




Tools homologation according to VDi/VDE 2647

| <i>General information</i> | |
|--|----------------------------|
| Operator name: | Pascal BIGUET |
| Testing date: | 2017-04-07 |
| Report number: | 17A00008/17A00009/17A00010 |
| <i>General information about tool</i> | |
| Manufacturer: | Desoutter |
| Machine type: | ELIT Angle |
| Model: | ELC60 |
| Part number: | 6153190040 |
| Square: | 1/2 |
| Maximum speed: | 160 Rpm |
| Minimal torque: | 36 N.m |
| Nominal torque | 60 N.m |
| Weight | 2.364/2.616/2.540 |
| Length | 520 / 500 |
| Sound level (EN 60 745): | < 75dB (A) |
| Vibration level (EN 60 745): | < 2.5 m/s ² |
| <i>Picture of tool</i> | |
|  | |

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| | | | |
|---|------------------------------|---------------------------|--------------------|
| <input type="checkbox"/> | Battery-operated tool | | |
| Manufacturer: | Desoutter | Serial number: | 408201500064 |
| Rated capacity: | 36V 2.1Ah | Part number: | 6158119240 |
| Battery voltage: | 36V | Battery type: | 36VCD 2.1Ah 75.6Wh |
| Picture of battery | | | |
|  | | | |
| <input checked="" type="checkbox"/> | Controller tool | | |
| Controller type: | NA | Serial number: | NA |
| Manufacturer: | NA | Part number: | NA |
| Power: | NA | Manufacturer date: | NA |
| CVi3 firmware: | NA | CPU board: | NA |
| CPLD: | NA | Front panel: | NA |
| LCD driver: | NA | Servo-driver 1: | NA |
| OS version: | NA | Ac line: | NA |
| Picture of controller | | | |
| NA | | | |
| <input checked="" type="checkbox"/> | Cable tool | | |
| Cable type: | NA | Serial number: | NA |
| Manufacturer: | NA | Part number: | NA |
| Length: | NA | | |
| Picture of cable | | | |
| NA | | | |

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| <input checked="" type="checkbox"/> Joint simulator | | | |
|--|------------|-----------------------|------------|
| Manufacturer: | BLM | Serial number: | 3860.586 |
| Model type: | E700 | Part number: | DM1701013 |
| Transducers torques | | | |
| Cell #1: | 2 Nm | Cell #2: | 10 Nm |
| Cell #3: | 50 Nm | Cell #4: | 500.0 N.m |
| Cell #5: | 2000 Nm | | |
| Validity date of transducers | | | |
| Cell #1: | 2018-01-31 | Cell #2: | 2018-01-31 |
| Cell #3: | 2018-01-31 | Cell #4: | 2018-01-31 |
| Cell #5: | 2018-01-31 | | |
| Picture of joint simulator | | | |
|  | | | |
| Picture of test bench | | | |
|  | | | |

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Tightening at torque - test conditions

| <i>Value for the duration of break between cycles</i> | | | | | |
|---|-----------------------------|-------------------|-------------------------------|--------------|------|
| 30% soft: | NA | 30 % hard: | NA | | |
| 80% soft: | NA | 80 % hard: | NA | | |
| 100% soft: | NA | 100 % hard | NA | | |
| <i>Number of tightenings for the test</i> | | | | | |
| 30 % of the torque range: | 100 | | | | |
| 80 % of the torque range: | 100 | | | | |
| 100 % of the torque range: | 100 | | | | |
| <i>Number of free speed</i> | | | | | |
| All torque range: | 2 | | | | |
| <i>Torque test - test point specification</i> | | | | | |
| <i>Torque and torsion tested (from 50% to 100% of tightening)</i> | | | | | |
| P1: 30 % of the torque range: | 35.5 Nm | Soft: | 30° | Hard: | 360° |
| P2: 80 % of the torque range: | 53.0 Nm | Soft: | 30° | Hard: | 360° |
| P3: 100 % of the torque range: | 60.0 Nm | Soft: | 30° | Hard: | 360° |
| <i>Revolutions per minute</i> | | | | | |
| <i>30 % of the torque range</i> | | | | | |
| Hard | Rundown speed (Rpm): | 160 Rpm | Downshift speed (Rpm): | 160 Rpm | |
| Soft | Rundown speed (Rpm): | 160 Rpm | Downshift speed (Rpm): | 160 Rpm | |
| <i>80 % of the torque range</i> | | | | | |
| Hard | Rundown speed (Rpm): | 160 Rpm | Downshift speed (Rpm): | 160 Rpm | |
| Soft | Rundown speed (Rpm): | 160 Rpm | Downshift speed (Rpm): | 160 Rpm | |
| <i>100 % of the torque range</i> | | | | | |
| Hard | Rundown speed (Rpm): | 160 Rpm | Downshift speed (Rpm): | 160 Rpm | |
| Soft | Rundown speed (Rpm): | 160 Rpm | Downshift speed (Rpm): | 160 Rpm | |
| <i>Torsion angle start moment (Angle threshold)</i> | | | | | |
| 30 % of the torque range: | Soft: | 17.80 Nm | Hard: | 17.80 Nm | |
| 80 % of the torque range: | Soft: | 26.50 Nm | Hard: | 26.50 Nm | |
| 100 % of the torque range: | Soft: | 30.00 Nm | Hard: | 30.00 Nm | |
| <i>Downshift torque</i> | | | | | |
| 30 % of the torque range: | Soft: | NA | Hard: | NA | |
| 80 % of the torque range: | Soft: | NA | Hard: | NA | |
| 100 % of the torque range: | Soft: | NA | Hard: | NA | |

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Tightening at angle - test conditions

| <i>Value for the duration of break between cycles</i> | | | |
|--|----|-------------------------------|----|
| 40° | NA | | |
| 180° | NA | | |
| <i>Number of tightening for the test</i> | | | |
| <i>Tightening hard</i> | NA | | |
| <i>Tightening soft</i> | NA | | |
| <i>Number of free speed</i> | | | |
| <i>All tightening:</i> | NA | | |
| <i>Rotation angle test - test points specification</i> | | | |
| <i>Rotation angle</i> | | | |
| <i>Hard from 50 to 100% of tightening</i> | NA | | |
| <i>Soft from 50 to 100% of tightening</i> | NA | | |
| <i>Revolutions per minute</i> | | | |
| <i>40 °</i> | | | |
| <i>Rundown speed (Rpm):</i> | NA | <i>Downshift speed (Rpm):</i> | NA |
| <i>180°</i> | | | |
| <i>Rundown speed (Rpm):</i> | NA | <i>Downshift speed (Rpm):</i> | NA |
| <i>Torsion angle start moment (Angle threshold)</i> | | | |
| <i>40° (20% of torque range)</i> | NA | | |
| <i>180° (20% of the torque range)</i> | NA | | |
| <i>Target torque</i> | | | |
| <i>40° (60 % of the torque range)</i> | NA | | |
| <i>180° (80 % of the torque range)</i> | NA | | |

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Torque tightening test

| Test point | | | | 30% | | 80% | | 100% | |
|---|----------|-----|-----|------------------------|--------------------------|------------------------|--------------------------|------------------------|--------------------------|
| Test torque | | | | 35.5 N.m | | 53.0 N.m | | 60.0 N.m | |
| Joints (from 50 to 100% of tightening) | | | | hard (30°) (±5°) | soft (360°) (±15°) | hard (30°) (±5°) | soft (360°) (±15°) | hard (30°) (±5°) | soft (360°) (±15°) |
| IT.(±)* | | | | | | | | | |
| Serial number of tools | 17A00008 | Cm | 10% | 2.24 | 4.51 | 2.31 | 4.85 | 2.62 | 4.91 |
| | | Cmk | 10% | 1.96 | 4.23 | 2.21 | 4.70 | 2.38 | 4.42 |
| | 17A00009 | Cm | 10% | 2.16 | 4.94 | 2.22 | 4.29 | 2.53 | 4.02 |
| | | Cmk | 10% | 1.91 | 4.74 | 1.78 | 4.18 | 2.10 | 3.94 |
| | 17A00010 | Cm | 10% | 1.84 | 2.91 | 1.94 | 3.09 | 2.25 | 3.16 |
| | | Cmk | 10% | 1.73 | 2.82 | 1.84 | 2.76 | 2.07 | 3.03 |

| | | | | | | | | |
|--------------|-----|-----|------|------|------|------|------|------|
| Min Cm / Cmk | Cm | 10% | 1.84 | 2.91 | 1.94 | 3.09 | 2.25 | 3.16 |
| | Cmk | 10% | 1.73 | 2.82 | 1.78 | 2.76 | 2.07 | 3.03 |

Angle tightening test

| | | | hard | soft |
|---|--|------------------------------|------|------|
| Angle tested (from 50 to 100% of tightening) | | | 40° | 180° |
| Target torque | | | NA | NA |
| Serial number of tools | | IT (±) (torque) < 7%* | NA | NA |
| | | IT (±) (angle) H< 5° S< 15°* | NA | NA |
| | | IT (±) (torque) < 7%* | NA | NA |
| | | IT (±) (angle) H< 5° S< 15°* | NA | NA |
| | | IT (±) (torque) < 7%* | NA | NA |
| | | IT (±) (angle) H< 5° S< 15°* | NA | NA |

| | | | |
|---------------------------|------------------------------|------|------|
| Max IT (±) torque / angle | IT (±) (torque) < 7%* | 0.0% | 0.0% |
| | IT (±) (angle) H< 5° S< 15°* | 0.0° | 0.0° |

(*) Informations for reference based on VDI VDE 2645