

# Jet Series

## Gaiter independent pneumatic gauging probes

Datasheet  
502720  
Issue 6  
EDCR 18681



### Features

- Wide choice of measurement ranges 2 mm to 10 mm
- Pneumatic push (gaiter independent)
- LVDT, half bridge and digital (Orbit® Network) interface
- Accuracy to 0.1% of reading (for digital version)

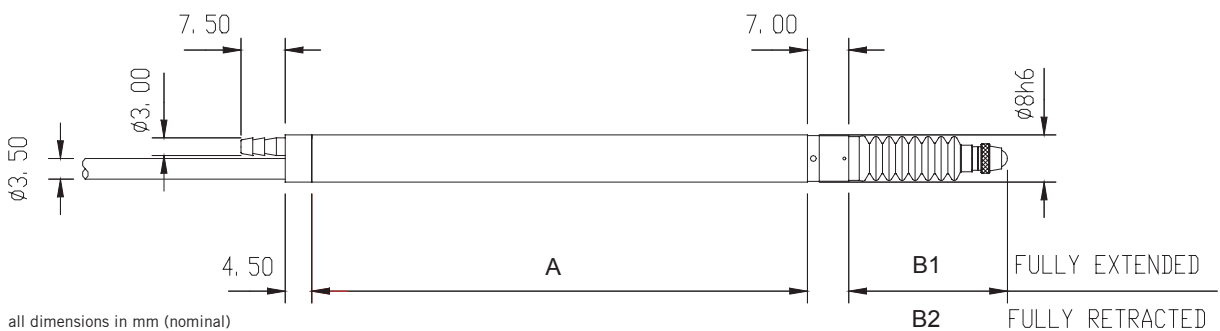
### Description

Solartron gauging transducers are used wherever the ultimate in high accuracy and measurement speed is required. They incorporate a precision linear bearing giving exceptional repeatability.

Pneumatic operation is a cost effective way of achieving transducer actuation, particularly when large numbers of probes need to be actuated simultaneously.

With conventional pneumatic probes, the air pressure is contained within the gaiter. The new Jet Series of gaiter independent pneumatic gauging probes are designed so that the gaiter is not pressurised. This has the advantage that gaiter damage will not affect probe performance, resulting in less down-time and a reduced cost of ownership.

### Mechanical Drawings



| Transducer Type            |                      | 'A' mm<br>Body length | 'B1' mm<br>fully extended | 'B2' mm<br>fully retracted |
|----------------------------|----------------------|-----------------------|---------------------------|----------------------------|
| LVDT<br>and<br>Half Bridge | AJ1/P and AJ1/PH     | 49.0                  | 15.4                      | 12.4                       |
|                            | AJ5/1/P and AJ5/1/PH | 84.0                  | 26.9                      | 15.9                       |
|                            | AJ2.5/P and AJ2.5/PH | 71.0                  | 18.9                      | 12.9                       |
|                            | AJ5/P and AJ5/PH     | 96.0                  | 26.9                      | 15.9                       |
| Digital                    | DJ2/P                | 52.0                  | 15.4                      | 12.4                       |
|                            | DJ10/2/P             | 84.0                  | 26.9                      | 15.9                       |
|                            | DJ5/P                | 71.0                  | 18.9                      | 12.9                       |
|                            | DJ10/P               | 96.0                  | 26.9                      | 15.9                       |

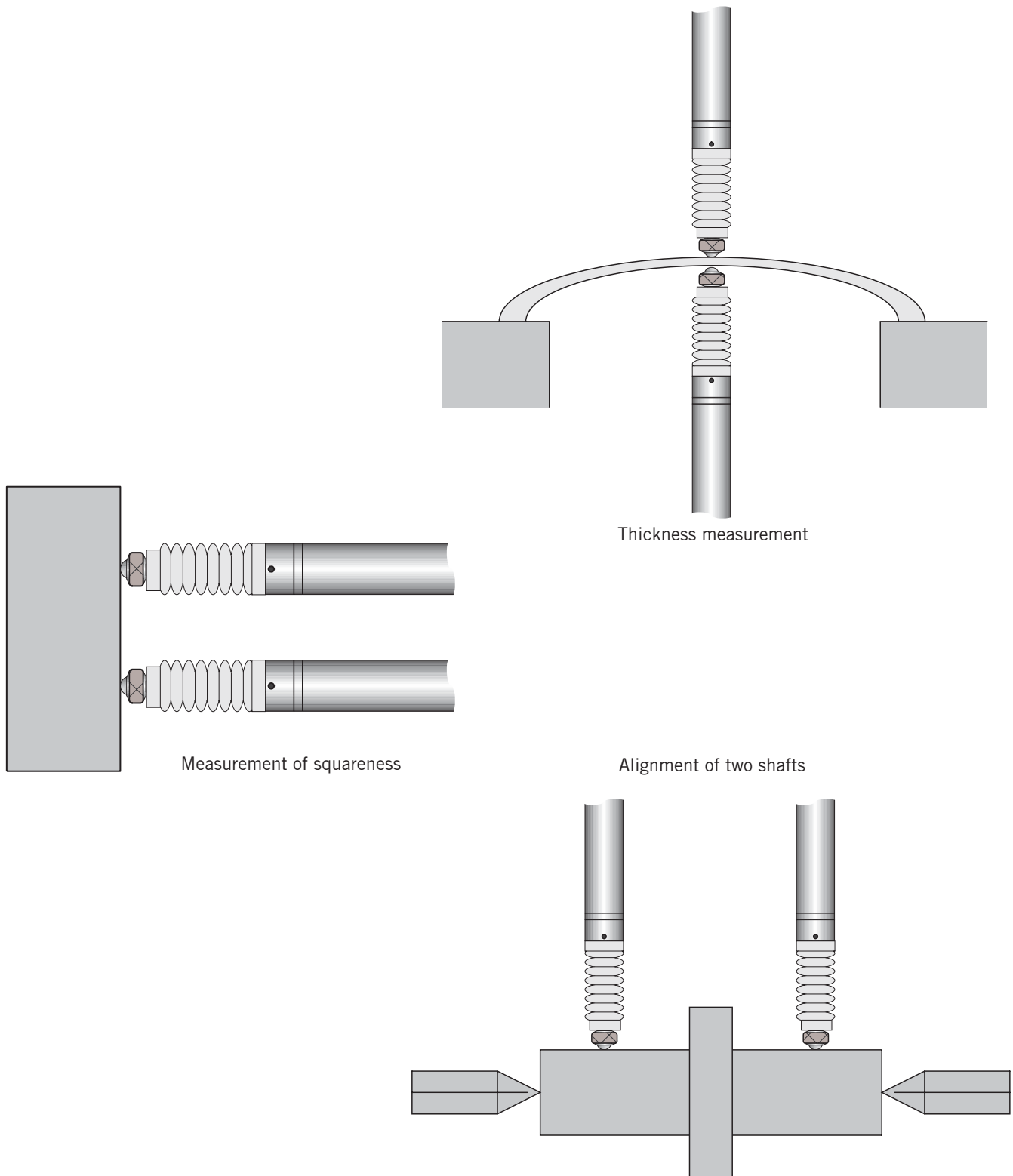
## Applications

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A large variety of applications exist for pneumatic gauging probes with examples including gauging of vehicle windscreens, TV glass and brake discs / drums.

If gaitors are damaged on conventional pneumatic gauging probes, the entire process must be halted whilst the gaitors are replaced. With gaitor independent pneumatic gauging probes, maintenance can be carried out at a pre-selected time, keeping down time to a minimum.

Solartron's new Jet Series of gaitor independent pneumatic gauging probes can withstand higher operating pressures compared with standard pneumatic probes thereby eliminating the need for precise and expensive pressure regulators.



## Technical Specification

| Product Type                       | Analogue |             | Digital | Analogue |             | Digital   | Analogue |             | Digital | Analogue |             | Digital |
|------------------------------------|----------|-------------|---------|----------|-------------|-----------|----------|-------------|---------|----------|-------------|---------|
|                                    | LVDT     | Half Bridge |         | LVDT     | Half Bridge |           | LVDT     | Half Bridge |         | LVDT     | Half Bridge |         |
| Jet Series<br>- axial cable outlet | AJ/1/P   | AJ/1/PH     | DJ/2/P  | AJ/5/1/P | AJ/5/1/PH   | DJ/10/2/P | AJ/2.5/P | AJ/2.5/PH   | DJ/5/P  | AJ/5/P   | AJ/5/PH     | DJ/10/P |

### Measurement

|  |   |      |           |      |             |      |           |      |
|--|---|------|-----------|------|-------------|------|-----------|------|
| Measurement range (mm)                       | ±1  | 2    | ±1        | 2    | ±2.5        | 5    | ±5        | 10   |
| Accuracy <sup>(1)</sup>                      | 0.5% 1 µm   | 0.1% | 0.5% 1 µm | 0.1% | 0.5% 2.5 µm | 0.2% | 0.5% 5 µm | 0.2% |
| Repeatability (µm)                           | 0.15  |      |           |      |             |      |           |      |
| Resolution (µm)                              | For LVDT and half bridge, dependent on electronics. For digital, user selectable <0.1 µm. |      |           |      |             |      |           |      |
| Pre-travel (mm)                              | 0.3   | 0.15 | 0.3       | 0.15 | 0.3         | 0.15 | 0.3       | 0.15 |
| Post-travel (mm)                             | 0.7   | 0.85 | 8.7       | 8.85 | 0.7         | 0.85 | 0.7       | 0.85 |
| Tip force at mid position, standard (N) ±20% | 0.85 @ 1 bar  |      |           |      |             |      |           |      |
| Temperature coefficient (%FSO/°C)            | 0.01  |      |           |      |             |      |           |      |

### Electrical Interface - plugged versions<sup>(2)</sup>

|                               |     |      |     |      |    |      |    |      |
|-------------------------------|-----|------|-----|------|----|------|----|------|
| Sensitivity (mV/V/mm) ±0.5%   | 200 | 73.5 | 200 | 73.5 | 80 | 29.4 | 40 | 14.5 |
| Energising current (mA/V) ±5% | 1.8 | 1    | 1.8 | 1    | 2  | 1    | 1  | 1.2  |

### Electrical Interface - unplugged versions<sup>(2)</sup>

|                            |     |    |     |    |     |    |     |    |
|----------------------------|-----|----|-----|----|-----|----|-----|----|
| Sensitivity (mV/V/mm) ±5%  | 210 | 83 | 210 | 83 | 150 | 82 | 105 | 51 |
| Zero phase frequency (kHz) | 10  |    | 10  |    | 13  | 10 | 10  |    |
| Phase shift (deg.)         | +8  | -1 | +8  | -1 | +8  | 0  | +4  | 0  |

| Materials             |                   |
|-----------------------|-------------------|
| Case                  | Stainless steel   |
| Tip                   | Tungsten carbide* |
| Gaiter <sup>(3)</sup> | Viton®            |
| Cable <sup>(4)</sup>  | PUR               |

\*other options available

| Environmental (probe head only) |             |
|---------------------------------|-------------|
| Storage temperature (°C)        | -40 to +100 |
| Operating temperature (°C)      | +5 to +80   |
| IP rating                       | None        |

| Operating Pressure Range           |                           |
|------------------------------------|---------------------------|
| Jet Series<br>(gaiter independent) | 0.6 bar to 2 bar relative |

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

| Digital Probe Interface Electronics <sup>(5)</sup> |   |
|--|---|
| Reading rate                                       | Up to 3906 readings/second  |
| Bandwidth  | Up to 460 Hz dependent on noise performance required                  |
| Output   | Serial communication - RS485 signal level (Solartron Orbit® protocol) |
| Power  | 5 ±0.25 VDC @ 0.06 A (includes power for probe)                       |
| Storage temperature °C                             | -20 to +70  |
| Operating temperature °C                           | 0 to +60  |
| IP rating  | 43  |

### Notes

#### 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.

#### 2. LVDT and Half Bridge Probe Performance

Accuracy, sensitivity, energising current and phase shift 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. Gaiter

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 also available on request.

#### 5. Digital Probe Termination

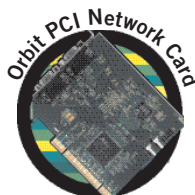
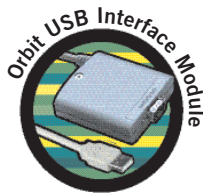
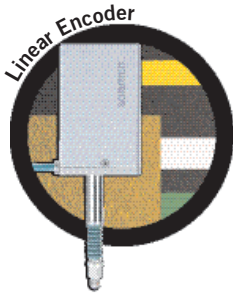
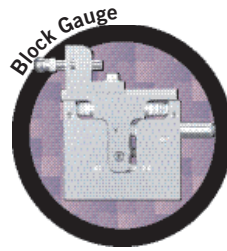
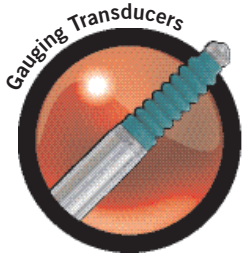
Digital probes are terminated with Solartron's Probe Interface Electronics (PIE) module. Please refer to the Orbit® Network Measurement Systems datasheet 502629 for details of this module and methods of integration for digital probes.

## Ordering Guide

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| Part Numbers |           |          |           |
|--------------|-----------|----------|-----------|
| Probe Type   |           | Standard | Unplugged |
| LVDT         | AJ/1/P    | 925413   | 925393    |
|              | AJ5/1/P   | 925417   | 925407    |
|              | AJ/2.5/P  | 925414   | 925395    |
|              | AJ/5/P    | 925415   | 925397    |
| Half Bridge  | AJ/1/PH   | 925404   | 925392    |
|              | AJ5/1/PH  | 925408   | 925416    |
|              | AJ/2.5/PH | 925405   | 925394    |
|              | AJ/5/PH   | 925406   | 925396    |
| Digital      | DJ/2/P    | 971167-1 | n/a       |
|              | DJ/2/PE   | 971170-1 | n/a       |
|              | DJ/5/P    | 971168-1 | n/a       |
|              | DJ/10/P   | 971169-1 | n/a       |

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