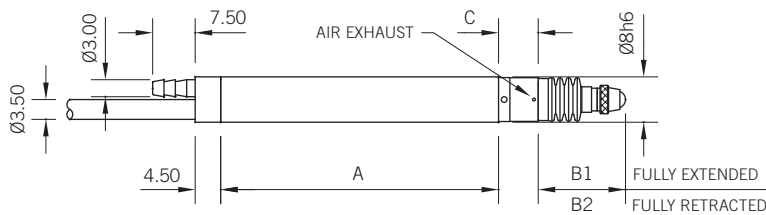
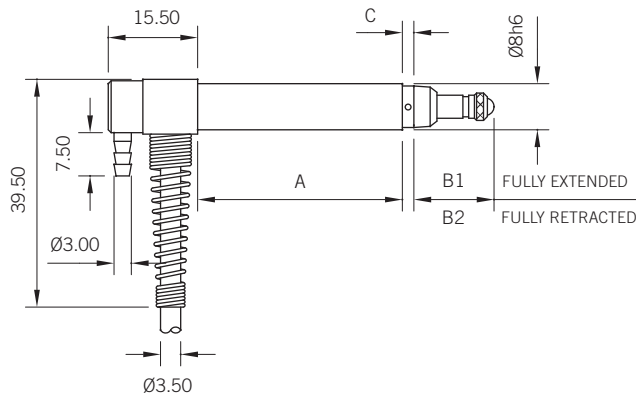
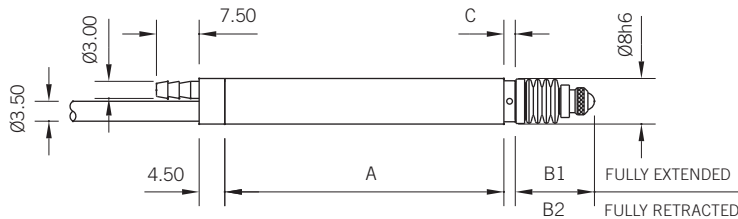
Digital Probes are terminated with Solartron's Probe Interface Electronics (PIE) module. Please refer to the Orbit Network for details on this module and methods of integration for Digital Probes.

**6 Below 0°C** environment must be dry

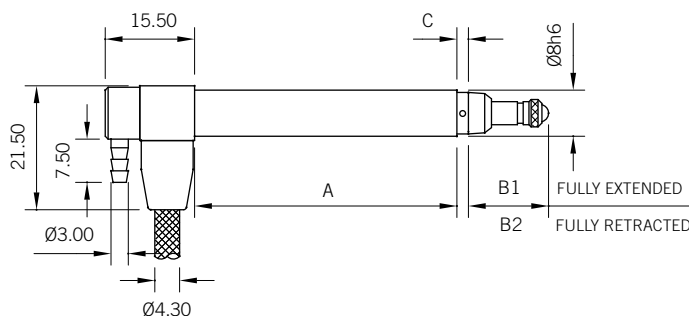
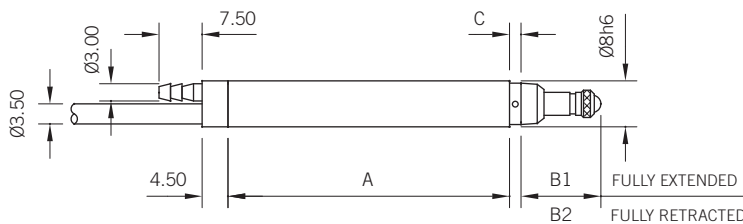


## Dimensions (mm) Pneumatic push

26



During mounting, care must be taken not to clamp over the air exhaust



### Pneumatic Push

(AX/P and DP/P)

|           | AX/1/P | AX5/1/P | DP/2/P | AX/2.5/P | AX/5/P  | AX/10/P |
|-----------|--------|---------|--------|----------|---------|---------|
|           |        | DP/2/PE |        | DP/5/S   | DP/10/P | DP/20/P |
| <b>A</b>  | 49.00  | 84.00   | 52.00  | 71.00    | 96.00   | 127.00  |
| <b>C</b>  | 2.00   | 2.00    | 2.00   | 2.00     | 2.00    | 3.00    |
| <b>B1</b> | 13.90  | 25.40   | 13.90  | 17.40    | 25.40   | 44.90   |
| <b>B2</b> | 10.90  | 14.40   | 10.90  | 11.40    | 14.40   | 23.90   |

### Right Angled Pneumatic Push

with 90° output and non braided cable (ATR/P and DTR/P)

|           | ATR/1/P | DTR/2/P | ATR/2.5/P | ATR/5/P  | ATR/10/P |
|-----------|---------|---------|-----------|----------|----------|
|           |         |         | DTR/5/P   | DTR/10/P | DTR/20/P |
| <b>A</b>  | 35.50   | 38.50   | 57.50     | 82.50    | 113.50   |
| <b>C</b>  | 2.00    | 2.00    | 2.00      | 2.00     | 3.00     |
| <b>B1</b> | 13.90   | 13.90   | 17.40     | 25.40    | 33.90    |
| <b>B2</b> | 10.90   | 10.90   | 17.40     | 14.40    | 12.90    |

### Gaiter Independent Pneumatic Push

(AJ/P and DJ/P)

|           | AJ/1/P | DJ/2/P | AJ5/1/P  | AJ/2.5/P | AJ/5/P  |
|-----------|--------|--------|----------|----------|---------|
|           |        |        | DJ10/2/P | DJ/5/P   | DJ/10/P |
| <b>A</b>  | 49.0   | 52.0   | 84.0     | 71.0     | 96.0    |
| <b>B1</b> | 15.4   | 15.4   | 26.9     | 18.9     | 26.9    |
| <b>B2</b> | 12.4   | 12.4   | 15.9     | 12.9     | 15.9    |
| <b>C</b>  | 7.0    | 7.0    | 7.0      | 7.0      | 7.0     |

### Feather Touch Pneumatic Push

(AT/P and DT/P)

|           | AT/1/P | DT/2/P | AT/2.5/P | AT/5/P | DT/10/P | AT/10/P |
|-----------|--------|--------|----------|--------|---------|---------|
|           |        |        | DT/5/P   |        |         | DT/20/P |
| <b>A</b>  | 49.00  | 52.00  | 71.00    | 96.00  | 96.00   | 127.00  |
| <b>C</b>  | 2.00   | 2.00   | 2.00     | 2.00   | 2.00    | 3.00    |
| <b>B1</b> | 13.90  | 13.90  | 17.40    | 25.40  | 25.40   | 33.90   |
| <b>B2</b> | 10.90  | 10.90  | 11.40    | 11.40  | 14.40   | 12.90   |

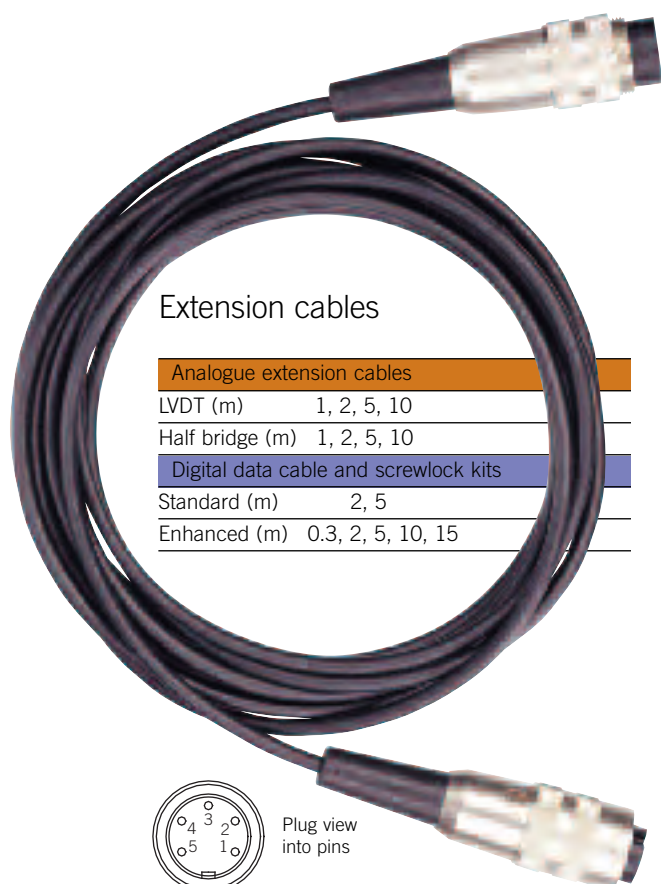
### Right Angle Feather Touch Pneumatic Push

with 90° output and braided cable (ATR/P and DTR/P)

|           | ATR/1/P | DTR/2/P | ATR/2.5/P | ATR/5/P  | ATR/10/P |
|-----------|---------|---------|-----------|----------|----------|
|           |         |         | DTR/5/P   | DTR/10/P | DTR/20/P |
| <b>A</b>  | 35.50   | 38.50   | 57.50     | 82.50    | 113.50   |
| <b>C</b>  | 2.00    | 2.00    | 2.00      | 2.00     | 3.00     |
| <b>B1</b> | 13.90   | 13.90   | 17.40     | 25.40    | 33.90    |
| <b>B2</b> | 10.90   | 10.90   | 11.40     | 14.40    | 12.90    |



## 28 Accessories and spares



### Extension cables

#### Analogue extension cables

LVDT (m) 1, 2, 5, 10

Half bridge (m) 1, 2, 5, 10

#### Digital data cable and screwlock kits

Standard (m) 2, 5

Enhanced (m) 0.3, 2, 5, 10, 15

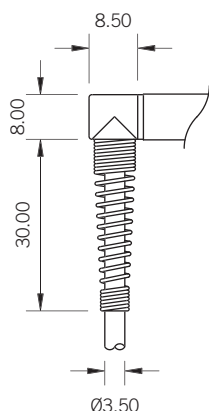


Plug view  
into pins

Standard extension cables are fitted with a 5 pin 270° DIN socket and a 5 pin 270° plug, and are designed to be used with Solartron Metrology standard product

### Radial outlet

To convert cable outlet from axial to radial on analogue and digital gauging probes

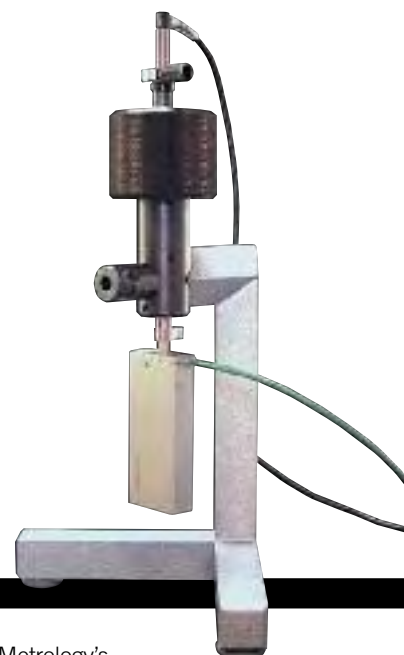


### Springs



Replacement springs for analogue gauging probes

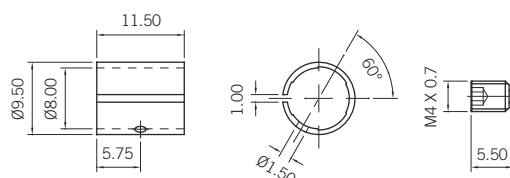
### Calibration equipment



A combination of Solartron Metrology's successful linear encoder LE/25/S, the DR600 digital readout and a precision micrometer, provides a comprehensive kit for checking and inspection of readings from a linear transducer.

Handy and easy-to-use, Solartron calibration equipment will rapidly and precisely test any linear transducer with a stroke from  $\pm 0.25\text{mm}$  to  $\pm 10\text{mm}$ .

The kit includes an adaptor for testing smaller range transducers and comes with a comprehensive user manual.



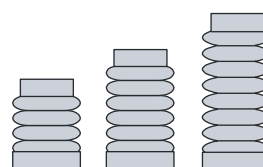
### Clamping collet

For mounting 8mm analogue and digital gauging probes



### Adjusting spanner

For adjusting the pre-travel on gauging probes



### Gaiters

Replacement gaiters for analogue and digital gauging probes and linear encoders