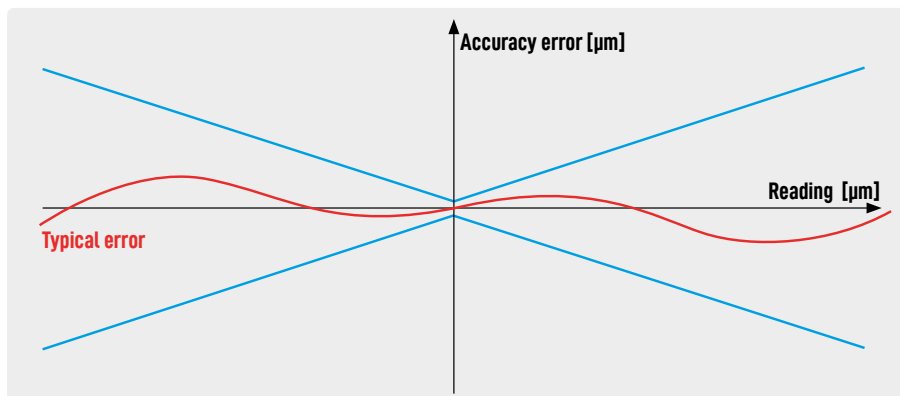




## ACCURACY ERROR



| Mechanical specifications |         | ±2,5 mm                        | ±5 mm                    | ±10 mm                  |
|---------------------------|---------|--------------------------------|--------------------------|-------------------------|
| Measuring range           | [mm]    | 5                              | 10                       | 20                      |
| Mechanical travel         | [mm]    | 6,6                            | 11                       | 21                      |
| Body Ø                    | [mm]    | 8                              | 8                        | 8                       |
| Cable length              | [m]     | 2                              | 2                        | 2                       |
| Operating temperature     | [°C]    | -10 to +65                     | -10 to +65               | -10 to +65              |
| Storage temperature       | [°C]    | -20 to +100                    | -20 to +100              | -20 to +100             |
| Contact thread            |         | M2,5                           | M2,5                     | M2,5                    |
| Accuracy error            | [µm]    | ±MIN(0,3 + 10* K ; 11 + 2* K ) | ±MAX(5,0 + 2* K ; 7* K ) | ±MAX(10 + 2* K ; 7* K ) |
| Repeatability (2.77 σ)    | [µm]    | ≤0,15                          | ≤0,15                    | ≤0,15                   |
| Zero thermal drift        | [µm/°C] | <0.25                          | <0.25                    | <0.25                   |

| Standard MARPOSS (with gasket) |         | ±2,5 mm                                             |             |               |  | ±5 mm                                               |             |               |  | ±10 mm                                              |             |   |  |
|--------------------------------|---------|-----------------------------------------------------|-------------|---------------|--|-----------------------------------------------------|-------------|---------------|--|-----------------------------------------------------|-------------|---|--|
| Sensitivity [mV/V/mm]          |         | 115                                                 |             |               |  | 115                                                 |             |               |  | 23                                                  |             |   |  |
| Calibration spec.              |         | 3,5355V <sub>RMS</sub> @7,5kHz with load 1MΩ//360pF |             |               |  | 3,5355V <sub>RMS</sub> @7,5kHz with load 1MΩ//360pF |             |               |  | 3,5355V <sub>RMS</sub> @7,5kHz with load 1MΩ//360pF |             |   |  |
| Spring strength                | [N/mm]  | 0,023                                               | 0,03        | 0,02          |  | 0,03                                                | 0,02        | 0,02          |  | 0,03                                                | 0,016       | - |  |
| Measuring force                | [N±25%] | 0,70                                                | 0,7 to 2    | 0,5           |  | 0,70                                                | 0,8 to 2    | 0,4           |  | 0,1                                                 | 0,7 to 2    | - |  |
| Pneumatic Push pressure        | bar     |                                                     | 0,5 to 1    |               |  |                                                     | 0,5 to 1    |               |  |                                                     | 0,5 to 1    |   |  |
|                                | psi     |                                                     | 7,5 to 14,5 |               |  |                                                     | 7,5 to 14,5 |               |  |                                                     | 7,5 to 14,5 |   |  |
| Vacuum retract pressure        | bar     |                                                     |             | -0,45 to -0,6 |  |                                                     |             | -0,45 to -0,6 |  |                                                     |             | - |  |
|                                | psi     |                                                     |             | -6,5 to -8,7  |  |                                                     |             | -6,5 to -8,7  |  |                                                     |             | - |  |
| Gasket                         |         | Fluoroelastometer                                   |             |               |  | Fluoroelastometer                                   |             |               |  | Fluoroelastometer                                   |             |   |  |
| Protection grade               |         | IP65                                                |             |               |  | IP65                                                |             |               |  | IP65                                                |             |   |  |
| Contact type                   |         | carbide                                             |             |               |  | carbide                                             |             |               |  | carbide                                             |             |   |  |

| Cable (A=axial - R=radial)<br>Actuation (*) | A<br>S       | R            | A<br>PP      | R            | A<br>V       | R            | A<br>PV | R | A<br>S       | R            | A<br>PP      | R            | A<br>V       | R            | A<br>PV | R | A<br>S       | R            | A<br>PP      | R            | A<br>V | R | A<br>PV | R |
|---------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|---|--------------|--------------|--------------|--------------|--------------|--------------|---------|---|--------------|--------------|--------------|--------------|--------|---|---------|---|
| Trade name                                  | F25          | FR25         | FPA25        | FRP25        | FVA25        | FRV25        | '       | ' | F50          | FR50         | FPA50        | FRP50        | FVA50        | FRV50        | '       | ' | F100         | FR100        | FPA100       | FRP100       | '      | ' | '       | ' |
| Order code                                  | 8B3PR05L0000 | 8B3PR05L1200 | 8B3PR05L0400 | 8B3PR05L1600 | 8B3PR05L0560 | 8B3PR05L1760 | '       | ' | 8B3PR10L0000 | 8B3PR10L1200 | 8B3PR10L0400 | 8B3PR10L1600 | 8B3PR10L0560 | 8B3PR10L1760 | '       | ' | 8B3PR20L0000 | 8B3PR20L1200 | 8B3PR20L0400 | 8B3PR20L1600 | '      | ' | '       | ' |

| Soft Touch (without gasket) |            | ±2,5 mm                                             |                       |  |                               | ±5 mm                                               |                       |  |                               | ±10 mm                                              |                       |  |                               |
|-----------------------------|------------|-----------------------------------------------------|-----------------------|--|-------------------------------|-----------------------------------------------------|-----------------------|--|-------------------------------|-----------------------------------------------------|-----------------------|--|-------------------------------|
| Sensitivity [mV/V/mm]       |            | 115                                                 |                       |  |                               | 115                                                 |                       |  |                               | 23                                                  |                       |  |                               |
| Calibration spec.           |            | 3,5355V <sub>RMS</sub> @7,5kHz with load 1MΩ//360pF |                       |  |                               | 3,5355V <sub>RMS</sub> @7,5kHz with load 1MΩ//360pF |                       |  |                               | 3,5355V <sub>RMS</sub> @7,5kHz with load 1MΩ//360pF |                       |  |                               |
| Spring strength             | [N/mm]     | 0,016                                               | 0,01                  |  |                               | 0,02                                                | 0,07                  |  |                               | 0,030                                               | 0,010                 |  |                               |
| Total Measuring force       | [N±25%]    | 0,30                                                | 0,18 to 1,9           |  | 0,14 to 2,3                   | 0,30                                                | 0,18 to 1,9           |  | 0,14 to 2,3                   | 0,30                                                | 0,18 to 1,9           |  | 0,14 to 2,3                   |
| Pneumatic Push pressure     | bar<br>psi |                                                     | 0,5 to 2<br>7,3 to 29 |  | 0,125 to 2<br>1,825 to 29     |                                                     | 0,5 to 2<br>7,3 to 29 |  | 0,125 to 2<br>1,825 to 29     |                                                     | 0,5 to 2<br>7,3 to 29 |  | 0,125 to 2<br>1,825 to 29     |
| Vacuum retract pressure     | bar<br>psi |                                                     |                       |  | -0,45 to -0,6<br>-6,5 to -8,7 |                                                     |                       |  | -0,45 to -0,6<br>-6,5 to -8,7 |                                                     |                       |  | -0,45 to -0,6<br>-6,5 to -8,7 |
| Protection grade            |            | IP50(IP54 PP version)                               |                       |  |                               | IP50(IP54 PP version)                               |                       |  |                               | IP50(IP54 PP version)                               |                       |  |                               |
| Contact type                |            | Nylon (PA66)                                        |                       |  |                               | Nylon (PA66)                                        |                       |  |                               | Nylon (PA66)                                        |                       |  |                               |

| Cable (A=axial - R=radial)<br>Actuation (*) | A<br>S      | R           | A<br>PP     | R<br>V      | A<br>PV | R           | A<br>S      | R           | A<br>PP     | R<br>V      | A<br>PV     | R           | A<br>S | R     | A<br>PP     | R<br>V      | A<br>PV     | R           |             |             |   |   |             |             |
|---------------------------------------------|-------------|-------------|-------------|-------------|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|-------|-------------|-------------|-------------|-------------|-------------|-------------|---|---|-------------|-------------|
| Trade name                                  | F25L        | FR25L       | FPA25L      | FP25L       | -       | FV25L       | FPA25L      | FPV25L      | F50L        | FR50L       | FPA50L      | FP50L       | FVA50L | FV50L | FPA50L      | FPV50L      | F100L       | FR100L      | FPA100L     | FP100L      | - | - | FPA100L     | FPV100L     |
| Order code                                  | 33PR05L5000 | 33PR05L6200 | 33PR05L5400 | 33PR05L6600 | -       | 33PR05L6760 | 33PR05L5800 | 33PR05L7000 | 33PR10L5000 | 33PR10L6200 | 33PR10L5400 | 33PR10L6600 | -      | -     | 33PR10L5800 | 33PR10L7000 | 33PR20L5000 | 33PR20L6200 | 33PR20L5400 | 33PR20L6600 | - | - | 33PR20L5800 | 33PR20L7000 |

## Displacement Sensors



## Bore Gauges



## Forks and Ring Gauges



## Bench Gauges



### Indicators and Electronic Display Units



## Interface Boxes for Data Acquisition

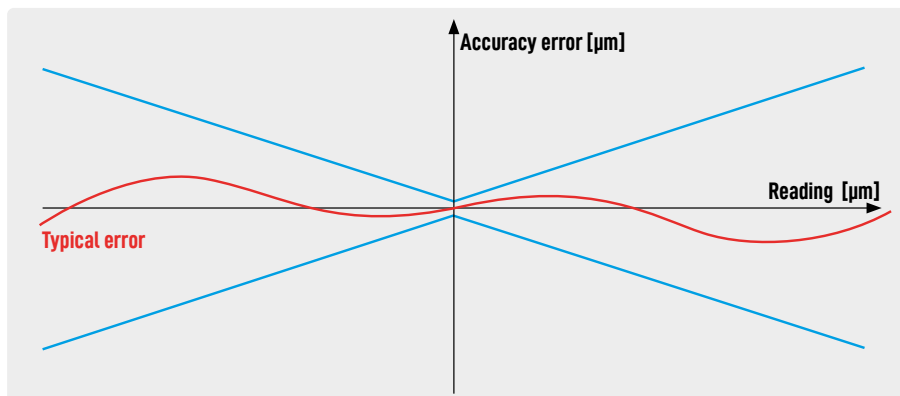


## Software





## ACCURACY ERROR



| Mechanical specifications |         | ±2,5 mm                  | ±5 mm                   | ±10 mm                 |
|---------------------------|---------|--------------------------|-------------------------|------------------------|
| Measuring range           | [mm]    | 5                        | 10                      | 20                     |
| Mechanical travel         | [mm]    | 6,6                      | 11                      | 21                     |
| Body Ø                    | [mm]    | 8                        | 8                       | 8                      |
| Cable length              | [m]     | 2                        | 2                       | 2                      |
| Operating temperature     | [°C]    | -10 to +65               | -10 to +65              | -10 to +65             |
| Storage temperature       | [°C]    | -20 to +100              | -20 to +100             | -20 to +100            |
| Contact thread            |         | M2,5                     | M2,5                    | M2,5                   |
| Accuracy error            | [µm]    | ±MAX (2,5 + 2* K ;7* K ) | ±MAX(5,0 + 2* K ;7* K ) | ±MAX(10 + 2* K ;7* K ) |
| Repeatability (2.77 σ)    | [µm]    | ≤0,15                    | ≤0,15                   | ≤0,15                  |
| Zero thermal drift        | [µm/°C] | <0.25                    | <0.25                   | <0.25                  |

| Standard MARPOSS (with gasket) |           | ±2,5 mm                                           |             |               | ±5 mm                                             |             |               | ±10 mm                                            |             |   |
|--------------------------------|-----------|---------------------------------------------------|-------------|---------------|---------------------------------------------------|-------------|---------------|---------------------------------------------------|-------------|---|
| Sensitivity                    | [mV/V/mm] | 36,875                                            |             |               | 29,5                                              |             |               | 7,375                                             |             |   |
| Calibration spec.              |           | 3,5355V <sub>RMS</sub> @7,5kHz with load 2KΩ±0,1% |             |               | 3,5355V <sub>RMS</sub> @7,5kHz with load 2KΩ±0,1% |             |               | 3,5355V <sub>RMS</sub> @7,5kHz with load 2KΩ±0,1% |             |   |
| Spring strength                | (N/mm)    | 0,023                                             | 0,03        | 0,02          | 0,03                                              | 0,02        | 0,02          | 0,03                                              | 0,016       | - |
| Measuring force                | (N±25%)   | 0,70                                              | 0,7 to 2    | 0,5           | 0,70                                              | 0,8 to 2    | 0,4           | 0,1                                               | 0,7 to 2    | - |
| Pneumatic Push pressure        | bar       |                                                   | 0,5 to 1    |               |                                                   | 0,5 to 1    |               |                                                   | 0,5 to 1    |   |
|                                | psi       |                                                   | 7,5 to 14,5 |               |                                                   | 7,5 to 14,5 |               |                                                   | 7,5 to 14,5 |   |
| Vacuum retract pressure        | bar       |                                                   |             | -0,45 to -0,6 |                                                   |             | -0,45 to -0,6 |                                                   |             | - |
|                                | psi       |                                                   |             | -6,5 to -8,7  |                                                   |             | -6,5 to -8,7  |                                                   |             | - |
| Gasket                         |           | Fluoroelastometer                                 |             |               | Fluoroelastometer                                 |             |               | Fluoroelastometer                                 |             |   |
| Protection grade               |           | IP65                                              |             |               | IP65                                              |             |               | IP65                                              |             |   |
| Contact type                   |           | carbide                                           |             |               | carbide                                           |             |               | carbide                                           |             |   |

| Cable (A=axial - R=radial) | A           | R           | A           | R           | A           | R           | A  | R | A           | R           | A           | R           | A           | R           | A  | R | A           | R           | A           | R           |   |   |    |   |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|----|---|-------------|-------------|-------------|-------------|-------------|-------------|----|---|-------------|-------------|-------------|-------------|---|---|----|---|
| Actuation (*)              | S           |             | PP          |             | V           |             | PV |   | S           |             | PP          |             | V           |             | PV |   | S           |             | PP          |             | V |   | PV |   |
| Trade name                 | H25         | HR25        | HPA25       | HP25        | HVA25       | HV25        | '  | ' | H50         | HR50        | HPA50       | HP50        | HVA50       | HV50        | '  | ' | H100        | HR100       | HPA100      | HP100       | ' | ' | '  | ' |
| Order code                 | 33PR05N0000 | 33PR05N1200 | 33PR05N0400 | 33PR05N1600 | 33PR05N0560 | 33PR05N1760 | '  | ' | 33PR10N0000 | 33PR10N1200 | 33PR10N0400 | 33PR10N1600 | 33PR10N0560 | 33PR10N1760 | '  | ' | 33PR20N0000 | 33PR20N1200 | 33PR20N0400 | 33PR20N1600 | ' | ' | '  | ' |

| Soft touch - TESA (without gasket) |           | ±2,5 mm                                     |             |               | ±5 mm                                       |             |               | ±10 mm                                      |             |               |
|------------------------------------|-----------|---------------------------------------------|-------------|---------------|---------------------------------------------|-------------|---------------|---------------------------------------------|-------------|---------------|
| Sensitivity                        | [mV/V/mm] | 73,75                                       |             |               | 29,5                                        |             |               | 7,375                                       |             |               |
| Calibration spec.                  |           | 3V <sub>RMS</sub> @13KHz with load 2KΩ±0,1% |             |               | 3V <sub>RMS</sub> @13KHz with load 2KΩ±0,1% |             |               | 3V <sub>RMS</sub> @13KHz with load 2KΩ±0,1% |             |               |
| Spring strength                    | [N/mm]    | 0,016                                       | 0,01        |               | 0,02                                        | 0,07        |               | 0,030                                       | 0,010       |               |
| Total Measuring force              | [N±25%]   | 0,30                                        | 0,18 to 1,9 | 0,14 to 2,3   | 0,30                                        | 0,18 to 1,9 | 0,14 to 2,3   | 0,30                                        | 0,18 to 1,9 | 0,14 to 2,3   |
| Pneumatic Push pressure            | bar       |                                             | 0,5 to 2    | 0,125 to 2    |                                             | 0,5 to 2    | 0,125 to 2    |                                             | 0,5 to 2    | 0,125 to 2    |
|                                    | psi       |                                             | 7,3 to 29   | 1,825 to 29   |                                             | 7,3 to 29   | 1,825 to 29   |                                             | 7,3 to 29   | 1,825 to 29   |
| Vacuum retract pressure            | bar       |                                             |             | -0,45 to -0,6 |                                             |             | -0,45 to -0,6 |                                             |             | -0,45 to -0,6 |
|                                    | psi       |                                             |             | ≤0,9          |                                             |             | -6,5 to -8,7  |                                             |             | -6,5 to -8,7  |
| Protection grade                   |           | IP50(IP54 PP version)                       |             |               | IP50(IP54 PP version)                       |             |               | IP50(IP54 PP version)                       |             |               |
| Contact type                       |           | Nylon (PA66)                                |             |               | Nylon (PA66)                                |             |               | Nylon (PA66)                                |             |               |

| Cable (A=axial - R=radial) | A            | R            | A            | R            | A | R | A            | R            | A            | R            | A            | R            | A | R | A            | R            | A            | R            | A            | R            |   |   |              |              |
|----------------------------|--------------|--------------|--------------|--------------|---|---|--------------|--------------|--------------|--------------|--------------|--------------|---|---|--------------|--------------|--------------|--------------|--------------|--------------|---|---|--------------|--------------|
| Actuation (*)              | S            |              | PP           |              | V |   | PV           |              | S            |              | PP           |              | V |   | PV           |              | S            |              | PP           |              | V |   | PV           |              |
| Trade name                 | H25L         | HR25L        | HPA25L       | HP25L        | ' | ' | HPVA25L      | HPV25L       | H50L         | HR50L        | HPA50L       | HP50L        | ' | ' | HPVA50L      | HPV50L       | H100LL       | HR100L       | HPA100L      | HP100L       | ' | ' | HPVA100L     | HPV100L      |
| Order code                 | 333PR05T5000 | 333PR05T6200 | 333PR05T5400 | 333PR05T6600 | ' | ' | 333PR05T5800 | 333PR05T7000 | 333PR10T5000 | 333PR10T6200 | 333PR10T5400 | 333PR10T6600 | ' | ' | 333PR10T5800 | 333PR10T7000 | 333PR20T5000 | 333PR20T6200 | 333PR20T5400 | 333PR20T6600 | ' | ' | 333PR20T5800 | 333PR20T7000 |

## Displacement Sensors



## Bore Gauges



## Forks and Ring Gauges



## Bench Gauges



## Indicators and Electronic Display Units



## Interface Boxes for Data Acquisition



## Software

