Packers and Associated Downhole Tools

- MULTITECH Rotary Mechanical Set Packer PM-V ................................................................. 8
- MULTITECH Axial Mechanical Set Packer PVM-O ................................................................. 10
- MULTITECH Axial Mechanical Set Packer PM-A ................................................................. 14
- MULTITECH Axial Mechanical Set Packer PM-A1 ............................................................... 16
- MULTITECH Axial Mechanical Set Packer (retainer) PM-A1 (F) ........................................... 18
- MULTITECH Compression Packer PU ................................................................................... 20
- MULTITECH Compression Mechanical Set Packer PU-M .................................................... 22
- MULTITECH Split-Cone Compression Packer PU-M (R) ....................................................... 24
- MULTITECH Hydraulic-Set Packer PM-D-YaG ................................................................. 26
- MULTITECH Feed-through Axial Mechanical Set Packer PVM-O (KV) ................................. 28
- MULTITECH Feed-through Axial Mechanical Set Packer PVM-O (KV) M ......................... 30
- MULTITECH Feed-through Compression Packer PU (KV) .................................................... 32
- MULTITECH Feed-through Compression Mechanical Set Packer PU-M (KV) ................. 34
- MULTITECH Bridge Plug P-PT ......................................................................................... 36
- MULTITECH Hydraulic Anchor YaG .................................................................................. 38
- MULTITECH Mechanical Anchor YaM ............................................................................... 40
- MULTITECH Mechanical Anchor YaM ............................................................................... 40
- MULTITECH Re-entry Guide В ......................................................................................... 71

Valves and Downhole Accessories

- MULTITECH Axial Unloader Valve KU-O ........................................................................ 44
- MULTITECH Circulating Sub KCP .................................................................................... 46
- MULTITECH Circulating Sub KP ..................................................................................... 48
- MULTITECH Downhole Flow Control Valve KO-ZP ........................................................ 49
- MULTITECH Hydraulic Circulating Sub KCG ................................................................. 50
- MULTITECH Top/Bottom Circulating Sub KCP-V/N ...................................................... 51
- MULTITECH Circulating (Sealing) Sub KCP (U) .............................................................. 52
- MULTITECH Gas Vent Valve KG ................................................................................... 53
- MULTITECH Tester Valve KKO ..................................................................................... 54
- MULTITECH Check Valve KO (M) .................................................................................. 55
- MULTITECH Chemical Injection Mandrel KI ................................................................... 56
- MULTITECH Hydraulic Booster Valve K-UG ................................................................. 57
- MULTITECH Formation Isolation Valve KO-ZP .............................................................. 58
- MULTITECH Hydraulic On-Off Connector RK-G ............................................................ 59
- MULTITECH On-Off Connector RK/RK-S ..................................................................... 60
- MULTITECH On-Off Sealing Connector RK-S (U) .......................................................... 62
- MULTITECH Hydrostatic Sand Bailer ZhG ................................................................. 63
- MULTITECH Well Clean-Up Assembly KOS ................................................................. 64
- MULTITECH Side Pocket Mandrel KS .......................................................................... 65
- MULTITECH Magnet Tool LM ....................................................................................... 66
- MULTITECH Release Joint P-B ..................................................................................... 67
- MULTITECH Drill Pipe Screen FBK .............................................................................. 68
- MULTITECH Downhole Filter Sub FZT ......................................................................... 70
- MULTITECH Re-entry Guide B ..................................................................................... 71
Multiple Packer Assemblies for Oil Wells

- MULTITECH Packer Assembly KOUS-DPK (A) ................................................................. 74
- MULTITECH Packer Assembly KOUS-PK (A) K-UG ......................................................... 75
- MULTITECH Packer Assembly KOUS-DPK (A) K-UG ......................................................... 76
- MULTITECH Packer Assembly KOUS-PK (F) ................................................................. 77
- MULTITECH Packer Assembly KOUS-PVM-O (KV) ......................................................... 78
- MULTITECH Packer Assembly KOUS-PVM-O (KV) M ...................................................... 80
- MULTITECH Packer Assembly KOUS-PVM-O (KV) ORD ................................................ 81
- MULTITECH Packer Assembly KOUS-DL-ORZ .............................................................. 82
- MULTITECH Packer Assembly KOUS-DPK-ORZ/D ......................................................... 83
- MULTITECH Packer Assembly KOUS-DPK-ORZ (KZ) ....................................................... 84
- MULTITECH Packer Assembly KOUS-PM-A1 (F) ........................................................... 85
- MULTITECH Packer Assembly KOUS-PK-ORD (KP) M .................................................. 86
- MULTITECH Packer Assembly KOUS-DPK-GL ............................................................... 87
- MULTITECH Packer Assembly KOUS-PK-GL ................................................................. 88
- MULTITECH Packer Assembly KOUS-DPK (KZ) ............................................................ 89
- MULTITECH Packer Assembly KOUS-TPK-VSP ............................................................. 90
- MULTITECH Packer Assembly KOUS-TPK (A) .............................................................. 91
- MULTITECH Packer Assembly KOUS-TPK-SO .............................................................. 92
- MULTITECH Packer Assembly KOUS-DPK-ORZ (KZ) ................................................... 93
- MULTITECH Packer Assembly KOUS-DPK-ORZ (KZ) M .............................................. 94
- MULTITECH Packer Assembly KOUS-DPK-ORZ (KP) M .............................................. 95
- MULTITECH Packer Assembly KOUS-PM-A1 (F) KO ..................................................... 96

Fracturing Equipment and Assemblies

- MULTITECH Diverter Sub KP-D ...................................................................................... 98
- MULTITECH Check Valve KO-GRP ............................................................................... 99
- MULTITECH Rotary Mechanical Set Packer PM-V (GRP) ............................................ 100
- MULTITECH Axial Mechanical Set Packer PM-R (GRP) ............................................. 102
- MULTITECH Compression Packer PU (GRP) YaG1 ..................................................... 104
- MULTITECH Swellable Packer PN ............................................................................... 106
- MULTITECH Hydraulic Set Packer PIG ....................................................................... 107
- MULTITECH Liner Hanger Packer PGPKh ................................................................. 108
- MULTITECH Stinger S ................................................................................................. 109
- MULTITECH Fracturing Sleeves MGR ........................................................................ 110
- MULTITECH Packer Assembly KOUS-DPK GRP-SO .................................................. 111

Gas and Gas Condensate Downhole Equipment

- MULTITECH Surface-Controlled Subsurface Safety Valve KO-U .................................. 114
- MULTITECH Slip Joint ST ........................................................................................... 115
- MULTITECH Packer Assembly KOUS-PK-GL ............................................................ 116
- MULTITECH Packer Assembly KPO ........................................................................... 117
- MULTITECH Packer Assembly KOUS-DPK-DLK-ORE ............................................. 118
Packers and Associated Downhole Tools
Application

- Squeeze cementing;
- Hydraulic fracturing;
- Formation pressure increase;
- Casing leak detection;
- Acidizing;
- Well testing and production;
- Other well interventions which require pressurization above or below the packer.

To stand upward movement of the string due to differential pressure from below and to hold the packer down the PM-V packer is equipped with hydraulic anchors YaG1, YaG2 or YaG3.

Main Features and Benefits

- The packer is set in the well by a quarter right-hand turn of the tubing string and lowering it;
- To release the packer apply tension to the tubing;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design;
- Simple design;
- Low maintenance cost;
- To easily release the packer in the deep wells it is recommended that the packer be set along with KU-O unloader valve (placed above the packer). The valve allows the pressure between the tubing and the annulus to equalize.
### Packers and Associated Downhole Tools

#### Specifications

- **Optional box (top) and pin (bottom) thread connections are available.**
- **Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi; 14500 psi.**
- **High-temperature (302 °F) model of the packer is available on request.**
- Higher performance version available for hostile environments – K2 Model.
- If ordering a packer with a hydraulic anchor, please indicate the anchor option (YaG1, YaG2 or YaG3) following the packer’s name.
- Other sizes of PM-V packer are available on request.

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD in</th>
<th>ID in</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-V 82-34-100</td>
<td>4.0</td>
<td>3.23</td>
<td>1.339</td>
<td>2.375 NU</td>
<td>60.33</td>
<td>45.276</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
</tr>
<tr>
<td>PM-V 88-38-100</td>
<td>4 ½</td>
<td>3.465</td>
<td>1.46</td>
<td>2.375 NU</td>
<td>60.33</td>
<td>45.276</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
</tr>
<tr>
<td>PM-V 92-38-100</td>
<td>4 ½</td>
<td>3.622</td>
<td>1.46</td>
<td>2.375 NU</td>
<td>60.33</td>
<td>45.276</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
</tr>
<tr>
<td>PM-V 98-42-100</td>
<td>4 ½; 5.0</td>
<td>3.86</td>
<td>1.65</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
</tr>
<tr>
<td>PM-V 101-42-100</td>
<td>5.0</td>
<td>3.976</td>
<td>1.65</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
</tr>
<tr>
<td>PM-V 112-52-100</td>
<td>5 ½; 5 ¾</td>
<td>4.41</td>
<td>2.04</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 114-52-100</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 116-52-100</td>
<td>5 ½; 5 ¾</td>
<td>139.7</td>
<td>4.567</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 118-52-100</td>
<td>5 ½; 5 ¾</td>
<td>139.7</td>
<td>4.646</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 122-52-100</td>
<td>5 ¾</td>
<td>146</td>
<td>4.803</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 136-60-100</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.354</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 140-60-100</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 142-60-100</td>
<td>6 ½</td>
<td>168.3</td>
<td>5.59</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 145-60-100</td>
<td>6 ½; 7</td>
<td>168.3</td>
<td>5.709</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PM-V 150-60-100</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>2.87 NU</td>
<td>73.03</td>
<td>48.819</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
</tbody>
</table>
MULTITECH PVM-O
axial mechanical set packer

Application

■ Formation pressure increase;
■ Acid fracturing;
■ Squeeze cementing;
■ Acidizing;
■ Casing leak test;
■ Well testing and production;
■ Other well interventions which require pressurization above or below the packer.

To prevent the tool string from moving under weight and to hold the packer down at the tool’s depth the PVM-O Model is completed with hydraulic anchors YaG1, YaG2 or YaG3.

Main Features and Benefits

■ To set the packer pull the tubing string upward and then lower it (tubing rotation is not required);
■ To release the packer pull the tubing string upward;
■ The packer has two latching slots to ensure secure setting of the packer in deviated wellbores;
■ Two-cup (protective and sealing) or three-cup (two protective and one sealing) design for worn casings;
■ To easily release the packer in the deep wells it is recommended that the packer be set along with KU-O unloader valve (placed above the packer). The valve allows the pressure between the tubing and the annulus to equalize;
■ The packer has a built-in hydraulic anchor which can also be connected through a coupling;
■ Easy to use and maintain;
■ Multiple use within one tripping;
■ Tool’s components are plated or coated with phosphate.

Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM-O 82-34-100</td>
<td>4.0</td>
<td>101.6</td>
<td>3.23</td>
<td>82</td>
<td>1.339</td>
<td>34</td>
<td>2.375 NU</td>
<td>60.33</td>
<td>56.1</td>
</tr>
<tr>
<td>PVM-O 88-38-100</td>
<td>4 ½</td>
<td>114.3</td>
<td>3.465</td>
<td>88</td>
<td>1.496</td>
<td>38</td>
<td>2.375 NU</td>
<td>60.33</td>
<td>56.1</td>
</tr>
<tr>
<td>PVM-O 92-38-100</td>
<td>4 ½</td>
<td>114.3</td>
<td>3.622</td>
<td>92</td>
<td>1.496</td>
<td>38</td>
<td>2.375 NU</td>
<td>60.33</td>
<td>56.1</td>
</tr>
<tr>
<td>PVM-O 98-42-100</td>
<td>4 ½; 5.0</td>
<td>114.3; 127.0</td>
<td>3.86</td>
<td>98</td>
<td>1.654</td>
<td>42</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>59</td>
</tr>
<tr>
<td>PVM-O 101-42-100</td>
<td>5.0</td>
<td>127.0</td>
<td>3.976</td>
<td>101</td>
<td>1.654</td>
<td>42</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>59</td>
</tr>
<tr>
<td>PVM-O 112-52-100</td>
<td>5 ½; 5 ⅛</td>
<td>139.7; 146.1</td>
<td>4.41</td>
<td>112</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>60.6</td>
</tr>
<tr>
<td>PVM-O 114-52-100</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>60.6</td>
</tr>
<tr>
<td>PVM-O 116-52-100</td>
<td>5 ½; 5 ⅝</td>
<td>139.7; 146.1</td>
<td>4.567</td>
<td>116</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>60.6</td>
</tr>
<tr>
<td>PVM-O 118-52-100</td>
<td>5 ½; 5 ⅞</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>60.6</td>
</tr>
<tr>
<td>PVM-O 122-52-100</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>60.6</td>
</tr>
<tr>
<td>PVM-O 136-60-100</td>
<td>6 ⅝</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>61</td>
</tr>
<tr>
<td>PVM-O 140-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>61.42</td>
</tr>
<tr>
<td>PVM-O 142-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>61.42</td>
</tr>
<tr>
<td>PVM-O 145-60-100</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.709</td>
<td>145</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>61.42</td>
</tr>
<tr>
<td>PVM-O 150-60-100</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>150</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>61.42</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi; 14500 psi.
- *** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- If ordering a packer with a hydraulic anchor, please indicate the anchor option (YaG1, YaG2 or YaG3) following the packer’s name.
- Other sizes of PVM-O packer are available on request.
MULTITECH PM-R
axial mechanical set packer

**Application**
- Acid fracturing;
- Acidizing;
- Squeeze cementing;
- Formation pressure increase;
- Casing leak test;
- Other well interventions which require pressurization above or below the packer.

To prevent the tool string from moving under pressure and to hold the packer down at the tool’s depth during well interventions the PM-R packer is completed with hydraulic anchors YaG1, YaG2 or YaG3.

**Main Features and Benefits**
- To set the packer pull the tubing string upward and then lower it (tubing rotation is not required);
- To release the packer pull the tubing string upward;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design for worn casings;
- Built-in hydraulic anchor;
- To easily release the packer in the deep wells it is recommended that the packer be set along with KU-O unloader valve (placed above the packer). The valve allows for pressure between the tubing and the annulus to equalize;
- Multiple use within one tripping;
- High maintainability;
- Tool’s components are plated or coated with phosphate.

Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
# Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-R 70-25-70</td>
<td>3½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 80-38-70</td>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 82-38-100</td>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 88-38-100</td>
<td>4½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 92-38-100</td>
<td>4½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 98-42-100</td>
<td>4½; 5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 101-42-100</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 112-52-100</td>
<td>5½; 5 ⅜</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 114-52-100</td>
<td>5½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 116-52-100</td>
<td>5½; 5 ⅜</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 118-52-100</td>
<td>5½; 5 ⅜</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 122-52-100</td>
<td>5½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 136-60-100</td>
<td>6½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 140-60-100</td>
<td>6½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 142-60-100</td>
<td>6½</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 145-60-100</td>
<td>6½; 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 150-60-100</td>
<td>7.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 152-60-100</td>
<td>7.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 182-95-100</td>
<td>8 ⅜</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R 205-100-100</td>
<td>9 ⅜</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Larger Tool ID of 2.992 in (76mm) is available on request.
- *** Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi; 14500 psi.
- **** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- If ordering a packer with a hydraulic anchor, please indicate the anchor option (YaG1, YaG2 or YaG3) following the packer’s name.
- Other sizes of PM-R packer are available on request.
MULTITECH PM-A
axial mechanical set packer

Application

- Formation pressure increase;
- Acidizing;
- Well testing and production;
- Long-term isolation of zones in the production casing;
- Other well interventions which require pressurization above or below the packer.

Main Features and Benefits

- Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
- The packer is set in the well by a quarter right-hand turn of the tubing string and lowering it;
- The packer is released by a quarter right-hand turn of the tubing string and an upward pull;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design;
- Original sleeve design enables the packer release off the tubing with an RK On-Off Connector and replacement of the tubing without packer unsettling and pickup;
- The packer has two mechanical anchors to secure it in the well with pressure applied from above or below;
- Doesn’t require tandem installation with hydraulic anchors;
- Robust construction;
- Dependable sealing of the production casing during cyclic injection;
- Tool’s components are plated or coated with phosphate.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-A 112-50-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.41</td>
<td>112</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>165.35</td>
</tr>
<tr>
<td>PM-A 114-50-70</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>171.96</td>
</tr>
<tr>
<td>PM-A 116-50-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.567</td>
<td>116</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>180.8</td>
</tr>
<tr>
<td>PM-A 118-52-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>189.6</td>
</tr>
<tr>
<td>PM-A 122-52-70</td>
<td>5 ½</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>205</td>
</tr>
<tr>
<td>PM-A 136-60-70</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>268.96</td>
</tr>
<tr>
<td>PM-A 140-60-70</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>286.6</td>
</tr>
<tr>
<td>PM-A 142-60-70</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>295.42</td>
</tr>
<tr>
<td>PM-A 145-60-70</td>
<td>6 ¼; 7</td>
<td>168.3; 177.8</td>
<td>5.709</td>
<td>145</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>96.575</td>
<td>302</td>
</tr>
<tr>
<td>PM-A 150-60-70</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>150</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>97.244</td>
<td>335.1</td>
</tr>
</tbody>
</table>

- Optional box (top) and pin (bottom) thread connections are available.
- Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi.
- High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of PM-A packer are available on request.
MULTITECH PM-A1
axial mechanical set packer

Application

- Formation pressure increase;
- Squeeze cementing;
- Other well interventions which require pressurization above or below the packer.

Main Features and Benefits

- Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.

- To set the packer pull the tubing string upward and then lower it (tubing rotation is not required);
- To release the packer pull the tubing string upward;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design;
- The packer has two mechanical anchors to secure it in the well with pressure applied from above or below;
- Robust construction;
- Dependable sealing of the production casing during cyclic injection;
- Tool’s components are plated or coated with phosphate.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>OD in</th>
<th>ID in</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-A1 101-42-70</td>
<td>5.0 127.0</td>
<td>3.976 101</td>
<td>1.654 42</td>
<td>2.875 NU 73.03</td>
<td>106.3</td>
<td>209.4</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 114-50-70</td>
<td>5 ½ 139.7</td>
<td>4.49 114</td>
<td>1.969 50</td>
<td>2.875 NU 73.03</td>
<td>107.84</td>
<td>235.9</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 116-50-70</td>
<td>5 ½; 5 ¾ 139.7; 146.1</td>
<td>4.567 116</td>
<td>1.969 50</td>
<td>2.875 NU 73.03</td>
<td>107.874</td>
<td>240.3</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 118-52-70</td>
<td>5 ½; 5 ¾ 139.7; 146.1</td>
<td>4.646 118</td>
<td>2.047 52</td>
<td>2.875 NU 73.03</td>
<td>109.65</td>
<td>251.3</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 122-52-70</td>
<td>5 ¾ 146.1</td>
<td>4.803 122</td>
<td>2.047 52</td>
<td>2.875 NU 73.03</td>
<td>109.65</td>
<td>255.7</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 136-60-70</td>
<td>6 ¾ 168.3</td>
<td>5.354 136</td>
<td>2.362** 60**</td>
<td>2.875 NU 73.03</td>
<td>111.22</td>
<td>330.7</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 140-60-70</td>
<td>6 ¾ 168.3</td>
<td>5.512 140</td>
<td>2.362** 60**</td>
<td>2.875 NU 73.03</td>
<td>111.22</td>
<td>332.9</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 142-60-70</td>
<td>6 ¾ 168.3</td>
<td>5.59 142</td>
<td>2.362** 60**</td>
<td>2.875 NU 73.03</td>
<td>111.22</td>
<td>337.3</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 145-60-70</td>
<td>6 ¾; 7 168.3; 177.8</td>
<td>5.709 145</td>
<td>2.362** 60**</td>
<td>2.875 NU 73.03</td>
<td>111.22</td>
<td>377</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PM-A1 150-60-70</td>
<td>7.0 177.8</td>
<td>5.906 150</td>
<td>2.362** 60**</td>
<td>2.875 NU 73.03</td>
<td>112.2</td>
<td>383.6</td>
<td>10150***</td>
<td>266****</td>
<td>80...120</td>
<td></td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Larger Tool ID of 2.992 in (76mm) is available on request.
- *** Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi.
- **** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments - K2 Model.
- Other sizes of PM-A1 packer are available on request.
MULTITECH PM-A1 (F) axial mechanical set packer (retainer)

Application

- Formation pressure increase;
- Squeeze cementing;
- Long-term isolation of zones in the production casing;
- Other well interventions which require pressurization above or below the packer.

Main Features and Benefits

- To set the packer pull the tubing string upward and then lower it (tubing rotation is not required);
- To release the packer pull the tubing string upward;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design;
- The packer has two mechanical anchors to secure it in the well with pressure applied from above or below;
- Robust construction;
- Dependable sealing of the production casing during cyclic injection;
- Tool’s components are plated or coated with phosphate.

Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>ID</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-A1 (F)</td>
<td>114-50-70</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>116-50-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.567</td>
<td>116; 118</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>118-52-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118; 2.047</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>122-52-70</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
<td>122; 52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>136-62-70</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.354</td>
<td>136; 2441</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>140-62-70</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
<td>140; 2441</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>142-62-70</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.59</td>
<td>142; 2441</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>145-62-70</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.709</td>
<td>145; 2.441</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
<tr>
<td>PM-A1 (F)</td>
<td>150-62-70</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>150; 2.441</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>10150**</td>
</tr>
</tbody>
</table>

- Optional box (top) and pin (bottom) thread connections are available.
- Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi.
- High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of PM-A1 (F) packer are available on request.
MULTITECH PU
compression packer

Application

- Two- or three-packer assemblies used for dual completion or dual injection;
- Other well interventions which require pressurization above or below the packer.
To prevent the tool string from moving under weight and to hold the packer down at the tool’s depth the PU Packer is completed with hydraulic anchors YaG1, YaG2 or YaG3.

Main Features and Benefits

- Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
- Set with a liner seating against the bottomhole or atop the lower packer;
- Reliable setting in deviated and horizontal wells;
- Equipped with a pin to ensure a torque-through feature to allow rotation of the tubing assembly below the packer;
- Easy setting;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design for worn casings;
- Simple design;
- Tool’s components are plated or coated with phosphate.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU 80-38-70</td>
<td>4.0 101.6</td>
<td>3.15 80</td>
<td>1.496 38</td>
<td>2.375 NU 60.33</td>
<td>35.236 39.68</td>
<td>10150**</td>
<td>266***</td>
<td>50...80</td>
<td></td>
</tr>
<tr>
<td>PU 82-38-70</td>
<td>4.0 101.6</td>
<td>3.23 82</td>
<td>1.496 38</td>
<td>2.375 NU 60.33</td>
<td>35.236 41.9</td>
<td>10150**</td>
<td>266***</td>
<td>50...80</td>
<td></td>
</tr>
<tr>
<td>PU 88-38-100</td>
<td>4.3 114.3</td>
<td>3.465 88</td>
<td>1.496 38</td>
<td>2.375 NU 60.33</td>
<td>35.236 48.5</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
<td></td>
</tr>
<tr>
<td>PU 92-38-100</td>
<td>4  114.3</td>
<td>3.622 92</td>
<td>1.496 38</td>
<td>2.375 NU 60.33</td>
<td>35.236 52.91</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
<td></td>
</tr>
<tr>
<td>PU 98-42-100</td>
<td>4.3; 5.0 114.3; 127.0</td>
<td>3.86 98</td>
<td>1.654 42</td>
<td>2.875 NU 73.03</td>
<td>35.433 55.1</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
<td></td>
</tr>
<tr>
<td>PU 101-42-100</td>
<td>5.0 127.0</td>
<td>3.976 101</td>
<td>1.654 42</td>
<td>2.875 NU 73.03</td>
<td>35.433 57.3</td>
<td>14500**</td>
<td>266***</td>
<td>50...80</td>
<td></td>
</tr>
<tr>
<td>PU 112-52-100</td>
<td>5.3; 5.3</td>
<td>139.7; 146.1</td>
<td>4.41 112</td>
<td>2.047 52</td>
<td>2.875 NU 73.03</td>
<td>35.63 61.73</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PU 114-52-100</td>
<td>5.3 139.7</td>
<td>4.49 114</td>
<td>2.047 52</td>
<td>2.875 NU 73.03</td>
<td>35.63 61.73</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 116-52-100</td>
<td>5.3; 5.3</td>
<td>139.7; 146.1</td>
<td>4.567 116</td>
<td>2.047 52</td>
<td>2.875 NU 73.03</td>
<td>35.63 66.14</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PU 118-52-100</td>
<td>5.3; 5.3</td>
<td>139.7; 146.1</td>
<td>4.646 118</td>
<td>2.047 52</td>
<td>2.875 NU 73.03</td>
<td>35.63 68.34</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
</tr>
<tr>
<td>PU 122-52-100</td>
<td>5.3 146.1</td>
<td>4.803 122</td>
<td>2.047 52</td>
<td>2.875 NU 73.03</td>
<td>35.63 70.55</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 136-60-100</td>
<td>6.3 168.3</td>
<td>5.354 136</td>
<td>2.362 60</td>
<td>2.875 NU 73.03</td>
<td>35.827 90.4</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 140-60-100</td>
<td>6.3 168.3</td>
<td>5.512 140</td>
<td>2.362 60</td>
<td>2.875 NU 73.03</td>
<td>35.827 97</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 142-60-100</td>
<td>6.3 168.3</td>
<td>5.59 142</td>
<td>2.362 60</td>
<td>2.875 NU 73.03</td>
<td>35.827 97</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 145-60-100</td>
<td>6.3; 7 168.3; 177.8</td>
<td>5.709 145</td>
<td>2.362 60</td>
<td>2.875 NU 73.03</td>
<td>35.827 97</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 150-60-100</td>
<td>7.0 177.8</td>
<td>5.906 150</td>
<td>2.362 60</td>
<td>2.875 NU 73.03</td>
<td>35.827 101.4</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 182-76-100</td>
<td>8.3 219.1</td>
<td>7.283 185</td>
<td>2.992 76</td>
<td>4.5 NU 114.3</td>
<td>40.748 126.46</td>
<td>14500**</td>
<td>266***</td>
<td>80...120</td>
<td></td>
</tr>
<tr>
<td>PU 205-100-100</td>
<td>9.4 244.5</td>
<td>8.07 205</td>
<td>3.937 100</td>
<td>4.5 NU 114.3</td>
<td>40.748 185.39</td>
<td>14500**</td>
<td>266***</td>
<td>120...160</td>
<td></td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi. At 14500 psi the packer is used with a hydraulic anchor YaG1, YaG2 or YaG3.
- *** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- If ordering a packer with a hydraulic anchor, please indicate the anchor option (YaG1, YaG2 or YaG3) following the packer’s name.
- Other sizes of PU packer are available on request.
MULTITECH PU-M
compression mechanical set packer

Application

- ESP completions;
- Casing leak test below the packer;
- Multi-packer assemblies used for dual completion and dual injection;
- Fracturing for isolation of the upper section of the production casing (in straddle packer assemblies);
- Other well interventions which require pressurization above or below the packer.

Main Features and Benefits

- Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.

- Set with a liner seating against the bottomhole or atop the lower packer;
- The tool allows the packer to be suspended in the hole (without tubing);
- Two- and three-packer assemblies;
- Reliable setting in deviated and horizontal wells;
- Equipped with a pin to ensure a torque-through feature to allow rotation of the tubing assembly below the packer;
- Easy setting;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design for worn casings;
- Simple design;
- Tool’s components are plated or coated with phosphate.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
<td></td>
<td>in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 101-42-70</td>
<td>5.0</td>
<td>127.0</td>
<td>3.976</td>
<td>101</td>
<td>1.654</td>
<td>42</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>88.583</td>
<td>154.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 105-42-70</td>
<td>5.0</td>
<td>127.0</td>
<td>4.114</td>
<td>105</td>
<td>1.654</td>
<td>42</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>88.583</td>
<td>180.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 112-50-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.41</td>
<td>112</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>89.37</td>
<td>187.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 114-50-70</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>119</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>89.37</td>
<td>191.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 116-50-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.567</td>
<td>116</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>89.37</td>
<td>196.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 118-50-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>89.37</td>
<td>202.83</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 118-50-70</td>
<td>5 ½</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>89.37</td>
<td>209.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 122-50-70</td>
<td>5 ½</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>89.37</td>
<td>264.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 136-56-70</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.205</td>
<td>56</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>90.551</td>
<td>266.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 140-56-70</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>2.205</td>
<td>56</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>90.551</td>
<td>291</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 142-56-70</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>2.205</td>
<td>56</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>90.551</td>
<td>297.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 145-56-70</td>
<td>6 ¼; 7</td>
<td>168.3; 177.8</td>
<td>5.709</td>
<td>145</td>
<td>2.205</td>
<td>56</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>90.551</td>
<td>299.83</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 150-56-70</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>150</td>
<td>2.205</td>
<td>56</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>90.551</td>
<td>308.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 182-76-70</td>
<td>8 ¾</td>
<td>219.1</td>
<td>7.283</td>
<td>185</td>
<td>2.992</td>
<td>76</td>
<td>4.5 NU</td>
<td>114.3</td>
<td>96.457</td>
<td>412.26</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M 205-100-70</td>
<td>9 ¾</td>
<td>244.5</td>
<td>8.07</td>
<td>205</td>
<td>3.937</td>
<td>100</td>
<td>4.5 NU</td>
<td>114.3</td>
<td>101.968</td>
<td>520.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi.
- *** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of PU-M packer are available on request.
MULTITECH PU-M (R) split-cone compression packer

Application

- ESP completions;
- Casing leak test below the packer;
- Multi-packer assemblies used for dual completion and dual injection;
- Other well interventions which require pressurization above or below the packer.

Main Features and Benefits

- Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
- The packer's design incorporates an upper adjustable cone;
- Set with a liner seating against the bottomhole or atop the lower packer;
- The tool allows the packer to be suspended in the hole (without tubing);
- Two- and three-packer assemblies;
- Reliable setting in deviated and horizontal wells;
- Equipped with a pin to ensure a torque-through feature to allow rotation of the tubing assembly below the packer;
- Easy setting;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design;
- Simple design;
- Tool's components are plated or coated with phosphate.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td></td>
<td>in</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M (R) 118-52-70</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>NU</td>
<td>73.03</td>
<td>96.457</td>
<td>205</td>
<td>10150**</td>
<td>266***</td>
</tr>
<tr>
<td>PU-M (R) 122-52-70</td>
<td>5 ¾</td>
<td>146.1</td>
<td>NU</td>
<td>73.03</td>
<td>96.457</td>
<td>211.6</td>
<td>10150**</td>
<td>266***</td>
</tr>
<tr>
<td>PU-M (R) 140-60-70</td>
<td>6 ¾</td>
<td>168.3</td>
<td>NU</td>
<td>73.03</td>
<td>98.03</td>
<td>297.6</td>
<td>10150**</td>
<td>266***</td>
</tr>
</tbody>
</table>

- Optional box (top) and pin (bottom) thread connections are available.
- Differential pressure ratings — 5076 psi; 7252 psi.
- High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments - K2 Model.
- Other sizes of PU-M (R) packer are available on request.
MULTITECH PM-D-YaG hydraulic set packer

Application

- Squeeze cementing;
- Well interventions requiring one-time isolation;
- Water injection in injection wells;
- Horizontal wells.

Main Features and Benefits

Allows for long-term isolation of zones in the production casing and protects the production casing from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.

- Set in the well hydraulically by creating pressure in the tubing;
- Set by dropping a ball and applying pressure or with a release tool assembly;
- To release the packer pull the tubing string upward;
- Responsive to upward and downward differential pressure;
- Shallow depth setting capability without minimum setdown weight limit of the tubing;
- Hydraulic anchor is not exposed to the flow of the pumped fluid;
- High setting precision;
- Tool's components are plated or coated with phosphate.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>PM-D-YAG 112-50-100</td>
<td>5 ½; 5 ¾ 139.7; 146.1</td>
<td>4.41</td>
<td>112</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>76.181</td>
</tr>
<tr>
<td>PM-D-YAG 114-50-100</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
<tr>
<td>PM-D-YAG 116-50-100</td>
<td>5 ½; 5 ¾ 139.7; 146.1</td>
<td>4.567</td>
<td>116</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>76.181</td>
</tr>
<tr>
<td>PM-D-YAG 118-50-100</td>
<td>5 ½</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
<tr>
<td>PM-D-YAG 122-50-100</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
<tr>
<td>PM-D-YAG 136-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
<tr>
<td>PM-D-YAG 140-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
<tr>
<td>PM-D-YAG 142-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
<tr>
<td>PM-D-YAG 145-60-100</td>
<td>6 ¾; 7 168.3; 177.8</td>
<td>5.709</td>
<td>145</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>80.7</td>
</tr>
<tr>
<td>PM-D-YAG 150-60-100</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>150</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi.
- *** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments = K2 Model.
- Other sizes of PM-D-YaG packer are available on request.
MULTITECH PVM-O-KV
feed-through axial mechanical set packer

Application

- Water shut-off in the production casing above ESP;
- Multi-packer assemblies during dual completions.

Optional Design

- Packer with a gas vent;
- Packer with a gas vent and a chemical injection port.

Main Features and Benefits

- To set the packer pull the tubing string upward and then lower it (tubing rotation is not required);
- To release the packer pull the tubing string upward;
- Two symmetrical J-slots provide secure setting in deviated wells;
- Swivel ensures that the packer and the electric wireline are correctly positioned;
- Simple and rugged packing element;
- Easy to use and maintain;
- Multiple use within one tripping;
- High maintainability;
- Tool’s components are plated or coated with phosphate.

Designed for ESP completions with production casing leak sections above payzone.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM-O (KV) 112-35-50</td>
<td>5 ½; 5 ¾ 139.7; 146.1</td>
<td>139.7</td>
<td>146.1</td>
<td>Box Pin</td>
<td>73.03</td>
<td>96.969</td>
<td>149.91</td>
<td>7252**</td>
<td>266***</td>
</tr>
<tr>
<td>PVM-O (KV) 116-35-50</td>
<td>5 ½ 139.7</td>
<td>139.7</td>
<td>146.1</td>
<td>Box Pin</td>
<td>73.03</td>
<td>96.969</td>
<td>154.3</td>
<td>7252**</td>
<td>266***</td>
</tr>
<tr>
<td>PVM-O (KV) 118-35-50</td>
<td>5 ½; 5 ¾ 139.7; 146.1</td>
<td>139.7</td>
<td>146.1</td>
<td>Box Pin</td>
<td>73.03</td>
<td>96.969</td>
<td>154.3</td>
<td>7252**</td>
<td>266***</td>
</tr>
<tr>
<td>PVM-O (KV) 122-35-50</td>
<td>5 ¼ 146.1</td>
<td>146.1</td>
<td>146.1</td>
<td>Box Pin</td>
<td>73.03</td>
<td>96.81</td>
<td>191.8</td>
<td>7252**</td>
<td>266***</td>
</tr>
<tr>
<td>PVM-O (KV) 124-45-50</td>
<td>6 ½ 168.3</td>
<td>168.3</td>
<td>177.8</td>
<td>Box Pin</td>
<td>73.03</td>
<td>97.99</td>
<td>233.7</td>
<td>7252**</td>
<td>266***</td>
</tr>
<tr>
<td>PVM-O (KV) 128-52-50</td>
<td>6 ¾ 177.8</td>
<td>177.8</td>
<td>190.5</td>
<td>Box Pin</td>
<td>73.03</td>
<td>104.33</td>
<td>264.6</td>
<td>7252**</td>
<td>266***</td>
</tr>
<tr>
<td>PVM-O (KV) 130-62-50</td>
<td>7.0 177.8</td>
<td>177.8</td>
<td>190.5</td>
<td>Box Pin</td>
<td>73.03</td>
<td>109.763</td>
<td>407.86</td>
<td>7252**</td>
<td>266***</td>
</tr>
</tbody>
</table>

* Optional box (top) and pin (bottom) thread connections are available.
** Differential pressure rating — 7252 psi.
*** High-temperature (302 °F) model of the packer is available on request.
Higher performance version available for hostile environments - K2 Model.
If ordering a packer with a hydraulic anchor, please indicate the anchor option (YaG1, YaG2 or YaG3) following the packer's model.
Other sizes of PVM-O (KV) packer are available on request.
The size of KRBP matching power cable — 0.59x1.472 (0.118x0.63).
Other sizes of the packer are available on request to fit different power cables (as per GOST R 51777-2001).
MULTITECH PVM-O (KV) M
feed-through axial mechanical set packer, upgraded

Application
- Water shut-off in the production casing above ESP;
- Multiple-packer assemblies during dual completions.

Main Features and Benefits
- Designed for ESP completions with production casing leak sections above payzone.
- To set the packer pull the tubing string upward and then lower it (tubing rotation is not required);
- To release the packer pull the tubing string upward;
- Two symmetrical J-slots provide secure setting in deviated wells;
- Gas vent in PVM-O (KV) M (GT) packer serves to evacuate gas from the sealbore;
- Packer bore of a larger diameter;
- Damage-free installation of electric conduit;
- Swivel ensures that the packer and the electric wireline are correctly and securely positioned;
- Simple and rugged packing element;
- Easy to use and maintain;
- Multiple use within one tripping;
- High maintainability;
- Tool’s components are plated or coated with phosphate.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td></td>
<td>Box</td>
<td>Pin</td>
</tr>
<tr>
<td></td>
<td>Length, in, no more than</td>
<td>Weight, lbs, no more than</td>
</tr>
<tr>
<td>PVM-O (KV) M 118-50-50</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
</tr>
<tr>
<td>PVM-O (KV) M 122-50-50</td>
<td>5 ¾</td>
<td>146.1</td>
</tr>
<tr>
<td>PVM-O (KV) M 140-60-50</td>
<td>6 ¾</td>
<td>168.3</td>
</tr>
<tr>
<td>PVM-O (KV) M 142-60-50</td>
<td>6 ¾</td>
<td>168.3</td>
</tr>
<tr>
<td>PVM-O (KV) M 145-60-50</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
</tr>
<tr>
<td>PVM-O (KV) M 150-60-50</td>
<td>7</td>
<td>177.8</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure rating – 7252 psi.
- *** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of PVM-O (KV) M packer are available on request.
- The size of KRBP matching power cable – 0.118 x 0.98.

Other sizes of the packer are available on request to fit different power cables (as per GOST R 51777-2001).
MULTITECH PU (KV)
feed-through compression packer

Application

- Multiple-packer assemblies for dual completions;
- As part of Packer Assembly KOUS-DPK-ORZ (K2)/M.

Main Features and Benefits

- Designed for protection of production casing from injected fluid, ESP completions and isolation of production casing leak sections above ESP.
- The packer is set by sealing in the bore of the lower packer;
- Easy setting;
- Reliable operation in deviated wells;
- Swivel ensures that the packer and the electric wireline are correctly and securely positioned;
- Through-bore capability to feed power supply cables to downhole tool assemblies;
- Tool’s components are plated or coated with phosphate.
Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>OD in</td>
<td>ID mm</td>
<td>Box in</td>
<td>Pin in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU (KV) 118-35-50</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>1.378</td>
<td>35 NU</td>
<td>73.03</td>
<td>95.669</td>
<td>189.6</td>
</tr>
<tr>
<td>PU (KV) 122-35-50</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
<td>1.378</td>
<td>35 NU</td>
<td>73.03</td>
<td>96.81</td>
<td>191.8</td>
</tr>
<tr>
<td>PU (KV) 140-52-50</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
<td>2.047</td>
<td>52 NU</td>
<td>88.9</td>
<td>97.99</td>
<td>233.7</td>
</tr>
<tr>
<td>PU (KV) 142-52-50</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.59</td>
<td>2.047</td>
<td>52 NU</td>
<td>88.9</td>
<td>97.99</td>
<td>238.1</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure rating — 7252 psi.
- *** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments — K2 Model.
- Other sizes of the packer are available on request.
- The size of KRPB matching power cable — 0.59x1.472 (0.118x0.63).
- Other sizes of the packer are available on request to fit different power cables (as per GOST R 51777-2001).
MULTITECH PU-M (KV)
feed-through compression mechanical set packer

Application

- Multiple-packer assemblies for intrawell injection (from bottom to top).

Main Features and Benefits

- Designed for ESP completions and isolation of production casing leak sections above ESP.
- The packer is set by sealing in the bore of the lower packer;
- Easy setting;
- Reliable operation in deviated wells;
- Swivel ensures that the packer and the electric wireline are correctly and securely positioned;
- Tool’s components are plated or coated with phosphate.
**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M (KV)</td>
<td>118-35-35</td>
<td>5 ⅜; 5 ¾</td>
<td>139.7;</td>
<td>146.1</td>
<td>4.646</td>
<td>118</td>
<td>1.378</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>140.71</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>in</td>
<td>mm</td>
<td>mm</td>
<td>in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M (KV)</td>
<td>122-35-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>1.378</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>140.71</td>
<td>282.19</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>in</td>
<td>mm</td>
<td>mm</td>
<td>in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M (KV)</td>
<td>140-50-35</td>
<td>6 ⅜</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>1.969</td>
<td>3.5 NU</td>
<td>88.9</td>
<td>97.244</td>
<td>343.92</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>in</td>
<td>mm</td>
<td>mm</td>
<td>in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU-M (KV)</td>
<td>142-50-35</td>
<td>6 ⅝</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>1.969</td>
<td>3.5 NU</td>
<td>88.9</td>
<td>97.244</td>
<td>348.3</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure rating ~ 7252 psi.
- *** High-temperature (302 °F) model of the packer is available on request.
- Higher performance version available for hostile environments - K2 Model.
- Other sizes of the packer are available on request.
- The size of KRPB matching power cable — 0.59x1.472 (0.118x0.63).
- Other sizes of the packer are available on request to fit different power cables (as per GOST R 51777-2001).
MULTITECH P-PT bridge plug

Application

- Setting bridge plugs and temporary isolation of formations;
- Well plugging and abandonment;
- Squeeze cementing above the tool.

Main Features and Benefits

- Simple design;
- Easy delivery and installation due to compact design;
- Average milling time — 5-6 hours.

Designed for zonal isolation of production casing.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Pressure Required To Move Plug Packer from Shipping To Working Position, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-PT 118-50</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>30</td>
<td>57.32</td>
<td>7252**</td>
</tr>
<tr>
<td>P-PT 120-50</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.724</td>
<td>120</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>30</td>
<td>61.73</td>
<td>7252**</td>
</tr>
<tr>
<td>P-PT 136-50</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>30</td>
<td>83.776</td>
<td>7252**</td>
</tr>
<tr>
<td>P-PT 140-50</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>30</td>
<td>94.8</td>
<td>7252**</td>
</tr>
</tbody>
</table>

- * Optional box (top) thread connections are available.
- ** Differential pressure rating – 7252 psi.
- *** High-temperature (302 °F) model of the packer is available on request.
- Other sizes of P-PT packer are available on request.
- Higher performance version available for hostile environments - K2 Model.
MULTITECH YaG hydraulic anchor

Application

- Mechanically and hydraulically set packer assemblies;
- Tubing assemblies.

Main Features and Benefits

- Prevents downhole equipment from movement inside the production casing during well interventions and stimulations.
- Set in the well with hydraulically pressurized tubing string;
- KV-series anchors are equipped with a lateral groove to accommodate power cable;
- Slips with high-performance grip on the casing;
- Easy assembly and disassembly;
- YaG1 anchor — 6 slips, YaG2 anchor — 9 slips, YaG3 anchor — 15 slips;
- No screws used to secure retaining plates (dovetail);
- Tool’s components are plated or coated with phosphate.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Anchor size</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>YAG1/YAG2/YAG3 80-34-100</td>
<td>4.0</td>
<td>101.6</td>
<td>3.15</td>
<td>80</td>
<td>1.339</td>
<td>34</td>
<td>2.375 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 82-34-100</td>
<td>4.0</td>
<td>101.6</td>
<td>3.23</td>
<td>82</td>
<td>1.339</td>
<td>34</td>
<td>2.375 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 88-38-100</td>
<td>4 ½</td>
<td>114.3</td>
<td>3.465</td>
<td>88</td>
<td>1.496</td>
<td>38</td>
<td>2.375 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 92-38-100</td>
<td>4 ½</td>
<td>114.3</td>
<td>3.622</td>
<td>92</td>
<td>1.496</td>
<td>38</td>
<td>2.375 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 98-42-100</td>
<td>4 ½; 5.0</td>
<td>114.3; 127.0</td>
<td>3.86</td>
<td>98</td>
<td>1.654</td>
<td>42</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 101-42-100</td>
<td>5.0</td>
<td>127.0</td>
<td>3.976</td>
<td>101</td>
<td>1.654</td>
<td>42</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 112-52-100</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.41</td>
<td>112</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 114-52-100</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 116-52-100</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.567</td>
<td>116</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 118-52-100</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 122-52-100</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 136-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 140-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 142-60-100</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 145-60-100</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.709</td>
<td>145</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>YAG1/YAG2/YAG3 150-60-100</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>150</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi; 14500 psi.
- *** High-temperature (302 °F) model of the anchor is available on request.
- Higher performance version available for hostile environments - K2 Model.
- Supplied with spare parts, tools and accessories.
- Other sizes of the hydraulic anchor are available on request.
MULTITECH YaM mechanical anchor

Application
■ Prevents tubing hanger from twist-off and dropping during SRP or PCP completions.

Main Features and Benefits
■ Set in the well mechanically by axial movement of the tubing (no rotation required), brought into a run-in position by an upward pull of the tubing;
■ Multiple use within one tripping;
■ Simple design;
■ High maintainability;
■ Tool’s components are plated or coated with phosphate.

Creates compression upon production casing and resists upward and downward movement of tubing.
Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Anchor size</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>YAM 118-52-50</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
</tr>
<tr>
<td>YAM 122-52-50</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
</tr>
<tr>
<td>YAM 140-62-50</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
</tr>
</tbody>
</table>

- Optional box and pin thread connections are available.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of the mechanical anchor are available on request.
MULTITECH

Valves and Downhole Accessories
MULTITECH KU-O
axial unloader valve

Application

- Fracturing, acid fracturing;
- Perforation;
- Other operations upon which circulation between the annulus and the tubing should be ensured.

Main Features and Benefits

- Valve opening triggered by an upward pull of the tubing;
- Equipped with a pin to convey torque onto the assembly below the valve;
- Valve closing triggered by a downward movement of the tubing;
- Adjustable triggering settings;
- Tool’s components are plated or coated with phosphate;
- Simple design.

Designed for pressure equalization between the annulus and the tubing.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Valve size</th>
<th>Working Pressure, psi</th>
<th>Total Flow Area of Side Ports, in²</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td>Connection*</td>
<td>Length, in, no more than</td>
<td>Weight, lbs, no more than</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>KU-O 82-40-35</td>
<td>3 1/2</td>
<td>88</td>
<td>3.23</td>
<td>82</td>
<td>1.575</td>
</tr>
<tr>
<td>KU-O 101-42-35</td>
<td>4 3/8</td>
<td>112</td>
<td>3.976</td>
<td>101</td>
<td>1.654</td>
</tr>
<tr>
<td>KU-O 112-52-35</td>
<td>4 5/8</td>
<td>118</td>
<td>4.41</td>
<td>112</td>
<td>2.047</td>
</tr>
<tr>
<td>KU-O 114-62-35</td>
<td>4 3/4</td>
<td>120</td>
<td>4.49</td>
<td>114</td>
<td>2.44</td>
</tr>
<tr>
<td>KU-O 136-76-35</td>
<td>5 3/4</td>
<td>144</td>
<td>5.354</td>
<td>136</td>
<td>2.992</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure rating may be increased to 7252 psi; 10150 psi.
- *** High-temperature (302 °F) model of the valve is available on request.
- Valve actuation force of an upward tubing pull can be adjusted in the range of 2205...13228 lbs per customer request.
- Higher performance valve available for hostile environments – K2 Model.
- Other sizes of the valve are available on request.
MULTITECH KCP circulating valve

Application

- Well testing;
- Well circulation;
- Removal of wax deposits;
- Other downhole operations in oil, gas and gas condensate wells.

Main Features and Benefits

- Opening and closing operations are accomplished with a shifting tool and a jar on wireline or coiled tubing;
- Utilized as a component of various downhole assemblies;
- Setting above and below the packer;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working Pressure, psi</th>
<th>Total Flow Area of Side Ports, in²</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCP-1.87-35</td>
<td>3.346</td>
<td>1.87</td>
<td>47.53</td>
<td>3.75 NU</td>
<td>55.1</td>
<td>5076**</td>
<td>3.1</td>
<td>266***</td>
</tr>
<tr>
<td>KCP-2.313-35</td>
<td>3.7</td>
<td>94</td>
<td>2.313</td>
<td>47.53 NU</td>
<td>68.34</td>
<td>5076**</td>
<td>3.88</td>
<td>266***</td>
</tr>
<tr>
<td>KCP-2.25-35</td>
<td>4.134</td>
<td>105</td>
<td>2.25</td>
<td>47.53 NU</td>
<td>68.34</td>
<td>5076**</td>
<td>5.43</td>
<td>266***</td>
</tr>
<tr>
<td>KCP-3.313-35</td>
<td>5.315</td>
<td>135</td>
<td>3.313</td>
<td>47.53 NU</td>
<td>94.80</td>
<td>5076**</td>
<td>7.91</td>
<td>266***</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure rating may be increased to 7252 psi.
- *** High-temperature (302 °F) model of the valve is available on request.
- Higher performance valve available for hostile environments – K2 Model.
- Other sizes of the valve are available on request.

Provides communication between the tubing and the annulus.
MULTITECH T shifting tool

Serves to open and close circulating valve.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>OD (with slips engaged)</th>
<th>Connection</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td></td>
<td>mm</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>T 54.8-65.8</td>
<td>2.157</td>
<td>54.8</td>
<td>2.59</td>
<td>65.8</td>
<td>UNS 23.825 SH 16</td>
</tr>
<tr>
<td>T 80.75-93.5</td>
<td>3.179</td>
<td>80.75</td>
<td>3.681</td>
<td>93.5</td>
<td>UNS 27.000 SH 19</td>
</tr>
</tbody>
</table>

Higher performance shifting tool available for hostile environments - K2 Model.
Other sizes of the tool are available on request.

MULTITECH YaSS mechanical jar

Serves to open and close circulating valve.

Application

- Tubing strings with wireline-set downhole assemblies.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>Fishing neck Diameter</th>
<th>Piston Stroke Length, no more than</th>
<th>Connection</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>YAM-38.1 K1</td>
<td>1.5</td>
<td>38.1</td>
<td>34.252</td>
<td>870</td>
<td>UNS 23.825 SH 16</td>
<td>57.08</td>
</tr>
<tr>
<td>YAM-47.5 K1</td>
<td>1.87</td>
<td>47.5</td>
<td>34.252</td>
<td>870</td>
<td>UNS 27.000 SH 19</td>
<td>57.08</td>
</tr>
</tbody>
</table>

Higher performance jar available for hostile environments – K2 Model.
Other sizes of the jar are available on request.
MULTITECH KP

circulating sub

Application

- Subsequent swabbing in two or more payzones;
- Equalization of pressure in the annulus and in the tubing;
- Chemical treatment of wax deposits.

Main Features and Benefits

- Actuated at the next increase of hydraulic pressure in the annulus;
- Adjustable pressure triggering setting;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Valve size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Valve Opening Differential Pressure, psi</th>
<th>Working Pressure, psi</th>
<th>Total Flow Area of Side Ports, in²</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KP-NKT 73-114-52-35</td>
<td>5 1/2</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>2.047</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.33</td>
<td>57.32</td>
<td>1015-1450</td>
<td>5076**</td>
</tr>
<tr>
<td>KP-NKT 73-122-60-35</td>
<td>5 3/4</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>2.362</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.61</td>
<td>61.73</td>
<td>1015-1450</td>
<td>5076**</td>
</tr>
<tr>
<td>KP-NKT 73-136-60-35</td>
<td>6 1/8</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.362</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>32.13</td>
<td>88.18</td>
<td>1015-1450</td>
<td>5076**</td>
</tr>
</tbody>
</table>

* Optional box (top) and pin (bottom) thread connections are available.
** Working pressure rating may be increased to 7252 psi.
*** High-temperature (302 °F) model of the valve is available on request.
Higher performance valve available for hostile environments - K2 Model.
Other sizes of the valve are available on request.

Provides communication between the annulus and the tubing during well testing and completion.
## Application

- Water injection wells;
- Dual injection;
- Intrawell injection.

## Main Features and Benefits

- Body design allows for optimum outflow to resist casing washouts;
- Volume of fluid injected from each formation can be adjusted by selecting a choke of a different size;
- Metering of injected volume;
- Retrievable sleeve distributes injected fluid between the zones;
- Sleeve is effectively sealed with packing rings;
- Sleeve retrieval is accomplished with standard fishing tools on wireline.

## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZ 114-35</td>
<td>4.49</td>
<td>114</td>
<td>2.17 55</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>17.68</td>
<td>26.46</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure rating may be increased to 7252 psi.
- *** High-temperature (302 °F) model of the valve is available on request.
- Higher performance valve available for hostile environments – K2 Model.
- Other sizes of the valve are available on request.

MULTITECH KZ
downhole flow control valve

Allows for individually regulated volumes of fluid be injected into two isolated zones through a single tubing string.
MULTITECH KCG
hydraulic circulating valve

Application

- Well testing;
- Well circulation;
- Large-volume fracturing;
- Other downhole operations in oil, gas and gas condensate wells.

Main Features and Benefits

- Durable design to resist proppant treatment and high pressure circulation;
- Opening is actuated by the pressure in the annulus;
- Adjustable valve opening pressure setting;
- Utilized as a component of various downhole assemblies;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD in</th>
<th>OD mm</th>
<th>ID in</th>
<th>ID mm</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCG 122-60-70</td>
<td>4.803</td>
<td>122</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>53.35</td>
<td>147.71</td>
<td>10150**</td>
<td>266***</td>
</tr>
<tr>
<td>KCG 145-74-70</td>
<td>5.709</td>
<td>145</td>
<td>2.913</td>
<td>74</td>
<td>3.5 NU</td>
<td>53.35</td>
<td>150.80</td>
<td>10150**</td>
<td>266***</td>
</tr>
<tr>
<td>KCG 152-74-70</td>
<td>5.984</td>
<td>152</td>
<td>2.913</td>
<td>74</td>
<td>3.5 NU</td>
<td>53.35</td>
<td>156.53</td>
<td>10150**</td>
<td>266***</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure rating may be increased to 14500 psi.
- *** High-temperature (302 °F) model of the valve is available on request.
- Higher performance valve available for hostile environments - K2 Model.
- Other sizes of the valve are available on request.
MULTITECH KCP V/N circulating valve

Application
- Single-trip selective stimulation during dual completions;
- Selective inflow performance test;
- Well testing;
- Multizone completion assemblies for subsequent or dual reservoir stimulation;
- Subsequent swabbing in two or more payzones.

Main Features and Benefits
- KCP-V top valve designed to run closed;
- KCP-N bottom valve designed to run open;
- Safety shear pins to prevent premature valve opening or closing;
- Lowered in the well closed;
- Safety pins allow for opening pressure regulation to prevent premature opening;
- Easily actuated by dropping a ball in the tubing and causing pressure to rise;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Valve Opening Differential Pressure, psi</th>
<th>Working Pressure, psi</th>
<th>Total Flow Area of Side Ports, in²</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCP-V 122-54-35</td>
<td>4.803</td>
<td>122</td>
<td>2.126 54</td>
<td>1160-2175</td>
<td>5076**</td>
<td>4.81</td>
<td>266***</td>
</tr>
<tr>
<td>KCP-N 108-45-35</td>
<td>4.252</td>
<td>108</td>
<td>1.772 45</td>
<td>1160-2175</td>
<td>5076**</td>
<td>2.40</td>
<td>266***</td>
</tr>
</tbody>
</table>

* Optional box (top) and pin (bottom) thread connections are available.
** Working pressure rating may be increased to 7252 psi.
*** High-temperature (302 °F) model of the valve is available on request.
Higher performance valve available for hostile environments – K2 Model.
Other sizes of the valve are available on request.

Provides fluid (gas) circulation between the annulus and the tubing during well interventions.
MULTITECH KCP (U) circulating (fullbore) valve

Application

- Straddle packer assemblies for dual injection;
- Straddle packer assemblies for dual injection and dual production;
- Other well interventions.

Main Features and Benefits

- Tubing tension slack-off;
- Compensation for thermal expansion of the tubing;
- Secure and tight connection between the inner tubing string and the valve;
- Optional increased number of ports for larger-volume injection;
- Wash ports designed to prevent production casing washout;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Casing Size</th>
<th>Nominal Internal Tubing ID</th>
<th>Nominal ID</th>
<th>Valve size</th>
<th>Working Pressure, psi</th>
<th>Max Mandrel Travel, no more than</th>
<th>Total Flow Area of Side Ports, in²</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCP (U) 108-35-35</td>
<td>4 5/8</td>
<td>117.5</td>
<td>1.654</td>
<td>42</td>
<td>4.252</td>
<td>108</td>
<td>1.378</td>
<td>35</td>
</tr>
<tr>
<td>KCP (U) 108-40-35</td>
<td>4 5/8</td>
<td>117.5</td>
<td>1.89</td>
<td>48</td>
<td>4.252</td>
<td>108</td>
<td>1.575</td>
<td>40</td>
</tr>
</tbody>
</table>

- * Optional thread connections are available to match.
- ** Working pressure rating may be increased to 7252 psi.
- *** High-temperature (302 °F) model of the valve is available on request.
- Higher performance valve available for hostile environments - K2 Model.
MULTITECH KGP

gas vent valve

Applicaiton

- Feed-through packer assembly;
- ESP-operated wells with high GOR;
- Enhanced oil recovery through gas lift stimulation.

Main Features and Benefits

- Simple design;
- Tool’s components are plated or coated with phosphate;
- KGPP valve is equipped with a lateral groove to accommodate power cable.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Valve size</th>
<th>Choke size</th>
<th>Valve Opening Differential Pressure, psi</th>
<th>Working Pressure, psi</th>
<th>Total Flow Area of Side Ports, in²</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
<td>OD mm</td>
<td>ID mm</td>
<td>Connection*</td>
<td>Length, in, no more than</td>
<td>Weight, lbs, no more than</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td>KGP 108-62</td>
<td>4-5/8</td>
<td>117.5</td>
<td>4.252</td>
<td>108</td>
<td>2.441</td>
<td>62</td>
<td>2.875 NU</td>
</tr>
<tr>
<td>KGPP 100-50</td>
<td>4-1/4</td>
<td>120</td>
<td>3.937</td>
<td>100</td>
<td>1.969</td>
<td>50</td>
<td>2.875 NU</td>
</tr>
</tbody>
</table>

- Optional thread connections are available to match.
- High-temperature (302 °F) model of the valve is available on request.
- Higher performance valve available for hostile environments – K2 Model.
- Other sizes of KGP and KGPP valve are available on request.

Provides withdrawal of gas in wells with high annulus pressure and reduces backpressure.
MULTITECH KKO
tester valve

Application
- Oil production;
- Squeeze cementing;
- Other well interventions.

Main Features and Benefits
- Set in a seat of the sub or sent down the tubing string:
  - the valve is circulated to a seat inside the tubing;
  - the valve is set in the tubing with a wireline running tool;
- Two retrieval options available:
  - circulating out by pumping fluid in the annulus;
  - with wireline fishing tools;
- Alloy-made test dart allows for quick valve pumpout;
- Simple design;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD in</th>
<th>OD mm</th>
<th>Connection* in</th>
<th>Connection* mm</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>KKO NKT V-60-43-35</td>
<td>1.693</td>
<td>43</td>
<td>2.375 EU</td>
<td>60.33</td>
<td>5.9</td>
<td>6.06</td>
<td>5076**</td>
</tr>
<tr>
<td>KKO NKT V-73-47.63-35</td>
<td>1.875</td>
<td>47.63</td>
<td>2.875 EU</td>
<td>73.03</td>
<td>6.14</td>
<td>8.8</td>
<td>5076**</td>
</tr>
<tr>
<td>KKO NKT V-89-60-35</td>
<td>2.362</td>
<td>60</td>
<td>3.5 EU</td>
<td>88.9</td>
<td>7.68</td>
<td>16.27</td>
<td>5076**</td>
</tr>
</tbody>
</table>

* Optional box (top) and pin (bottom) thread connections are available.
** Working pressure rating may be increased to 7252 psi.
Higher performance valve available for hostile environments - K2 Model.
Other sizes of the valve are available on request.
**MULTITECH KO (M) check valve**

**Application**

- ESP-operated wells;
- Other well interventions requiring temporary isolation of the tubing string.

**Main Features and Benefits**

- Allows direct circulation through the pump or below the valve;
- Doesn’t restrict cross-flows of produced fluid;
- Holds liquid column in the tubing string acting as a check valve;
- With differential pressure achieved, bypass opens to establish communication across the valve;
- Tool’s components are plated or coated with phosphate.

**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD (in, mm)</th>
<th>ID (in, mm)</th>
<th>Connection*</th>
<th>Valve Opening Differential Pressure, psi</th>
<th>Working Pressure, psi</th>
<th>Total Flow Area of Side Ports, in²</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KO (M) 92-40-35</td>
<td>3 7/8</td>
<td>98.4</td>
<td>3.622</td>
<td>92</td>
<td>1.575</td>
<td>40</td>
<td>2.875</td>
<td>NU</td>
</tr>
<tr>
<td>KO (M) 108-52-35</td>
<td>4 3/8</td>
<td>111.1</td>
<td>4.25</td>
<td>108</td>
<td>2.05</td>
<td>52</td>
<td>2.875</td>
<td>NU</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure rating may be increased to 7252 psi.
- *** High-temperature (302 °F) model of the valve is available on request.
- Higher performance valve available for hostile environments — K2 Model.
- Other sizes of the valve are available on request.
MULTITECH KI
chemical injection mandrel

Application

- Oil, gas and condensate production.

Main Features and Benefits

- Chemical injection;
- Injection of chemicals from the annulus;
- Rupture disc design;
- Dual-valve system;
- Adjustable actuation pressure;
- Internal flush joint;
- A groove on the housing to accommodate wire or a tube for the downhole tools below.
- Injection of inhibitors in the tubing or annular space

Specifications

- Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi
- Working temperature ratings: 266 °F; 302 °F.
- Higher performance valve available for hostile environments - K2 Model.
**MULTITECH K-UG booster valve**

Helps to set a packer (or a multiple packer assembly) when tubing weight can’t be conveyed to the packer or setdown weight is not sufficient (at low depths).

**Application**
- Oil and gas production;
- Squeeze cementing;
- Intrawell injection;
- Dual injection.

**Main Features and Benefits**
- Sufficient packer-setting travel;
- Equipped with a pin to convey torque onto the assembly below the K-UG valve;
- Tool’s components are plated or coated with phosphate.

**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Valve size</th>
<th>Force Generated at Differential Pressure of 3626 psi, KN</th>
<th>Conveyed Torque, kN•m</th>
<th>Max Mandrel Travel, no more than</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-UG 114-62-35</td>
<td>4 3/4 120.6</td>
<td>4.488 4.488 114 2.44 62</td>
<td>2.875 NU 73.03 101.4</td>
<td>170</td>
<td>15.748</td>
<td>400</td>
<td>7252**</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure ratings – 7252 psi; 10150 psi
- *** High-temperature (302 °F) model of the valve is available on request.
- Higher performance valve available for hostile environments – K2 Model.
- Other sizes of the valve are available on request.
MULTITECH KO-ZP
formation isolation valve

Application

- Pump-operated wells utilizing artificial lift method.

Main Features and Benefits

- Installed into the collar of the RK-S (Z) On-Off Connector;
- RK-S (Z) on-off connector enables disconnection of the tubing string from the packer assembly and serves as a landing nipple for the KO-ZP valve;
- Pressure actuated opening and closing;
- Multiple open-close cycles;
- KO-ZP valve retrieval is accomplished with wireline or coiled tubing;
- Tool’s components are plated or coated with phosphate.

Specifications

- * Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi.
- Working temperature ratings: 266 °F, 302 °F.
- Higher performance valve available for hostile environments – K2 Model.
MULTITECH RK-G
hydraulic on-off connector

Application

- Oil and gas producing wells;
- Other well interventions requiring disconnection of the tubing.

Main Features and Benefits

- Disconnection is achieved hydraulically by dropping a ball and increasing the tubing pressure;
- Comes with a retrieval tool;
- Connection of retrieval tool is accomplished by slacking off the tubing to at least 5 ton;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD in</th>
<th>OD mm</th>
<th>ID in</th>
<th>ID mm</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Maximum weight to unset the Packer with the Connector, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK-G 114-60-35</td>
<td>4.49</td>
<td>114</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>34.65</td>
<td>77.16</td>
<td>5076**</td>
<td>266***</td>
<td>44090-55120</td>
</tr>
<tr>
<td>RK-G 118-60-35</td>
<td>4.646</td>
<td>118</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>34.65</td>
<td>83.776</td>
<td>5076**</td>
<td>266***</td>
<td>44090-55120</td>
</tr>
<tr>
<td>RK-G 140-60-35</td>
<td>5.512</td>
<td>140</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>34.65</td>
<td>101.4</td>
<td>5076**</td>
<td>266***</td>
<td>44090-55120</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure ratings can be increased to 7252 psi and 10150 psi on special request.
- *** High-temperature (302 °F) model of the connector is available on request.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of the tool are available on request.
MULTITECH RK/RK-S
on-off connector

Application

- Well treatment, testing, production, completion and other well interventions requiring disconnection of the tubing string;
- Part of various downhole assemblies.

Main Features and Benefits

- Enables automatic disconnection (reconnection) of the tubing string from (to) the packer.

Right-hand disconnection for RK Connector. Disconnection is achieved by a 16-turn right-hand rotation followed by an upward pull of the tubing; Left-hand or right-hand disconnection for RK-S Connector - per customer request. Disconnection is achieved by a quarter right-hand turn followed by an upward pull of the tubing; Connection is accomplished automatically once the tubing string is slacked off; Shear pins for failure-free running; Tool’s components are plated or coated with phosphate.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in</th>
<th>Weight, lbs</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Maximum weight to unset the Packer with the Connector, lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK/RK-S 94-40-35</td>
<td>3.7</td>
<td>94</td>
<td>1.575 40</td>
<td>2.375 NU</td>
<td>60.33</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 105-42-35</td>
<td>4.134</td>
<td>105</td>
<td>1.654 42</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 110-52-35</td>
<td>4.33</td>
<td>110</td>
<td>2.047 52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 112-52-35</td>
<td>4.41</td>
<td>112</td>
<td>2.047 52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 114-52-35</td>
<td>4.49</td>
<td>114</td>
<td>2.047 52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 116-52-35</td>
<td>4.567</td>
<td>116</td>
<td>2.047 52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 118-52-35</td>
<td>4.646</td>
<td>118</td>
<td>2.047 52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 122-52-35</td>
<td>4.803</td>
<td>122</td>
<td>2.047 52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>29.53</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 136-60-35</td>
<td>5.354</td>
<td>136</td>
<td>2.362 60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>31.18</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 140-60-35</td>
<td>5.512</td>
<td>140</td>
<td>2.362 60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>31.18</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 142-60-35</td>
<td>5.59</td>
<td>142</td>
<td>2.362 60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>31.18</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 145-60-35</td>
<td>5.709</td>
<td>145</td>
<td>2.362 60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>31.18</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 150-60-35</td>
<td>5.906</td>
<td>150</td>
<td>2.362 60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>31.18</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK/RK-S 205-100-35</td>
<td>8.07</td>
<td>205</td>
<td>3.937 100</td>
<td>4.5 NU</td>
<td>114.3</td>
<td>31.18</td>
<td>5076**</td>
<td>266***</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure ratings can be increased to 7252 psi, 10150 psi and 14500 psi per customer request.
- *** High-temperature (302 °F) model of the connector is available on request.
- Higher performance version available for hostile environments = K2 Model.
- Other sizes of the tool are available on request.
MULTITECH RK-S (U) on-off sealing connector

Application

- Dual injection, intrawell injection, and dual completion assemblies;
- Other well interventions requiring retrieval of the tubing string.

Main Features and Benefits

- Left-hand or right-hand release - per customer request;
- Secure sealing of the polished bore in the housing of the connector lowered in the well with ESP;
- Polished bore has a free travel of 59,06 inch;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Maximum weight to unset the Packer with the Connector, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK-S (U) 122-60-35</td>
<td>4.803</td>
<td>122</td>
<td>2.362</td>
<td>2.875 NU</td>
<td>66.338</td>
<td>112.4</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>RK-S (U) 142-60-35</td>
<td>5.59</td>
<td>142</td>
<td>2.362</td>
<td>2.875 NU</td>
<td>66.338</td>
<td>123.5</td>
<td>5076**</td>
<td>266***</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure ratings can be increased to 7252 psi, 10150 psi and 14500 psi per customer request.
- *** High-temperature (302 °F) model of the connector is available on request.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of the tool are available on request.
MULTITECH ZhG
hydrostatic sand bailer

Application

- Failure to establish circulation in the well;
- Circulation is unwanted or harmful for formation.

Main Features and Benefits

- Sand and other debris are sucked up off the bottom with a fluid surge due to differential pressure between the annulus and the tubing;
- Fluid surge into the tubing can be interrupted numerous times by a pickup of the tubing string.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Valve size</th>
<th>Opening Travel</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td>Length, in, no more than</td>
<td>Weight, lbs, no more than</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>ZHG-90</td>
<td>3 7/8</td>
<td>98.4</td>
<td>3.66</td>
<td>93</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** High-temperature (302 °F) model of the sand bailer is available on request.
- Higher performance version available for hostile environments – K2 Model.
- Other sizes of the tool are available on request.
MULTITECH KOS
well cleanup assembly

Application
- Failure to establish circulation in the well;
- Circulation is unwanted or harmful for formation.

Main Features and Benefits
- Sand and other debris are sucked up off the bottom with a fluid surge due to differential pressure between the annulus and the tubing;
- Tool’s components are plated or coated with phosphate.

Assembly components
1. Mule shoe P;
2. Suction valve KV;
3. Bladed sub P-C;
4. Relief valve KN.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Valve size</th>
<th>Relief Valve Opening Travel</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OD</td>
<td>Connection*</td>
<td>Length, in, no more than</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>KOS 89</td>
<td>3 7/8</td>
<td>98.4</td>
<td>3.5</td>
<td>89</td>
</tr>
<tr>
<td>KOS 112</td>
<td>5</td>
<td>127</td>
<td>4.409</td>
<td>112</td>
</tr>
</tbody>
</table>

- Optional box (top) and pin (bottom) thread connections are available.
- High-temperature (302 °F) model of the assembly is available on request.
- Higher performance version available for hostile environments - K2 Model.
- Other sizes of the cleaning assembly are available on request.
Valves and Downhole Accessories

Multitech KS Side Pocket Mandrel

Application

- Natural flow production or gas lift production;
- Dual (multiple zone) injection;
- Chemical injection;
- Well interventions requiring communication between the tubing and the annulus.

Main Features and Benefits

- Eccentric side pocket offers full tubing drift ID;
- KIGS chemical injection valve and PG dummy valve are placed in a side pocket mandrel and retrieved with slickline or coil tubing.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Mandrel size</th>
<th>Working Pressure, psi</th>
<th>Sealbore Diameter to Accept Injection Valve, Dummy Valve and Circulating Valve, no more than</th>
<th>Maximum Joint Strenght of the Mandrel, lbs, no more than</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS-NKT 73-60-35 K1</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.57</td>
<td>116</td>
<td>3.85</td>
<td>97.8</td>
</tr>
</tbody>
</table>

* Optional box and pin thread connections are available.
** High-temperature (+150°C) model of the valve is available on request.
- Higher performance valve available for hostile environments – K2 Model.
- Other sizes of the valve are available on request.
MULTITECH LM
magnet tool

Designed to effectively remove metal objects, hard-alloy teeth of roller-cone bits and other ferrous debris from the bottom of oil and gas wells.

Main Features and Benefits

■ Magnetic components are made of highly-energized rare-earth permanent magnets;
■ Magnets have a three-layer protective coating;
■ Designed to enable circulation at the bottom;
■ Magnetic effect doesn't spread on the tubing string;
■ No depth limitation.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>Connection*</th>
<th>Tool size</th>
<th>Nominal Holding Capacity, lbs</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
<td>Length, in, no more than</td>
<td>Weight, lbs, no more than</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LM 80</td>
<td>3 1/2</td>
<td>88.9</td>
<td>3.15</td>
<td>80</td>
<td>2.375 EU</td>
<td>60.33</td>
</tr>
<tr>
<td>LM 92</td>
<td>3 7/8</td>
<td>98.4</td>
<td>3.622</td>
<td>92</td>
<td>2.875 NU</td>
<td>73.03</td>
</tr>
<tr>
<td>LM 118</td>
<td>4 7/8</td>
<td>123.8</td>
<td>4.646</td>
<td>118</td>
<td>2.875 EU</td>
<td>73.03</td>
</tr>
</tbody>
</table>

■ * Optional box (top) and pin (bottom) thread connections are available.
■ ** High-temperature (302 °F) model of the valve is available on request.
■ Other sizes of the tool are available on request.
MULTITECH PB release joint

Designed for safe release of the tubing from the downhole tools below should they become stuck.

Main Features and Benefits

- The string is released by applying right-hand torque (16 turns) followed by a straight pickup of the tubing;
- Reliable sealing elements;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD in</th>
<th>OD mm</th>
<th>ID in</th>
<th>ID mm</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Maximum weight When Released from the Packer, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB 89-52-35</td>
<td>3.5</td>
<td>89</td>
<td>2.047</td>
<td>52</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>16.14</td>
<td>22.05</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>PB 95-60-35</td>
<td>3.74</td>
<td>95</td>
<td>2.362</td>
<td>60</td>
<td>2.875 NU</td>
<td>73.03</td>
<td>16.14</td>
<td>24.25</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>PB 108-62-35</td>
<td>4.25</td>
<td>108</td>
<td>2.44</td>
<td>62</td>
<td>3.5 NU</td>
<td>88.9</td>
<td>16.54</td>
<td>30.87</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>PB 118-76-35</td>
<td>4.646</td>
<td>118</td>
<td>2.992</td>
<td>76</td>
<td>3.5 NU</td>
<td>88.9</td>
<td>17.52</td>
<td>35.27</td>
<td>5076**</td>
<td>266***</td>
</tr>
<tr>
<td>PB 145-100-35</td>
<td>5.709</td>
<td>145</td>
<td>3.937</td>
<td>100</td>
<td>4.5 NU</td>
<td>114.3</td>
<td>18.78</td>
<td>46.3</td>
<td>5076**</td>
<td>266***</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Working pressure ratings can be increased to 7252 psi and 10150 psi on special request.
- *** High-temperature (302 °F) model of the joint is available on request.
- Higher performance joint available for hostile environments – K2 Model.
- Other sizes of the tool are available on request.
MULTITECH FBK

Drill pipe screen

Application

- Drilling and well construction.

Main Features and Benefits

- Perforated screens provide free mud circulation but create obstruction for cuttings;
- Set in the tool joint box;
- Direct and reverse installation in the drill pipe;
- FT-N-DS has a double separation capability;
- FBK-N-K has a protective sleeve to reduce drill pipe washout and extend their service life;
- FS screen designed to protect MWD tools from solid particles.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Kelly Joint ID, mm</th>
<th>Tool Joint ID, mm</th>
<th>Minimum Tool Joint ID, no less than</th>
<th>OD</th>
<th>Largest ID of the Tapered Part</th>
<th>Protective Sleeve ID</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Total Flow Area of Ports, in²</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBK-N/V-73-86 K2</td>
<td>VBT-73K</td>
<td>Z-86</td>
<td>2</td>
<td>50.8</td>
<td>2.32</td>
<td>59</td>
<td>1.575</td>
<td>40</td>
<td>27.7</td>
</tr>
<tr>
<td>FBK-N/V-89-102 K2</td>
<td>VBT-89K</td>
<td>Z-102</td>
<td>2.244</td>
<td>57</td>
<td>2.953</td>
<td>75</td>
<td>1.969</td>
<td>50</td>
<td>38.9</td>
</tr>
<tr>
<td>FBK-N/V-108-122 K2</td>
<td>VBT-108K</td>
<td>Z-122</td>
<td>2.811</td>
<td>71.4</td>
<td>3.996</td>
<td>101.5</td>
<td>2.677</td>
<td>68</td>
<td>38.9</td>
</tr>
<tr>
<td>FBK-N/V-108/112-133 K2</td>
<td>VBT-108K, VBT-112K</td>
<td>Z-133</td>
<td>2.811</td>
<td>71.4</td>
<td>3.996</td>
<td>101.5</td>
<td>2.677</td>
<td>68</td>
<td>38.9</td>
</tr>
<tr>
<td>FBK-N/V-140-147 K2</td>
<td>VBT-140K</td>
<td>Z-147</td>
<td>3.976</td>
<td>101</td>
<td>4.53</td>
<td>115</td>
<td>2.992</td>
<td>76</td>
<td>38.9</td>
</tr>
<tr>
<td>FT-N-D5-89-102 K2</td>
<td>89</td>
<td>Z-102</td>
<td>2.244</td>
<td>57</td>
<td>2.953</td>
<td>75</td>
<td>1.969</td>
<td>50</td>
<td>38.9</td>
</tr>
<tr>
<td>FBK-N-K-140-147 K2</td>
<td>VBT-140K</td>
<td>Z-147</td>
<td>3.976</td>
<td>101</td>
<td>4.53</td>
<td>115</td>
<td>2.835</td>
<td>71</td>
<td>19.8</td>
</tr>
<tr>
<td>FS 127-NC50 K2</td>
<td>127</td>
<td>NC 50</td>
<td>2.88</td>
<td>73.15</td>
<td>4.6</td>
<td>116.8</td>
<td>3.504</td>
<td>89</td>
<td>-</td>
</tr>
</tbody>
</table>

- Higher performance screens available for hostile environments – K2 Model.
- Other sizes of the screens are available on request.
MULTITECH FZT
downhole filter sub

Application

- Downhole production assemblies incorporating releasable tools which can be left in the well.

Main Features and Benefits

- Run in the well on tubing, coiled tubing or wireline;
- Retrieved with standard fishing tools;
- Expandable debris catcher;
- Single trip operation.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing Size</th>
<th>Sub OD</th>
<th>Debris Cather Size*</th>
<th>Fishing Neck ID</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>mm</td>
</tr>
<tr>
<td>FZT-122</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.96</td>
<td>126</td>
<td>3.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>FZT-142</td>
<td>6 ⅝</td>
<td>168.3</td>
<td>5.75</td>
<td>146</td>
<td>3.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>FZT-152</td>
<td>7</td>
<td>177.8</td>
<td>5.98</td>
<td>152</td>
<td>3.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>85</td>
</tr>
</tbody>
</table>

* Other sizes of the catcher are available on request.

- Custom-made filter subs are available for other types of production casing.
- Higher performance subs available for hostile environments — K2 Model.

Designed to protect critical downhole equipment from debris (sand, scale, solid particles) and to catch foreign materials (lost cable bands, etc.) during subsurface pump replacement.
Multitech VN

guide funnel

Application

- Logging.
- As part of the downhole equipment composition

Main Features and Benefits

- Simple design;
- Tool’s components are plated or coated with phosphate.
- The inlet has guide bevelled corners for easy entry of tools and instruments.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>OD</th>
<th>ID</th>
<th>Re-entry guide size</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>V NK7 73-90</td>
<td>3.54</td>
<td>2.44</td>
<td>62</td>
<td>5.51</td>
<td>6.6</td>
</tr>
<tr>
<td>VN TMK UP FMT 3.5&quot;-108 K1 KhL</td>
<td>4.25</td>
<td>2.99</td>
<td>76</td>
<td>8.66</td>
<td>12.13</td>
</tr>
<tr>
<td>VN TMK UP FMT 4.5&quot;-130 K1 KhL</td>
<td>5.12</td>
<td>3.94</td>
<td>100</td>
<td>9.84</td>
<td>13.23</td>
</tr>
</tbody>
</table>

* Optional box (top) thread connections are available.
- Higher performance guides available for hostile environments – K2 Model.
- Other sizes of the re-entry guide are available on request.

Designed to guide the casing string during RIH and ensure unhindered entry of tools or geophysical instruments into the tubing string.
MULTITECH

Multiple Packer Assemblies for Oil Wells
MULTITECH KOUS-DPK (A)
designed for dual completion applications with isolation of perforated or disturbed casing section above the assembly

Benefits

- Ensures permanent (tubing-released) isolation of zones within the casing;
- Protects production casing from dynamic impact of the environment during various well interventions.

Components

- On-off connector RK-S;
- Compression mechanical packer PU-M;
- Release joint P-B;
- Axial mechanical set packer PM-R (PVM-O).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD in</td>
<td>ID mm</td>
<td>OD in</td>
</tr>
<tr>
<td>KOUS-DPK (A)</td>
<td>114-52-35</td>
<td>5 ½</td>
<td>139.7</td>
</tr>
<tr>
<td>KOUS-DPK (A)</td>
<td>118-52-35</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
</tr>
<tr>
<td>KOUS-DPK (A)</td>
<td>122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
</tr>
<tr>
<td>KOUS-DPK (A)</td>
<td>140-60-35</td>
<td>6 ⅔</td>
<td>168.3</td>
</tr>
<tr>
<td>KOUS-DPK (A)</td>
<td>150-60-35</td>
<td>6 ⅔; 7</td>
<td>168.3; 177.8</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments – K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-PK (A) K-UG

designed to be used in horizontal wells and to set packer assembly in shallow wells

Benefits
- Enables packer setting with insufficient tubing weight;
- Ensures packer setting and tubing release in horizontal wells;
- Allows setting of a packer at shallow depths 4724 in.

Components
- Hydraulic anchor YaG1;
- Bladed sub P-C;
- On-off sealing connector RK-S (U);
- Axial mechanical set packer PM-A1 (F);
- Hydraulic booster valve K-UG.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td>OD</td>
</tr>
<tr>
<td>KOUS-PK (A) K-UG 114-52-35</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
</tr>
<tr>
<td>KOUS-PK (A) K-UG 118-52-35</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
</tr>
<tr>
<td>KOUS-PK (A) K-UG 122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-PK (A) K-UG 140-60-35</td>
<td>6 ½; 7</td>
<td>168.3; 177.8</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-PK (A) K-UG 150-60-35</td>
<td>6 ½; 7; 8</td>
<td>168.3; 177.8; 187.3</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-DPK (A) K-UG used to protect production casing from fluid injected with inverted ESP

### Benefits
- Provides upper packer setting (followed by tubing release) with insufficient tubing weight or at shallow depths;
- Application in horizontal wells;
- Replacement of ESP without assembly retrieval.

### Components
- Hydraulic anchor YaG1;
- Hydraulic booster valve K-UG;
- On-off sealing connector RK-S (U);
- Compression mechanical set packer PU-M;
- Release joint P-B;
- Axial mechanical set packer PM-R.

### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in mm</td>
<td>OD in mm</td>
<td>ID in mm</td>
</tr>
<tr>
<td>KOUS-DPK (A) K-UG 114-52-35</td>
<td>5 ½; 4.49</td>
<td>139.7; 114</td>
<td>2.047; 52</td>
</tr>
<tr>
<td>KOUS-DPK (A) K-UG 118-52-35</td>
<td>5 ¾; 4.646</td>
<td>139.7; 146.1</td>
<td>2.047; 52</td>
</tr>
<tr>
<td>KOUS-DPK (A) K-UG 122-52-35</td>
<td>5 ¾; 4.803</td>
<td>146.1; 122</td>
<td>2.047; 52*</td>
</tr>
<tr>
<td>KOUS-DPK (A) K-UG 140-60-35</td>
<td>6 ¾; 5.512</td>
<td>168.3; 140</td>
<td>2.362; 60*</td>
</tr>
<tr>
<td>KOUS-DPK (A) K-UG 150-60-35</td>
<td>6 ¾; 7; 5.906</td>
<td>168.3; 177.8</td>
<td>2.362; 60*</td>
</tr>
</tbody>
</table>

* Other Tool ID is available on request.
** Differential pressure ratings — 7252 psi; 10150 psi.
* Working temperature ratings 266 °F; 302 °F.
* Customer-selected setdown weight.
* Higher performance assembly available for hostile environments – K2 Model.
* Other sizes of the assembly are available on request.

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.
MULTITECH KOUS-PK (F) enables intrawell injection from an upper water production zone into lower payzones with inverted ESP

Benefits
- Provides tight connection of the tubing string to ensure the fluid is injected straight in the formation;
- Protects production casing from injected fluid;
- Replacement of ESP without packer assembly retrieval.

Components
- Hydraulic anchor YaG1;
- Bladed sub P-C;
- On-off sealing connector RK-S (U);
- Axial mechanical set packer (retainer) PM-A1 (F).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD in mm</td>
<td>ID in mm</td>
<td></td>
</tr>
<tr>
<td>KAUS-PK (F)</td>
<td>140-60-35</td>
<td>6 ¾; 7</td>
<td>5076**</td>
</tr>
<tr>
<td>KAUS-PK (F)</td>
<td>150-60-35</td>
<td>6 ¾; 7</td>
<td>5076**</td>
</tr>
<tr>
<td>KAUS-PK (F)</td>
<td>140-52-35</td>
<td>6 ½</td>
<td>5076**</td>
</tr>
<tr>
<td>KAUS-PK (F)</td>
<td>150-52-35</td>
<td>6 ½</td>
<td>5076**</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings – 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments — K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-PVM-O (KV) provides ESP completion with isolation of disturbed sections of production casing

Benefits
- Evacuates gas from under the packer through the gas vent (Fig. 1);
- Evacuates gas from under the packer through the gas vent and allows for chemical injection to wash ESP (Fig. 2);
- Evacuates gas from under the packer through the gas vent into the flowline to allow for removal of paraffin deposits (Fig. 3);
- Evacuates gas from under the packer into the tubing using gas vent valve of the KGP and KPP series (Fig. 4);
- Multiple setting/unsetting cycles within single trip, including new connections.

Components
- PVM-O (KV) packer with a gas vent and a chemical injection port;
- Capillary tubing system.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td></td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) 122-35-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) 140-50-35</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) 150-50-35</td>
<td>6 ¼; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
Multiple Packer Assemblies for Oil Wells

Fig. 2

Fig. 3

Fig. 4

Tubing
Power cable
Production casing
Isolated zone
Capillary injection line
Gas vent
Feed-through axial mechanical set packer PVM-O (KV)

Payzone

ESP

Payzone

Gas vent

Gas vent valve KGP (KPP)

ESP

Feed-through axial mechanical set packer PVM-O (KV)
MULTITECH KOUS-PVM-O (KV) M provides ESP completion with isolation of disturbed sections of production casing

Benefits
- Evacuates gas from under the packer into the tubing using gas vent valve of the KGP and KPP series (Fig. 1);
- Evacuates gas from under the packer through the gas vent (Fig. 2);
- Multiple setting/unsetting cycles within single trip, including new connections;
- Quick and easy assembly without compromising power cable integrity.

Components
- Mechanical set gas vent packer PVM-O (KV) M;
- Gas vent;
- Gas vent valve KGP (KPP).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD in</td>
<td>ID mm</td>
<td>OD in</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) M 122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) M 140-60-35</td>
<td>6 ⅝</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) M 150-60-35</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-PVM-O (KV) ORD
used for single tubing dual completion

Benefits

- Enables ESP-production in the lower payzone and SRP-production in the upper reservoir.

Components

- Feed-through axial mechanical set packer PVM-O (KV) M;
- Gas vent valve KGP.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
<td>OD</td>
<td>ID</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) ORD 122-35-35</td>
<td>5 ⅜</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) ORD 140-50-35</td>
<td>6 ⅜</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) ORD 150-50-35</td>
<td>6 ½; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- Other Tool ID is available on request.
- Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-PVM-O (KV) ORD-DS

allows single tubing dual completion in the formations with significantly different reservoir properties

Benefits
- Provides dual and multiple zone completion;
- Enables dual metering of produced fluid.

Components
- On-off connector RK-S;
- Feed-through hydraulic anchor YaG (KV);
- Feed-through axial mechanical set packer PVM-O (KV).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) ORD-DS 122-35-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) ORD-DS 140-50-35</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-PVM-O (KV) ORD-DS 150-50-35</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments — K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-PM-A1 (F) ORD
allows single tubing dual completion in the formations with significantly different reservoir properties

Benefits

- Provides dual and multiple zone completion;
- Enables dual metering of produced fluid;
- Allows ESP changeover without packer assembly retrieval.

Components

- Feed-through hydraulic anchor YaG1 (KV);
- On-off sealing connector RK-S (U);
- Axial mechanical set packer (retainer) PM-A1 (F).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in/mm</td>
<td>OD/in/mm</td>
<td>ID/in/mm</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) ORD 122-52-35</td>
<td>5 ¾/146.1</td>
<td>4.803/122</td>
<td>1.378/52</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) ORD 140-60-35</td>
<td>6 ¾/168.3</td>
<td>5.512/140</td>
<td>1.969/60</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) ORD 150-60-35</td>
<td>6 ¾; 7/168.3;177.8</td>
<td>5.906/150</td>
<td>1.969/60</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-PK-ORD (KP) M
used for single tubing dual completion with single ESP

Benefits
- Enables dual completion with single ESP;
- Switching valve (KP) allows temporary isolation of one of the zones;
- Provides selective metering capabilities for produced fluid;
- Enables real-time pressure and temperature measurements. Data are transmitted through the logging cable to the wellhead interface unit;
- ESP and switching valve can be retrieved without unsetting the packer.

Components
- Switching valve KP;
- On-off sealing connector RK-S (U);
- Axial mechanical set packer (retainer) PM-A1 (F).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th></th>
<th>Equipment size</th>
<th></th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
<td>OD</td>
<td>ID</td>
<td>ID</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>KOUS-PK-ORD (KP) M 122-52-35</td>
<td>5 ¾</td>
<td>164.1</td>
<td>4.803</td>
<td>122</td>
<td>1.378</td>
</tr>
<tr>
<td>KOUS-PK-ORD (KP) M 140-60-35</td>
<td>6 ⅝</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>1.969</td>
</tr>
<tr>
<td>KOUS-PK-ORD (KP) M 150-60-35</td>
<td>6 ⅝; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
<td>150</td>
<td>1.969</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-DL-ORZ
used for dual injection through concentric tubing strings

Benefits
- Protects the production casing from HPHT environment of the injected fluid;
- Provides regulation of injected volume;
- Provides selective logging capabilities.

Components
- Compression packer with hydraulic anchor PU-YaG1;
- Circulating (sealing) valve KCP (U);
- Release joint P-B;
- Axial mechanical set packer PM-R (PVM-O).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
<td>OD</td>
<td>ID</td>
</tr>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td>ID of the valve</td>
</tr>
<tr>
<td>KOUS-DL-ORZ 122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-DL-ORZ 140-60-35</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-DL-ORZ 150-60-35</td>
<td>6 ¾; 7 168.3; 177.8</td>
<td>5.906</td>
<td>150</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-DPK-ORZ/D
used for dual-zone selective completion through concentric tubing strings with injection in the upper zone and production in the lower zone

Benefits
- Protects the production casing from HPHT environment of the injected fluid;
- Enables SRP-production.

Components
- Compression packer with hydraulic anchor PU-YaG1;
- Circulating (sealing) valve KCP (U);
- Release joint P-B;
- Axial mechanical set packer PM-R (PVM-O).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ/D 122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ/D 140-60-35</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ/D 150-60-35</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments — K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH
KOUS-DPK-DL-ORZ/D (KV)

used for dual-zone selective completion through concentric tubing strings with injection in the upper zone and production in the lower zone

Benefits
- Protects the production casing from HPHT environment of the injected fluid;
- Enables ESP-production;
- Helps evacuate gas from under the packer.

Components
- Feed-through compression packer PU (KV);
- Circulating (sealing) valve KCP (U);
- Release joint P-B;
- Feed-through axial mechanical set packer PVM-O (KV) M;
- Gas vent valve KPP.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>KOUS-DPK-DL-ORZ/D (KV) 122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-DPK-DL-ORZ/D (KV) 140-60-35</td>
<td>6 ¾</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-DPK-DL-ORZ/D (KV) 150-60-35</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-ORZ-DPK (KS) used for single string dual injection

**Benefits**
- Protects the production casing from HPHT environment of the injected fluid;
- Allows selective regulation of injected volume of fluid;
- Provides selective logging capabilities.

**Components**
- On-off connector RK-S;
- Side pocket mandrel KS;
- Compression packer with hydraulic anchor PU-YaG1;
- On-off connector RK Tubing;
- Axial mechanical set packer PM-R;
- Bull plug.

**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOUS-ORZ-DPK (KS) 122-52-35</td>
<td>5 ¾ 146.1</td>
<td>4.803 122 1.378 52* 5076**</td>
<td></td>
</tr>
<tr>
<td>KOUS-ORZ-DPK (KS) 140-60-35</td>
<td>6 ¼ 168.3 5.512 140 1.969 60* 5076**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOUS-ORZ-DPK (KS) 150-60-35</td>
<td>6 ¾; 7 168.3; 177.8 5.906 150 1.969 60* 5076**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-DPK (KV) VSP

designed for single string intrawell injection with water produced from the lower aquifer and injected in the upper reservoir

Benefits

- Protects the production casing from HP environment during intrawell injection;
- Helps maintain formation pressure when water supply is not available or water injection wells can’t support it due to remote location;
- Makes construction of water supply unnecessary, thereby substantially saving costs.

Components

- Feed-through hydraulic anchor YaG2 (KV);
- Feed-through compression mechanical set packer PU-M (KV);
- Feed-through axial mechanical set packer PVM-O (KV);
- Downhole flow control valve KZ.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD in</td>
<td>ID in</td>
<td>OD mm</td>
</tr>
<tr>
<td>KOUS-DPK (KV) VSP 122-35-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-DPK (KV) VSP 140-50-35</td>
<td>6 ⅝</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-DPK (KV) VSP 150-50-35</td>
<td>6 ⅝; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-TPK-VSP
used for single string intrawell injection with water produced from the upper aquifer and injected in the lower reservoir

Benefits
- Protects the production casing from HP environment during intrawell injection;
- Provides tight connection of the tubing string to ensure the fluid is injected straight in the formation;
- Allows ESP changeover without dual packer assembly retrieval.

Components
- Feed-through axial mechanical set packer PVM-O (KV);
- On-off sealing connector RK-S (U);
- Compression mechanical set packer PU-M;
- Axial mechanical set Packer PM-R (PVM-O);
- Downhole flow control valve KZ.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD in</td>
<td>ID in</td>
<td>OD mm</td>
</tr>
<tr>
<td>KOUS-TPK-VSP 122-35-35</td>
<td>5 ¼</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-TPK-VSP 140-50-35</td>
<td>6 ⅝</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-TPK-VSP 150-50-35</td>
<td>6 ⅝; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

| * Other Tool ID is available on request. |
| ** Differential pressure ratings — 7252 psi; 10150 psi. |
| Working temperature ratings 266 °F; 302 °F. |
| Customer-selected setdown weight. |
| Higher performance assembly available for hostile environments - K2 Model. |
| Other sizes of the assembly are available on request. |
MULTITECH KOUS-TPK (A)  
designed for long-term ESP-completion and isolation of previously perforated casing sections

Benefits
- Allows secure isolation of previously perforated casing sections;
- Allows ESP changeover without packer assembly retrieval.

Components
- On-off connector RK-S;
- Compression mechanical set packer PU-M;
- Release joint P-B;
- Compression packer PU;
- Axial mechanical set packer PM-R (PVM-O).

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 ¼</td>
<td>139.7</td>
<td>4.49</td>
</tr>
<tr>
<td>KOUS-TPK (A) 114-52-35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOUS-TPK (A) 118-52-35</td>
<td>5 ¼; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
</tr>
<tr>
<td>KOUS-TPK (A) 122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-TPK (A) 140-60-35</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-TPK (A) 150-60-35</td>
<td>6 ¼; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

* Other Tool ID is available on request.
** Differential pressure ratings — 7252 psi, 10150 psi.
■ Working temperature ratings 266 °F; 302 °F.
■ Customer-selected setdown weight.
■ Higher performance assembly available for hostile environments - K2 Model.
■ Other sizes of the assembly are available on request.

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.
MULTITECH KOUS-TPK-SO
used for selective stimulation or dual well testing with different fluid

**Benefits**
- Allows secure isolation of previously perforated zones;
- Provides single trip fluid injection.

**Components**
- Circulating sub KP;
- Compression packers PU;
- Top circulating sub KCP-V;
- Bottom circulating sub KCP-N;
- Axial mechanical set packer PM-R (PVM-O).

**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>KOUS-TPK-SO 114-52-35</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
</tr>
<tr>
<td>KOUS-TPK-SO 118-52-35</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
</tr>
<tr>
<td>KOUS-TPK-SO 122-52-35</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-TPK-SO 140-60-35</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-TPK-SO 150-60-35</td>
<td>6 ¼; 7</td>
<td>178.3</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments — K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-DPK-ORZ (KZ)
used for single string dual injection

Benefits
- Allows distribution of injected volume between upper and lower intervals;
- Helps regulate the volume injected in each zone by changing choke size on the surface;
- Valve retrieval is accomplished using a standard wireline unit without unsetting the packer.

Components
- Downhole flow control valve KZ;
- Axial mechanical set packer PM-R;
- Compression mechanical set packer PU-M;
- Release joint P-B.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OD in mm</td>
<td>ID in mm</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KZ) 122-52-35</td>
<td>5 ¾ 146.1</td>
<td>4.803</td>
<td>1.378</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KZ) 140-60-35</td>
<td>6 ¾ 168.3</td>
<td>5.512</td>
<td>1.969</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KZ) 150-60-35</td>
<td>6 ¾; 7 168.3; 177.8</td>
<td>5.906</td>
<td>1.969</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-DPK-ORZ (KZ) M
used for single string dual injection

Benefits
- Allows distribution of injected volume between upper and lower intervals;
- Helps regulate the volume injected in each zone by changing choke size on the surface. Valve retrieval is accomplished using a standard wireline unit without unsetting the packer;
- Enables real-time flowrate, pressure and temperature measurements. Data are transmitted through the logging cable to the interface unit on the surface.

Components
- Feed-through compression packer PU (KV);
- Downhole flow control valve KZ;
- Axial mechanical set packer PM-R;
- Gauge mandrel;
- Re-entry guide V;
- Interface unit.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KZ) M 122-52-35</td>
<td>5 ¼</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KZ) M 140-60-35</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KZ) M 150-60-35</td>
<td>6 ¾; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KOUS-DPK-ORZ (KP) M
used for single string dual injection

Benefits

- Allows distribution of injected fluid between zones;
- Enables flow control of injected fluid using surface-controlled switching valve;
- Contains gauge mandrel to allow real-time measurements of the following parameters:
  - Volume of injected fluid;
  - Tubing and annulus pressure;
  - Temperature;
- Allows retrieval of the switching valve without packer assembly retrieval.

Components

- Switching valve KPP;
- On-off connector RK-S;
- Compression mechanical set packer PU-M;
- Circulating (sealing) sub KCP (U);
- Axial mechanical set packer PM-R.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOUS-DPK-ORZ (KP) M 122-52-35</td>
<td>5 ¾ in</td>
<td>146.1 in mm</td>
<td>4.803 in 122 in 1.378 in 52* psi 5076**</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KP) M 140-60-35</td>
<td>6 ¾ in</td>
<td>168.3 in mm</td>
<td>5.512 in 140 in 1.969 in 60* psi 5076**</td>
</tr>
<tr>
<td>KOUS-DPK-ORZ (KP) M 150-60-35</td>
<td>6 ¾; 7 in</td>
<td>168.3; 177.8 in</td>
<td>5.906 in 150 in 1.969 in 60* psi 5076**</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
**MULTITECH KOUS-PM-A1 (F) KO**
isolates the formation from brine or other kill weight fluids during ESP changeover

**Benefits**
- Prevents the formation from being exposed to kill fluid during ESP replacement or other remedial interventions;
- Helps to significantly reduce damage to the formation;
- Reduces nonproductive time;
-Eliminates possible reduction of production rate at the start of production.

**Components**
- Downhole filter sub FZT;
- On-off connector RK-S (Z);
- Formation isolation valve KO-ZP;
- Axial mechanical set packer (retainer) PM-A1 (F).

**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) KO 114-52-35</td>
<td>5 ¼</td>
<td>139.7</td>
<td>4.49</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) KO 118-52-35</td>
<td>5 &amp;frac1}{2}; 5 &amp;frac3}{4}</td>
<td>139.7; 146.1</td>
<td>4.646</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) KO 122-52-35</td>
<td>5 &amp;frac1}{2}</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) KO 140-60-35</td>
<td>6 &amp;frac5}{8}</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-PM-A1 (F) KO 150-60-35</td>
<td>6 &amp;frac5}{8}; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 7252 psi; 10150 psi.
- Working temperature ratings 266 °F; 302 °F.
- Customer-selected setdown weight.
- Higher performance assembly available for hostile environments - K2 Model.
- Other sizes of the assembly are available on request.
MULTITECH KP-D diverter sub

Application

- Selective fracturing assemblies.

Main Features and Benefits

- Proppant-tolerant components;
- Minimized casing washout risk if fracturing fluid pumped through the sub;
- Grooves on the housing of the sub to allow communication with the annulus;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Total Flow Area of Side Ports, in²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>mm</td>
<td>in</td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KP-D 120</td>
<td>5.0</td>
<td>127</td>
<td>4.72</td>
<td>120</td>
<td>3.5 NU</td>
<td>88.9</td>
</tr>
</tbody>
</table>

- Optional box (top) and pin (bottom) thread connections are available.
- Higher performance valve available for hostile environments - K2 Model.
- Other sizes of the valve are available on request.
MULTITECH KO-GRP rotary check valve

Application

- Selective fracturing;
- Plug operations.

Main Features and Benefits

- Opening is accomplished by a half right-hand turn at the tubing string;
- Closing is accomplished by a half left-hand turn at the tubing string;
- Proppant-tolerant components;
- Multiple use within one tripping;
- Tool’s components are plated or coated with phosphate;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Working Pressure, psi</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KO-GRP 122-60-70</td>
<td>5.0 127</td>
<td>4.8 122</td>
<td>2.36 60</td>
<td>2.875 NU 73.03</td>
<td>37.95</td>
<td>125.66</td>
<td>10150** 266***</td>
</tr>
<tr>
<td>KO-GRP 140-72-70</td>
<td>5 ¾ 146.1</td>
<td>5.51 140</td>
<td>2.83 72</td>
<td>3.5 NU 88.9</td>
<td>37.95</td>
<td>134.48</td>
<td>10150** 266***</td>
</tr>
</tbody>
</table>

* Optional box (top) and pin (bottom) thread connections are available.
** Differential pressure ratings — 10150 psi; 14500 psi.
*** High-temperature (302 °F, 392 °F) model of the valve is available on request.
Higher performance valve available for hostile environments – K2 Model.
Other sizes of the valve are available on request.
MULTITECH PM-V (GRP)
rotary mechanical set packer

Application

- Hydraulic fracturing;
- Acid fracturing;
- Casing leak detection;
- Acidizing;
- Other well interventions requiring pressurization above or below the packer.

Main Features and Benefits

- Set in the well by a quarter right-hand turn of the tubing string and lowering it
- To release the packer apply tension to the tubing;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design for worn casings;
- Simple design;
- Low maintenance cost;
- To easily release the packer in the deep wells it is recommended that the packer be set along with KU-O unloader valve (placed above the packer). The valve allows the pressure between the tubing and the annulus to equalize;
- The packer has a built-in hydraulic anchor;
- Solid and reinforced bore design;
- Multiple use within one tripping;
- High maintainability;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid;
- Tool’s components are plated or coated with phosphate.

Allows for long-term isolation of zones in the production string and protects the production string from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>Length, in, no more than</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Maximum temperature, °F</th>
<th>Setdown Force, kN, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-V (GRP) 82-34-100 YaG1</td>
<td>4.0 101.6 3.23 82 1.339 34 2.375 NU 60.33</td>
<td>45.276 48.5</td>
<td>14500** 266*** 50...80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 88-38-100 YaG1</td>
<td>4 ½ 114.3 3.465 88 1.496 38 2.375 NU 60.33</td>
<td>45.276 55.1</td>
<td>14500** 266*** 50...80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 92-38-100 YaG1</td>
<td>4 ½ 114.3 3.622 92 1.496 38 2.375 NU 60.33</td>
<td>45.276 57.3</td>
<td>14500** 266*** 50...80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 98-42-100 YaG1</td>
<td>4 ½; 5.0 114.3; 127.0 3.86 98 1.654 42 2.375 NU 73.03</td>
<td>48.819 66.1</td>
<td>14500** 266*** 50...80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 101-42-100 YaG1</td>
<td>5.0 127.0 3.976 101 1.654 42 2.875 NU 73.03</td>
<td>48.819 75</td>
<td>14500** 266*** 50...80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 112-52-100 YaG1</td>
<td>5 ½; 5 ⅜ 139.7; 146.1 4.41 112 2.047 52 2.875 NU 73.03</td>
<td>48.819 92.95</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 114-52-100 YaG1</td>
<td>5 ¼ 139.7 4.49 114 2.047 52 2.875 NU 73.03</td>
<td>48.819 97</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 116-52-100 YaG1</td>
<td>5 ¼ 139.7; 146.1 4.576 116 2.047 52 2.875 NU 73.03</td>
<td>48.819 99.2</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 118-52-100 YaG1</td>
<td>5 ½; 5 ⅜ 139.7; 146.1 4.646 118 2.047 52 2.875 NU 73.03</td>
<td>48.819 101.4</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 122-52-100 YaG1</td>
<td>5 ¾ 146.1 4.803 122 2.047 52 2.875 NU 73.03</td>
<td>48.819 105.8</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 136-60-100 YaG1</td>
<td>6 ½ 168.3 5.354 136 2.362 60 2.875 NU 73.03</td>
<td>48.819 125.7</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 140-60-100 YaG1</td>
<td>6 ¼ 168.3 5.512 140 2.362 60 2.875 NU 73.03</td>
<td>48.819 139.8</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 142-60-100 YaG1</td>
<td>6 ¾ 168.3 5.59 142 2.362 60 2.875 NU 73.03</td>
<td>48.819 145.5</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 145-60-100 YaG1</td>
<td>6 ¼; 7 168.3; 177.8 5.709 145 2.362 60 2.875 NU 73.03</td>
<td>48.819 149.9</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 150-60-100 YaG1</td>
<td>7.0 177.8 5.906 150 2.362 60 2.875 NU 73.03</td>
<td>48.819 156.5</td>
<td>14500** 266*** 80...120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-V (GRP) 205-100-100 YaG1</td>
<td>9 ¼ 244.5 8.07 205 3.937 100 4.5 NU 114.3</td>
<td>64.961 7.559</td>
<td>14500** 266*** 120...160</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Differential pressure ratings – 7252 psi; 10150 psi; 14500 psi.
- *** High-temperature (302 °F, 392 °F) model of the packer is available on request.
- Higher performance version available for hostile environments - K2 Model.
- Supplied with spare parts, tools and accessories.
- If ordering a packer with a hydraulic anchor, please indicate the anchor option (YaG1, YaG2 or YaG3) following the packer's name.
- Other sizes of the PM-V (GRP) packer are available on request.
MULTITECH PM-R (GRP)
rotary mechanical set packer

Application

- Hydraulic fracturing;
- Acidizing;
- Isolation of the production casing from harsh downhole environment during production;
- Other well interventions that require pressurization above the packer;
- Injection and production wells.

Main Features and Benefits

- Allows for long-term isolation of zones in the production string and protects the production string from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.

- To set the packer pull the tubing string upward and then lower it (tubing rotation is not required);
- PM-R (GRP) B YAG1 packer has a bypass valve. When the packer is retrieved from a well by an upward pull of the tubing, the valve opens and equalizes the pressure across the packer which enables packer unsetting;
- J-slot on the sleeve ensures secure setting and prevents loosening of the body;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design for worn casings;
- Built-in hydraulic anchor;
- Solid and reinforced bore design helps eliminate sealbore washout risk in large-volume fracturing;
- Multiple use within one tripping;
- Hydraulic anchor isolated from injected fracturing fluid;
- High maintainability;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid;
- Tool’s components are plated or coated with phosphate.
### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Packer size</th>
<th>Weight, lbs, no more than</th>
<th>Maximum pressure, psi</th>
<th>Setdown Force, kN, no more than</th>
<th>Maximum temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td>Connection*</td>
<td>Length, in, no more than</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-R (GRP) 82-38-100 YaG2</td>
<td>4.0</td>
<td>101.6</td>
<td>3.23</td>
<td>82</td>
<td>1.496</td>
<td>38</td>
</tr>
<tr>
<td>PM-R (GRP) 88-38-100 YaG2</td>
<td>4 ½</td>
<td>114.3</td>
<td>3.465</td>
<td>88</td>
<td>1.496</td>
<td>38</td>
</tr>
<tr>
<td>PM-R (GRP) 92-38-100 YaG2</td>
<td>4 ½</td>
<td>114.3</td>
<td>3.622</td>
<td>92</td>
<td>1.496</td>
<td>38</td>
</tr>
<tr>
<td>PM-R (GRP) 98-42-100 YaG2</td>
<td>4 ½; 5.0</td>
<td>114.3; 127.0</td>
<td>3.86</td>
<td>98</td>
<td>1.654</td>
<td>42</td>
</tr>
<tr>
<td>PM-R (GRP) 101-42-100 YaG1</td>
<td>5.0</td>
<td>127.0</td>
<td>3.976</td>
<td>101</td>
<td>1.654</td>
<td>42</td>
</tr>
<tr>
<td>PM-R (GRP) 112-52-100 YaG1</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.41</td>
<td>112</td>
<td>2.047</td>
<td>52</td>
</tr>
<tr>
<td>PM-R (GRP) 114-52-100 YaG1</td>
<td>5 ½</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>2.047</td>
<td>52</td>
</tr>
<tr>
<td>PM-R (GRP) 116-52-100 YaG1</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.567</td>
<td>116</td>
<td>2.047</td>
<td>52</td>
</tr>
<tr>
<td>PM-R (GRP) 118-52-100 YaG1</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
<td>4.646</td>
<td>118</td>
<td>2.047</td>
<td>52</td>
</tr>
<tr>
<td>PM-R (GRP) 122-52-100 YaG1</td>
<td>5 ½</td>
<td>146.1</td>
<td>4.803</td>
<td>122</td>
<td>2.047</td>
<td>52</td>
</tr>
<tr>
<td>PM-R (GRP) 136-60-100 YaG1</td>
<td>6 ½</td>
<td>168.3</td>
<td>5.354</td>
<td>136</td>
<td>2.362**</td>
<td>60**</td>
</tr>
<tr>
<td>PM-R (GRP) 140-60-100 YaG1</td>
<td>6 ½</td>
<td>168.3</td>
<td>5.512</td>
<td>140</td>
<td>2.362**</td>
<td>60**</td>
</tr>
<tr>
<td>PM-R (GRP) 142-60-100 YaG1</td>
<td>6 ½</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>2.362**</td>
<td>60**</td>
</tr>
<tr>
<td>PM-R (GRP) 145-60-100 YaG1</td>
<td>6 ¼; 7</td>
<td>168.3; 177.8</td>
<td>5.709</td>
<td>145</td>
<td>2.362**</td>
<td>60**</td>
</tr>
<tr>
<td>PM-R (GRP) 150-60-100 YaG1</td>
<td>7.0</td>
<td>177.8</td>
<td>5.906</td>
<td>150</td>
<td>2.362**</td>
<td>60**</td>
</tr>
<tr>
<td>PM-R (GRP) 205-100-100 YaG1</td>
<td>9 ½</td>
<td>244.5</td>
<td>8.07</td>
<td>205</td>
<td>3.937</td>
<td>100</td>
</tr>
</tbody>
</table>

- * Optional box (top) and pin (bottom) thread connections are available.
- ** Other ID is available on request.
- *** Differential pressure ratings — 7252 psi; 10150 psi; 14500 psi.
- **** High-temperature (302 °F, 392 °F) model of the packer is available on request.
- Higher performance version available for hostile environments - K2 Model.
- Supplied with spare parts, tools and accessories.
- Other sizes of the PM-R (GRP) packer are available on request.
MULTITECH PU (GRP) YaG1
compression packer

Application

- Hydraulic fracturing;
- Acidizing;
- Isolation of the production casing from harsh downhole environment during production;
- Other well interventions that require pressurization above the packer.

Main Features and Benefits

- Allows for long-term isolation of zones in the production string and protects the production string from dynamic and hostile downhole conditions in the course of bottomhole zone treatment.
- Set with a liner compressed against the bottomhole or atop the lower packer;
- Reliable setting in deviated and horizontal wells;
- Equipped with a pin to ensure a torque-through feature to allow rotation of the tubing assembly below the packer;
- Easy setting;
- Two-cup (protective and sealing) or three-cup (two protective and one sealing) design for worn casings;
- Simple design;
- Built-in hydraulic anchor;
- Solid and reinforced bore design helps eliminate sealbore washout risk in large-volume fracturing;
- Multiple use within one tripping;
- Hydraulic anchor isolated from injected fracturing fluid;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid;
- Tool’s components are plated or coated with phosphate.
Specifications

| Type               | Casing size | Packer size
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
</tr>
<tr>
<td>PU (GRP) 82-38-70 YaG2</td>
<td>4.0</td>
<td>101.6</td>
</tr>
<tr>
<td>PU (GRP) 88-38-100 YaG2</td>
<td>4 ½</td>
<td>114.3</td>
</tr>
<tr>
<td>PU (GRP) 92-38-100 YaG2</td>
<td>4 ½</td>
<td>114.3</td>
</tr>
<tr>
<td>PU (GRP) 98-42-100 YaG2</td>
<td>4 ½</td>
<td>114.3</td>
</tr>
<tr>
<td>PU (GRP) 101-42-100 YaG1</td>
<td>5.0</td>
<td>127.0</td>
</tr>
<tr>
<td>PU (GRP) 112-52-100 YaG1</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
</tr>
<tr>
<td>PU (GRP) 114-52-100 YaG1</td>
<td>5 ½</td>
<td>139.7</td>
</tr>
<tr>
<td>PU (GRP) 116-52-100 YaG1</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
</tr>
<tr>
<td>PU (GRP) 118-52-100 YaG1</td>
<td>5 ½; 5 ¾</td>
<td>139.7; 146.1</td>
</tr>
<tr>
<td>PU (GRP) 122-52-100 YaG1</td>
<td>5 ½</td>
<td>146.1</td>
</tr>
<tr>
<td>PU (GRP) 136-60-100 YaG1</td>
<td>6 ½</td>
<td>168.3</td>
</tr>
<tr>
<td>PU (GRP) 140-60-100 YaG1</td>
<td>6 ½</td>
<td>168.3</td>
</tr>
<tr>
<td>PU (GRP) 142-60-100 YaG1</td>
<td>6 ½</td>
<td>168.3</td>
</tr>
<tr>
<td>PU (GRP) 145-60-100 YaG1</td>
<td>6 ½; 7</td>
<td>168.3; 177.8</td>
</tr>
<tr>
<td>PU (GRP) 150-60-100 YaG1</td>
<td>7.0</td>
<td>177.8</td>
</tr>
<tr>
<td>PU (GRP) 182-76-100 YaG1</td>
<td>8 ½</td>
<td>219.1</td>
</tr>
<tr>
<td>PU (GRP) 205-100-100 YaG1</td>
<td>9 ½</td>
<td>244.5</td>
</tr>
</tbody>
</table>

- Optional box (top) and pin (bottom) thread connections are available.
- Differential pressure rating – 14500 psi.
- High-temperature (302 °F) model of the packer is available on request.
- Higher performance seals available for hostile environments - K2 Model.
- Other sizes of the PU (GRP) packer are available on request.
MULTITECH PN
swellable packer

Main Features and Benefits

- Ability to adapt to changing wellbore profile;
- Self-healing;
- Ensures long-term sealing due to delayed mechanical stiffening;
- Size and composition of swelling element are determined by downhole conditions;
- No moving parts;
- No setting tool required;
- Up to 20-day swelling delay;
- Chemical resistant;
- Cable feed-through option.

Designed for separation of intervals, formation and cross flows, in multistage fracturing operations and other open-hole and production-related interventions. Swelling and sealing are achieved through exposure of elastomer to wellbore fluids (oil, water or both). Can be used in open-hole and cased hole wells.

- Threads TMK UP FMT, TMK UP PF, TMK UP GF, VrTZ1, VrTZ2, OTTG, OTTM and others;
- Casing size – 3 ½, 4, 4 ½, 5 ½, 5 ¾, 6 ⅝ in;
- Maximum differential pressure - 14 500 psi;
- Swelling temperature range - 32-392 °F
- Service application with H2S exposure;
- Available design:
  - NNP-T – oil-swellable vulcanized on the pipe
  - NNP-R – oil-swellable sleeve type
  - VNP-T – water-swellable vulcanized on the pipe
  - VNP-R – oil-swellable sleeve type
  - GNP-T – hybrid vulcanized on the pipe
  - GNP-R – hybrid sleeve type
  - KNP-T – combined water- and oil-swellable elastomer vulcanized on the pipe
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid.
- The packer base pipe size and specifications are selected in accordance with the pipe used by the Customer.
MULTITECH PIG
hydraulic packer

Application
- High differential pressure conditions;
- Instant activation for multistage fracturing;
- Adjustable triggering pressure;
- No activation tool required.

Main Features and Benefits
- Maximum differential pressure - 10150 psi;
- Allows selective activation with a tubing or CT-run tool;
- Larger through-bore;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid.

Provides isolation of zones, prevents cross flows and allows multistage fracturing. Packer is lowered in the well as a part of the casing string to be set in the open hole or in the cased wellbore.
MULTITECH PGPKh
liner hanger packer

Used for cementing and sealing the liner in the casing of deviated and horizontal wells.

Application

- Cementing and isolation of the top of liner in the casing.

Main Features and Benefits

- Capable of handling bidirectional loads;
- No rotation and reciprocation required for setting;
- Locking rings and special design prevent sealing elements from extrusion;
- Larger through-bore;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid.

Triggering method

- With hydraulic setting tool;
- By overpressurizing the packer.
MULTITECH S stinger

Main Features and Benefits

- Capable to resist high pressure differential;
- No-rotation release;
- SZ stinger comes with a latch collet.
  Release (disconnection) is accomplished by rotation or upward pull;
- Larger through-bore;
- Set in the well by slacking off the tubing weight;
- Maximum stroke of the moving stinger with retained sealing capacity — 236 in.
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid.

Design Options

- With moving parts and retained sealing capacity;
- Non-moving design, with latch collet engagement.

Designed for leak-proof connection of the tubing string in a PBR of the liner hanger packer or production packer.
Design Options

- Expendable, activated with a ball or hydraulically;
- Reclosable, activated with a ball or a tool.

Main Features and Benefits

- Allow multiple stages of fracturing;
- Selective opening of fracturing sleeves;
- Provide reservoir compartmentalization to allow flow control, repeat fracturing and reduce water-cut;
- Degradable balls and a shifting tool avoid the necessity of milling out seats and balls;
- Closing of fracturing sleeves with a shifting tool is accomplished with tubing, coiled tubing and downhole tractor;
- Internally nitried components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid.

MULTITECH MGR
fracturing sleeves

Used for fracturing at the setting depth. Fracturing sleeve is installed in the non-cemented liner assembly of deviated and horizontal wells.
MULTITECH KOUS-DPK GRP-SO used for selective fracturing, cement plugging operations, acidizing, formation testing and casing leak detection

Benefits
- Enables subsequent single-trip fracturing of several zones;
- Allows selective and multiple reservoir stimulation;
- Allows changing of tools' setting location.

Components
- Check valve KO-GRP;
- Diverter sub KP-D;
- Compression packer with hydraulic anchor PU (GRP) YaG1;
- Axial mechanical set packer PVM-O;
- Bull plug.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD (in)</td>
<td>ID (in)</td>
<td></td>
</tr>
<tr>
<td>KOUS-DPK GRP-SO 122-50</td>
<td>5 ¾</td>
<td>146.1</td>
<td>4.803 122 2.047 52</td>
</tr>
<tr>
<td>KOUS-DPK GRP-SO 140-50</td>
<td>6 ¼</td>
<td>168.3</td>
<td>5.512 140 2.362 60</td>
</tr>
<tr>
<td>KOUS-DPK GRP-SO 145-50</td>
<td>6 ½; 7</td>
<td>168.3; 177.8</td>
<td>5.709 145 2.362 60</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Differential pressure ratings — 10150 psi; 14500 psi.
- * Working temperature ratings 266 °F, 338 °F, 392 °F.
- * Customer-selected setdown weight.
- * Higher performance assembly available for hostile environments – K2 Model.
- * Other sizes of the assembly are available on request.
MULTITECH KO-U
surface-controlled subsurface safety valve

Provides controllable isolation of the tubing bore in case of emergency or during well interventions.

Application

- Gas and gas condensate wells requiring downhole shut-in;
- Large volume fracturing.

Main Features and Benefits

- Fail-safe design enables forced opening of the valve with a safety sleeve when surface control is lost;
- Complete isolation and sealing are achieved irrespectively of the reservoir pressure;
- Built-in pressure equalization system;
- With valve open, the flapper is not exposed to fluid flow;
- Valve body protects the flapper and the seat during wireline operations or coil tubing operation;
- Internally nitrided components are case-hardened, durable and corrosion-tolerant to resist fracturing fluid;
- Tool’s components are plated or coated with phosphate.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Maximum pressure, psi</th>
<th>SCSSV Opening Pressure, psi</th>
<th>Maximum Temperature, °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>KO-U TMK UP PF 3,5” 114-50-70 KhL ХЛ</td>
<td>5.5</td>
<td>139.7</td>
<td>4.49</td>
<td>114</td>
<td>1.969</td>
<td>50</td>
<td>TMK UP PF 89</td>
<td>54.7</td>
</tr>
<tr>
<td>KO-U TMK UP FMT 3,5” 132-70-21 KhL ХЛ</td>
<td>6.6</td>
<td>168,28</td>
<td>5.20</td>
<td>132</td>
<td>2.756</td>
<td>70</td>
<td>TMK UP FMT 89</td>
<td>60.47</td>
</tr>
<tr>
<td>KO-U 146-72-70 K1 KhL</td>
<td>7</td>
<td>177,8</td>
<td>5.75</td>
<td>146</td>
<td>2.835</td>
<td>72</td>
<td>TMK UP FMT 89</td>
<td>59.06</td>
</tr>
<tr>
<td>KO-U TMK UP PF 3,5” 152-72-100 KhL ХЛ</td>
<td>7</td>
<td>177,8</td>
<td>5.98</td>
<td>152</td>
<td>2.835</td>
<td>72</td>
<td>TMK UP PF 89</td>
<td>60.43</td>
</tr>
<tr>
<td>KO-U 190-98-21 K1 KhL</td>
<td>9.65</td>
<td>245</td>
<td>7.48</td>
<td>190</td>
<td>3.858</td>
<td>98</td>
<td>TMK UP FMT 114</td>
<td>61.1</td>
</tr>
</tbody>
</table>

* Optional premium gas-proof threads are available on request.
** High-temperature (302 °F) model of the SCSSV is available on request.
The valve can be manufactured into the corrosion-resistant design — 13Cr, K2.
Other sizes of the SCSSV are available on request.
SCSSV is also manufactured at a pressure of 35 MPa, 50 MPa and 100 MPa.
MULTITECH ST slip joint

Application

- Gas and gas condensate wells requiring downhole shut-in;
- Large volume fracturing.

Main Features and Benefits

- No shear screws design;
- Retention of a slip joint run-in position under compression and tension loads occurring during packer assembly lowering;
- Controllable jumping to operating position through the trigger unit;
- Capability to transmit torque to the equipment below in both run-in and operating modes;
- Optional installation of check valve or dummy valve in the upper section of the slip joint;
- Ultimate operation of slip joint;
- Trigger unit doesn’t obstruct the bore;
- Designed with an on-off connector function.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>OD</th>
<th>ID</th>
<th>Connection*</th>
<th>Length, in, no more than</th>
<th>Maximum pressure, psi</th>
<th>Weight, lbs, no more than</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST TMK UP FMT 4,5”-142-97-21 K1 KhL</td>
<td>6.63</td>
<td>168.3</td>
<td>5.59</td>
<td>142</td>
<td>3.82 97</td>
<td>TMK UP PF 89</td>
<td>142</td>
</tr>
</tbody>
</table>

Designed to accommodate any changes in tubing string length caused by temperature and pressure.
MULTITECH KOUS-PK-GL
used in gas, gas condensate and oil producing wells

Benefits

- Provides production control for intermittent gas-lift method of production;
- Allows temporary and permanent communication between the tubing and the annulus;
- Enables chemical treatment through the annulus into the tubing.

Components

- Landing nipple;
- SCSSV KO-A;
- Side pocket mandrel KS;
- Circulating sub KCP;
- On-off connector RK-S;
- Hydraulic-set packer PM-D-YaG;
- Re-entry guide.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td>OD</td>
</tr>
<tr>
<td>KOUS-PK-GL 118-52-35</td>
<td>5 1/2; 5 3/4</td>
<td>139.7; 146.1</td>
<td>4.646</td>
</tr>
<tr>
<td>KOUS-PK-GL 122-52-35</td>
<td>5 3/4</td>
<td>146.1</td>
<td>4.803</td>
</tr>
<tr>
<td>KOUS-PK-GL 140-60-35</td>
<td>6 5/8</td>
<td>168.3</td>
<td>5.512</td>
</tr>
<tr>
<td>KOUS-PK-GL 150-60-35</td>
<td>6 7/8; 7</td>
<td>168.3; 177.8</td>
<td>5.906</td>
</tr>
</tbody>
</table>

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Other Tool ID is available on request.
- ** Differential pressure ratings — 3046 psi; 7252 psi; 10150 psi.
- Working temperature ratings 266 °F, 302 °F, 338 °F.
- Higher performance assembly available into the corrosion-resistant design — 13Cr, K2.
- Optional premium gas-proof threads are available on request.
- Other sizes of the assembly are available on request.
MULTITECH
KPO 114-168/142-21 K1 KhL
used in flowing oil, gas and gas condensate wells

Benefits

- Enables sealing of the tubing string in case of emergency, when reservoir shut-in is required.
- Compensate for temperature-and-pressure changes in the length of the tubing string during operation.
- Ensuring connection of the tubing area with the annulus for flushing out and replacement of annular fluid.
- Conduct interval hydraulic pressure testing of the tubing string and equipment.

Components

- Protector P;
- SCSSV KO-U;
- Pup joint P;
- Slip joint ST;
- Circulating sub KCP;
- On-off connector RK-S;
- Hydraulic-set packer PM-D-YaG;
- Landing nipple NP;
- Re-entry guide.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD (in)</td>
<td>ID (mm)</td>
<td>OD (mm)</td>
</tr>
<tr>
<td>KPO 114-168/142-21 K1 KhL</td>
<td>9 ¾; 6 ¾</td>
<td>244.5;168.3</td>
<td>7.48/5.59</td>
</tr>
</tbody>
</table>

The KPO assembly has been successfully operating in the wells of GAZPROM Dobycha Nadym LLC.

Due to continuous improvement of packers, anchors and other downhole tools, applicable specifications and descriptions may not be complete.

- * Differential pressure ratings — 5076 psi; 7252 psi; 10150 psi.
- Working temperature ratings 266 °F, 302 °F, 338 °F.
- Higher performance assembly available into the corrosion-resistant design — 13Cr, K2.
- Optional premium gas-proof threads are available on request.
- Other sizes of the assembly are available on request.
**MULTITECH KOUS-DPK-DLK-ORE**

used for dual completion in gas and gas condensate wells

**Benefits**

- Allows independent metering of produced gas;
- Enables dual injection of corrosion or hydrate inhibitors through chemical injection valves;
- Provides temporary communication between the annulus and each of the tubing strings;

**Components**

- Chemical injection mandrels KI;
- Circulating subs KCP;
- Axial mechanical set packer PM-R;
- Axial mechanical set packer PVM-O (F);
- On-off sealing connector RK-S (U);
- Release joint P-B;
- Re-entry guide V;
- Re-entry guide with a pumpout plug.

**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Casing size</th>
<th>Equipment size</th>
<th>Working Pressure, psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OD</td>
<td>ID</td>
<td></td>
</tr>
<tr>
<td>KOUS-DPK-DLK-ORE 152-35</td>
<td>7</td>
<td>177.8</td>
<td>5.984</td>
</tr>
</tbody>
</table>

* Differential pressure ratings — 3046 psi; 7252 psi; 10150 psi.
* Working temperature ratings 266 °F, 302 °F, 338 °F.
* Higher performance assembly available into the corrosion-resistant design — 13Cr, K2.
* Optional premium gas-proof threads are available on request.
* Other sizes of the assembly are available on request.
This catalogue contains descriptions and working principles of MULTITECH equipment, manufactured by NKMZ-Group, Ltd. The list of equipment is not exhaustive.

You are kindly invited to visit our production facilities where you can get an insight about our cutting-edge manufacturing process as well as become familiar with our recent developments of downhole tools and packer equipment.

Please contact our representatives for further details.

TD NKMZ, LTD.

19 Magistralnaya St., +7 (34783) 2-02-29
Neftekamsk 452683, +7 (34783) 2-09-74
Republic of Bashkortostan, po@nkmz.ru
Russia www.nkmz-po.ru

SERVICE CENTERS:

Neftekamsk +7 (34783) 2-02-29, 2-09-74
Buzuluk +7 (35342) 2-76-53
Nizhnevartovsk +7 (3466) 31-13-06, +7-982-570-76-11