



# MULTI-FINGER CALIPER (MFC)

## STANDARD TOOLS

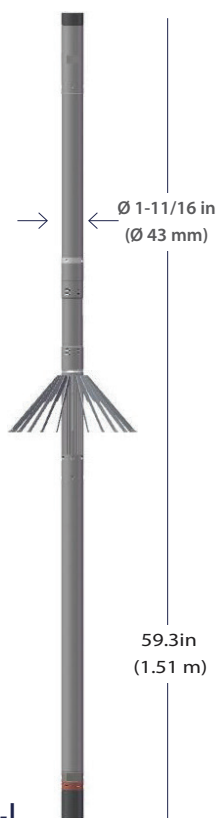
Multi-Finger Caliper tools provide direct, accurate and reliable measurements of internal tubing and casing diameters. Used in both drilling and production environments, applications include the evaluation of corrosion, erosion, wear, bending, buckling, pits, holes and other defects with high accuracy.

Measuring fingers move radially along the inner casing or tubing wall, detecting any diameter change. This produces a high resolution record of the tubular geometry which can be viewed and presented as a conventional log, a cross section, or a 3-D color enhanced image.

The Multi-Finger Caliper may also be used to measure the buildup of scale, paraffin or other mineral deposits in the wellbore. Auxiliary measurements include an integral wellbore temperature probe, along with deviation and relative bearing information. A range of instrument diameters with different finger arrays are available to provide optimized measurements in tubulars ranging from 2-3/8 in. to 16 in. diameter.

## APPLICATIONS & FEATURES

- Available in 24, 40, and 56 fingers
- Extended fingers available
- Combinable with all Pegasus Series Tools
- Compatible with PegasusStar Cased Hole Logging Platform
- Has built-in 3-axis accelerometer to provide Well Deviation and Finger position (relative bearing)
- ViewWell™ Compatible for analysis and reporting
- Warrior Compatible



MFC24C-J



MFC40C-G



MFC56C-I



# MULTI-FINGER CALIPER (MFC) STANDARD TOOLS

## SPECIFICATIONS

|                              |                       | MFC24C-J                   | MFC40C-G              | MFC56C-I              |
|------------------------------|-----------------------|----------------------------|-----------------------|-----------------------|
| GENERAL SPECS                |                       | P/N 1.01.03.100511763      | P/N 1.01.03.100520572 | P/N 1.01.03.100520563 |
| Maximum Pressure             |                       | 14503 PSI (100 Mpa)        |                       |                       |
| Maximum Temperature          |                       | 347 °F (175 °C)            |                       |                       |
| Diameter                     |                       | 1.69 in. (43 mm)           | 2.87 in. (73 mm)      | 3.54 in. (90 mm)      |
| Makeup Length                |                       | 59.33in. (1.51 m)          | 59.98 in. (1.52 m)    | 66.69 in. (1.69 m)    |
| Shipping Length              |                       | 62.60 in. (1.59 m)         | 63.25 in. (1.60 m)    | 69.96 (1.77 m)        |
| Weight                       |                       | 28.7 lbs (13 kg)           | 81.6 lbs (37.0 kg)    | 101.4 lbs (46.0 kg)   |
| Max Tensile Strength         |                       | 10000lbf                   |                       |                       |
| Material                     |                       | 17-4 SS & Al - Bronze      |                       |                       |
| CALIPER MEASUREMENT          |                       |                            |                       |                       |
| Number of arms               |                       | 24 arms                    | 40 arms               | 56 arms               |
| STD                          | Minimum, Diameter     | 2 in. (51 mm)              | 3.5 in. (89 mm)       | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter     | 7 in. (178 mm)             | 8-1/4 in. (209.6 mm)  | 9-5/8 in. (244.5 mm)  |
|                              | Accuracy, Radial      | ±0.02 in. (0.5 mm)         | ±0.02 in. (0.5 mm)    | ±0.02 in. (0.5 mm)    |
|                              | Resolution            | 0.0039 in (0.1mm)          | 0.0039 in (0.1mm)     | 0.0039 in (0.1mm)     |
|                              | Caliper Measure Point | 28.66 in. (0.72 m)         | 21.87 in. (0.55 m)    | 26.33 in. (0.66 m)    |
| XF                           | Minimum, Diameter     | 2 in. (51mm)               | 3.5 in. (89 mm)       | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter     | 9-5/8 in. (244.5 mm)       | 9-5/8 in. (244.5 mm)  | 13-3/8 in. (340 mm)   |
|                              | Accuracy, Radial      | ±0.035 in. (0.89 mm)       | ±0.035 in. (0.89 mm)  | ±0.035 in. (0.89 mm)  |
|                              | Resolution            | 0.005 in (0.13mm)          | 0.005 in (0.13mm)     | 0.005 in (0.13mm)     |
|                              | Caliper Measure Point | 26.97 (0.68 m)             | 20.56 in. (0.55 m)    | 23.20 in. (0.59 m)    |
| XXF                          | Minimum, Diameter     | N/A                        |                       | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter     | N/A                        |                       | 16 in. (406.4 mm)     |
|                              | Accuracy, Radial      | N/A                        |                       | ±0.045 in. (1.14 mm)  |
|                              | Resolution            | N/A                        |                       | 0.005 in (0.13mm)     |
|                              | Caliper Measure Point | N/A                        |                       | 20.72 in.             |
| Sensor type                  |                       | Linear Displacement sensor |                       |                       |
| INCLINATION MEASUREMENT      |                       |                            |                       |                       |
| Minimum                      |                       | 0°                         |                       |                       |
| Maximum                      |                       | 180°                       |                       |                       |
| Accuracy                     |                       | ±5.0°                      |                       |                       |
| RELATIVE AZIMUTH MEASUREMENT |                       |                            |                       |                       |
| Minimum                      |                       | 0°                         |                       |                       |
| Maximum                      |                       | 360°                       |                       |                       |
| Accuracy                     |                       | ±5.0° (Dev≥5.0°)           |                       |                       |
| VERTICAL RESOLUTION          |                       |                            |                       |                       |
| Typical Logging Speed        |                       | 32 ft/min (600 m/h)        |                       |                       |
| Vertical Resolution @ 600m/h |                       | 0.12 in. (3.05mm)          |                       |                       |
| BUILDIN CENTRALIZER          |                       |                            |                       |                       |
| Buildin Centralizer          |                       | NONE                       |                       |                       |



# MULTI-FINGER CALIPER (MFC)

## SOUR SERVICE TOOLS

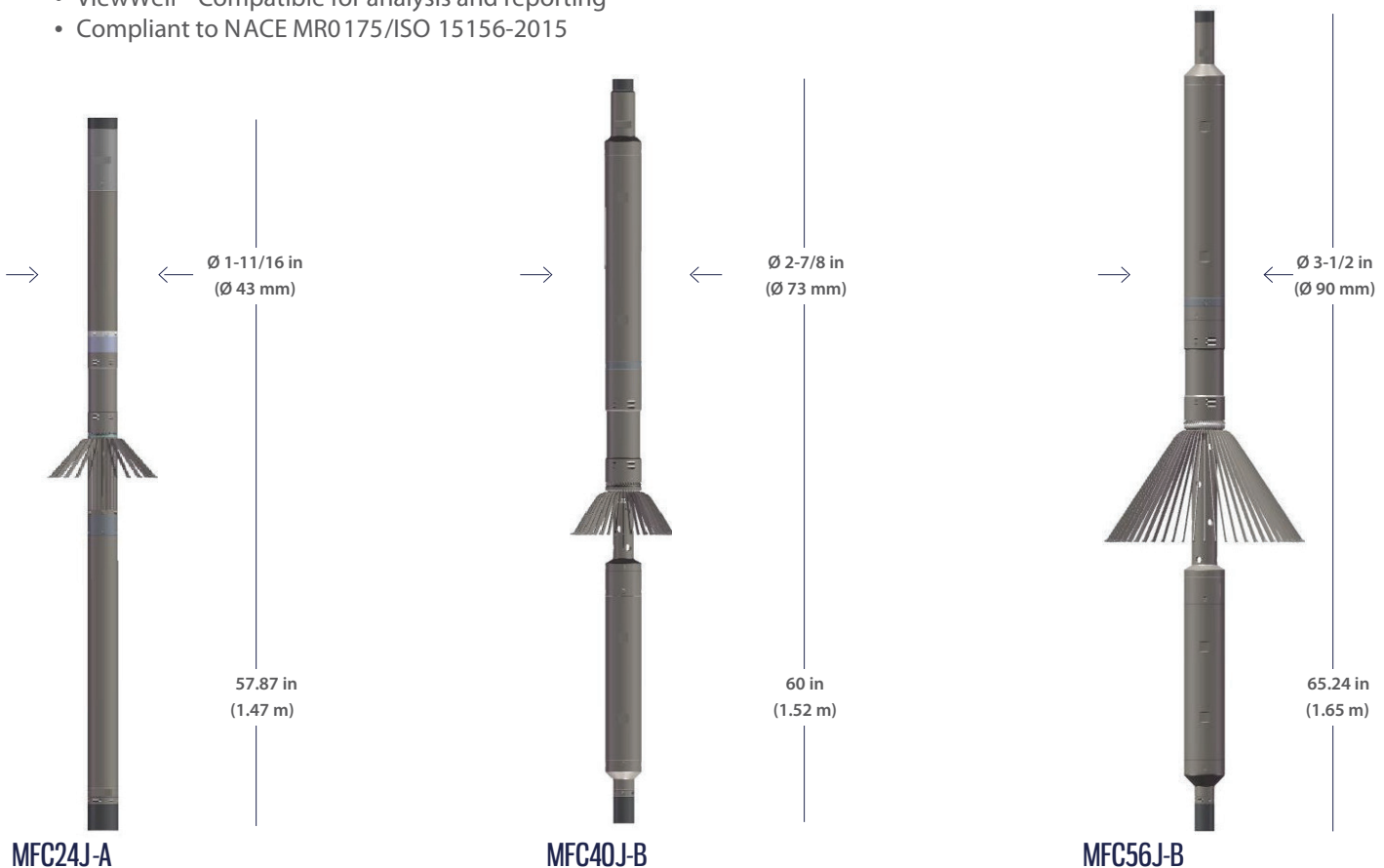
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Measuring fingers move radially along the inner casing or tubing wall, detecting any diameter change. This produces a high resolution record of the tubular geometry which can be viewed and presented as a conventional log, a cross section, or a 3-D color enhanced image.

The Multi-Finger Caliper may also be used to measure the buildup of scale, paraffin or other mineral deposits in the wellbore. Auxiliary measurements include an integral wellbore temperature probe, along with deviation and relative bearing information. A range of instrument diameters with different finger arrays are available to provide optimized measurements in tubulars ranging from 2-3/8 in. to 16 in. diameter.

## APPLICATIONS & FEATURES

- Available in 24, 40, and 56 fingers
- Extended fingers available
- Combinable with all Pegasus Series Tools
- Compatible with PegasusStar Cased Hole Logging Platform for surface readout and memory operations
- Has built-in 3-axis accelerometer to provide Well Deviation and Finger position (relative bearing)
- ViewWell™ Compatible for analysis and reporting
- Compliant to NACE MR0175/ISO 15156-2015





# MULTI-FINGER CALIPER (MFC) SOUR SERVICE TOOLS

## SPECIFICATIONS

|                              |                       | MFC24J-A                   | MFC40J-B              | MFC56J-B              |
|------------------------------|-----------------------|----------------------------|-----------------------|-----------------------|
| GENERAL SPECS                |                       | P/N 1.01.03.100516686      | P/N 1.01.03.100520573 | P/N 1.01.03.100520562 |
| Maximum Pressure             |                       | 14503 PSI (100 Mpa)        |                       |                       |
| Maximum Temperature          |                       | 347 °F (175 °C)            |                       |                       |
| Diameter                     |                       | 1.69 in. (43 mm)           | 2.87 in. (73 mm)      | 3.54 in. (90 mm)      |
| Makeup Length                |                       | 57.87 in. ( 1.47 m)        | 59.98 in. (1.52 m)    | 65.24 in. (1.65 m)    |
| Shipping Length              |                       | 61.14 in. (1.55 m)         | 63.25 in. (1.60 m)    | 68.50 in. (1.73 m)    |
| Weight                       |                       | 26.5 lbs (12kg)            | 44.1 lbs (20kg)       | 59.5 lbs (27kg)       |
| Max Tensile Strength         |                       | 10000lbf                   |                       |                       |
| Material                     |                       | Titanium Alloy/Inconel     |                       |                       |
| CALIPER MEASUREMENT          |                       |                            |                       |                       |
| Number of arms               |                       | 24 arms                    | 40 arms               | 56 arms               |
| STD                          | Minimum, Diameter     | 2 in. (51 mm)              | 3.5 in. (89 mm)       | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter     | 7 in. (178 mm)             | 8-1/4 in. (209.6 mm)  | 9-5/8 in. (244.5 mm)  |
|                              | Accuracy, Radial      | ±0.02 in. (0.5 mm)         | ±0.02 in. (0.5 mm)    | ±0.02 in. (0.5 mm)    |
|                              | Resolution            | 0.0039 in (0.1mm)          | 0.0039 in (0.1mm)     | 0.0039 in (0.1mm)     |
|                              | Caliper Measure Point | 27.87 in. (0.70 m)         | 21.87 in. (0.55 m)    | 26.33 in. (0.66 m)    |
| XF                           | Minimum, Diameter     | 2 in. (51mm)               | 3.5 in. (89 mm)       | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter     | 9-5/8 in. (244.5 mm)       | 9-5/8 in. (244.5 mm)  | 13-3/8 in. (340 mm)   |
|                              | Accuracy, Radial      | ±0.035 in. (0.89 mm)       | ±0.035 in. (0.89 mm)  | ±0.035 in. (0.89 mm)  |
|                              | Resolution            | 0.005 in (0.13mm)          | 0.005 in (0.13mm)     | 0.005 in (0.13mm)     |
|                              | Caliper Measure Point | 26.18 in. (0.66 m)         | 20.56 in. (0.55 m)    | 23.20 in. (0.59 m)    |
| XXF                          | Minimum, Diameter     | N/A                        |                       | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter     | N/A                        |                       | 16 in. (406.4 mm)     |
|                              | Accuracy, Radial      | N/A                        |                       | ±0.045 in. (1.14 mm)  |
|                              | Resolution            | N/A                        |                       | 0.005 in (0.13mm)     |
|                              | Caliper Measure Point | N/A                        |                       | 20.72 in.             |
| Sensor type                  |                       | Linear Displacement sensor |                       |                       |
| INCLINATION MEASUREMENT      |                       |                            |                       |                       |
| Minimum                      |                       | 0°                         |                       |                       |
| Maximum                      |                       | 180°                       |                       |                       |
| Accuracy                     |                       | ±5.0°                      |                       |                       |
| RELATIVE AZIMUTH MEASUREMENT |                       |                            |                       |                       |
| Minimum                      |                       | 0°                         |                       |                       |
| Maximum                      |                       | 360°                       |                       |                       |
| Accuracy                     |                       | ±5.0° (Dev≥5.0°)           |                       |                       |
| VERTICAL RESOLUTION          |                       |                            |                       |                       |
| Typical Logging Speed        |                       | 32 ft/min (600 m/h)        |                       |                       |
| Vertical Resolution @ 600m/h |                       | 0.12 in. (3.05mm)          |                       |                       |
| BUILDIN CENTRALIZER          |                       |                            |                       |                       |
| Buildin Centralizer          |                       | NONE                       |                       |                       |



# MULTI-FINGER CALIPER (MFC) WITH BUILT-IN MOTORIZED CENTRALIZERS

Multi-Finger Caliper tools provide direct, accurate and reliable measurements of internal tubing and casing diameters. Used in both drilling and production environments, applications include the evaluation of corrosion, erosion, wear, bending, buckling, pits, holes and other defects with high accuracy.

Measuring fingers move radially along the inner casing or tubing wall, detecting any diameter change. This produces a high resolution record of the tubular geometry which can be viewed and presented as a conventional log, a cross section, or a 3-D color enhanced image.

The Multi-Finger Caliper may also be used to measure the buildup of scale, paraffin or other mineral deposits in the wellbore. Auxiliary measurements include an integral wellbore temperature probe, along with deviation and relative bearing information. A range of instrument diameters with different finger are available to provide optimized measurements in tubulars ranging from 2-3/8 in. to 20 in. diameter.

## APPLICATIONS & FEATURES

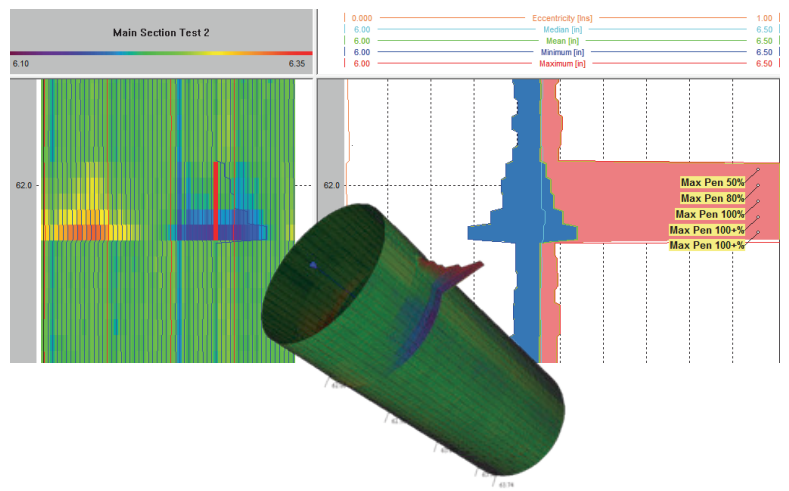
- Available in 24, 40, and 56 fingers
- Extended fingers available
- Combinable with all Pegasus Series Tools
- Compatible with PegasusStar Cased Hole Logging Platform
- Has Built-in Wellbore Temperature and 3-axis accelerometer able to provide crucial information about the Well Conditions including: Temperature, Deviation and Finger position
- ViewWell™ Compatible for analysis and reporting



MFC24C-H

MFC40C-B

MFC56C-G



MFC 3D VIEW



# MULTI-FINGER CALIPER (MFC) WITH BUILT-IN MOTORIZED CENTRALIZERS

## SPECIFICATIONS

|                                  |                       | MFC24 C-H                  | MFC40C-B              | MFC56C-G              |
|----------------------------------|-----------------------|----------------------------|-----------------------|-----------------------|
| GENERAL SPECS                    |                       | P/N 1.01.03.300003661      | P/N 1.01.03.100520911 | P/N 1.01.03.100520561 |
| Maximum Pressure                 |                       | 14503 PSI (100 Mpa)        |                       |                       |
| Maximum Temperature              |                       | 347 °F (175 °C)            |                       |                       |
| Diameter                         |                       | 1.69 in. (43 mm)           | 2.87 in. (73 mm)      | 3.54 in. (90 mm)      |
| Makeup Length                    |                       | 69.25 in. (1.759 m)        | 77.95 in. (1.98 m)    | 81.85 in.(2.079 m)    |
| Shipping Length                  |                       |                            |                       |                       |
| Weight                           |                       | 26.46 lbs (12kg)           | 79.4 lbs (35.5kg)     | 112.4 lbs (51kg)      |
| Max Tensile Strength             |                       | 10000lbf                   |                       |                       |
| Material                         |                       | 17-4 SS & Al-Bronze        |                       |                       |
| EXTENDED FINGER                  |                       |                            |                       |                       |
| Extended Finger                  |                       | XF (Same OD)               | EF kit (Bigger OD)    |                       |
| CALIPER MEASUREMENT              |                       |                            |                       |                       |
| Number of arms                   |                       | 24 arms                    | 40 arms               | 56 arms               |
| STD                              | Minimum, Diameter     | 2 in. (51 mm)              | 3.5 in. (89 mm)       | 4 in. (101.6 mm)      |
|                                  | Maximum, Diameter     | 7 in. (178 mm)             | 8-1/4 in. (209.6 mm)  | 9-5/8 in. (244.5 mm)  |
|                                  | Accuracy, Radial      | ±0.02 in. (0.5 mm)         | ±0.02 in. (0.5 mm)    | ±0.02 in. (0. mm)     |
|                                  | Resolution            | 0.0039 in (0.1mm)          | 0.0039 in (0.1mm)     | 0.0039 in (0.1mm)     |
|                                  | Caliper Measure Point | 33.92 in.                  | 27.63 in.             | 29.17 in.             |
| EF/XF                            | Minimum, Diameter     | 2 in. (51 mm)              | 5 in. (127 mm)        | 7.5 in. (190.4 mm)    |
|                                  | Maximum, Diameter     | 9-5/8 in. (244.5 mm)       | 9-5/8 in. (244.5 mm)  | 13-3/8 in. (340 mm)   |
|                                  | Accuracy, Radial      | ±0.035 in. (0.89 mm)       | ±0.035 in. (0.89 mm)  | ±0.035 in. (0.89 mm)  |
|                                  | Resolution            | 0.005 in (0.13mm)          | 0.005 in (0.13mm)     | 0.005 in (0.13mm)     |
|                                  | Caliper Measure Point | 36.97 in                   | 27.33 in              | 27.31 in              |
| EXF                              | Minimum, Diameter     | N/A                        |                       | 8.35 in. (212.2 mm)   |
|                                  | Maximum, Diameter     | N/A                        |                       | 20 in. (508 mm)       |
|                                  | Accuracy, Radial      | N/A                        |                       | ±0.045 in. (1.14 mm)  |
|                                  | Resolution            | N/A                        |                       | 0.005 in (0.13mm)     |
|                                  | Caliper Measure Point | N/A                        |                       | 23.56in.              |
| Sensor type                      |                       | Linear Displacement sensor |                       |                       |
| WELLBORE TEMPERATURE MEASUREMENT |                       |                            |                       |                       |
| Minimum                          |                       | N/A                        |                       | 13° F (-25° C)        |
| Maximum                          |                       | N/A                        |                       | 347 °F (175°C)        |
| Accuracy                         |                       | N/A                        |                       | ± 2° C                |
| INCLINATION MEASUREMENT          |                       |                            |                       |                       |
| Minimum                          |                       | 0°                         |                       |                       |
| Maximum                          |                       | 180°                       |                       |                       |
| Accuracy                         |                       | ±5.0°                      |                       |                       |
| RELATIVE AZIMUTH MEASUREMENT     |                       |                            |                       |                       |
| Minimum                          |                       | 0°                         |                       |                       |
| Maximum                          |                       | 360°                       |                       |                       |
| Accuracy                         |                       | ±5.0° (Dev≥5.0°)           |                       |                       |
| VERTICAL RESOLUTION              |                       |                            |                       |                       |
| Typical Logging Speed            |                       | 30 ft/min (9.14 m/min)     |                       |                       |
| Vertical Resolution @ 600m/h     |                       | 0.12 in. (3.05mm)          |                       |                       |
| BUILDIN CENTRALIZER              |                       |                            |                       |                       |
| Buildin Centralizer              |                       | Lower                      | Upper/Lower           |                       |



# MULTI-FINGER CALIPER (MFC) HIGH PRESSURE TOOLS

Multi-Finger Caliper tools provide direct, accurate and reliable measurements of internal tubing and casing diameters. Used in both drilling and production environments, applications include the evaluation of corrosion, erosion, wear, bending, buckling, pits, holes and other defects with high accuracy.

Measuring fingers move radially along the inner casing or tubing wall, detecting any diameter change. This produces a high resolution record of the tubular geometry which can be viewed and presented as a conventional log, a cross section, or a 3-D color enhanced image.

The Multi-Finger Caliper may also be used to measure the buildup of scale, paraffin or other mineral deposits in the wellbore. Auxiliary measurements include an integral wellbore temperature probe, along with deviation and relative bearing information. A range of instrument diameters with different finger arrays are available to provide optimized measurements in tubulars ranging from 2-3/8 in. to 16 in. diameter.

## APPLICATIONS & FEATURES

- Available in 24, 40, and 56 fingers
- Extended fingers available
- Combinable with all Pegasus Series Tools
- Compatible with PegasusStar Cased Hole Logging Platform
- Has built-in 3-axis accelerometer to provide Well Deviation and Finger position (relative bearing)
- ViewWell™ Compatible for analysis and reporting
- Up to 20000 PSI maximum working pressure



MFC24D-A



MFC40D-A



MFC56D-A



# MULTI-FINGER CALIPER (MFC) HIGH PRESSURE TOOLS

## SPECIFICATIONS

|                              |                   | MFC24D-A                   | MFC40D-A              | MFC56D-A              |
|------------------------------|-------------------|----------------------------|-----------------------|-----------------------|
| GENERAL SPECS                |                   | P/N 1.01.03.300002560      | P/N 1.01.03.300002415 | P/N 1.01.03.300002466 |
| Maximum Pressure             |                   | 20000 PSI (138 Mpa)        |                       |                       |
| Maximum Temperature          |                   | 347 °F (175 °C)            |                       |                       |
| Diameter                     |                   | 1-11/16 in. (43 mm)        | 2-7/8 in. (73 mm)     | 3-1/2 in. (90 mm)     |
| Makeup Length                |                   | 61.3 in. (1557 mm)         | 59.98 in. (1524 mm)   | 65.45 in. (1662 mm)   |
| Shipping Length              |                   | 64.57 in. (1640 mm)        | 63.25 in. (1606 mm)   | 68.72 in. (1745 mm)   |
| CALIPER MEASUREMENT          |                   |                            |                       |                       |
| Number of arms               |                   | 24 arms                    | 40 arms               | 56 arms               |
| STD                          | Minimum, Diameter | 2 in. (51 mm)              | 3.50 in. (89 mm)      | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter | 7 in. (177.8 mm)           | 8.26 in. (210 mm)     | 9-5/8 in. (244.5 mm)  |
|                              | Accuracy, Radial  | ±0.02 in. (0.5 mm)         | ±0.02 in. (0.5 mm)    | ±0.02 in. (0.7 mm)    |
| XF                           | Minimum, Diameter | 2 in. (51 mm)              | 3.50 in. (89 mm)      | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter | 9-5/8 in. (244.5 mm)       | 9-5/8 in. (244.5 mm)  | 13-3/8 in. (340 mm)   |
|                              | Accuracy, Radial  | ±0.035 in. (0.89 mm)       | ±0.035 in. (0.89 mm)  | ±0.032 in. (0.81 mm)  |
| XXF                          | Minimum, Diameter | N/A                        |                       | 4 in. (101.6 mm)      |
|                              | Maximum, Diameter | N/A                        |                       | 16 in. (406.4 mm)     |
|                              | Accuracy, Radial  | N/A                        |                       | ±0.045 in. (1.14 mm)  |
| Sensor Type                  |                   | Linear Displacement sensor |                       |                       |
| INCLINATION MEASUREMENT      |                   |                            |                       |                       |
| Minimum                      |                   | 0°                         |                       |                       |
| Maximum                      |                   | 180°                       |                       |                       |
| Accuracy                     |                   | ±5.0°                      |                       |                       |
| RELATIVE AZIMUTH MEASUREMENT |                   |                            |                       |                       |
| Minimum                      |                   | 0°                         |                       |                       |
| Maximum                      |                   | 360°                       |                       |                       |
| Accuracy                     |                   | ±5.0° (Dev≥5.0°)           |                       |                       |
| VERTICAL RESOLUTION          |                   |                            |                       |                       |
| Typical Logging Speed        |                   | 32 ft/min (600 m/h)        |                       |                       |
| Vertical Resolution @ 600m/h |                   | 0.12 in. (3.05mm)          |                       |                       |
| BUILDIN CENTRALIZER          |                   |                            |                       |                       |
| Buildin Centralizer          |                   | NONE                       |                       |                       |