Multiple Activated Bypass Tool
Product Information
Landrill oiltools

Version 2.1.3—Aug 2017
Multiple Activation Bypass Tool

1. Brief Introduction

The LANDRILL Multiple Activation Bypass Tool (MABT) is a simple reliable tool that helps reduce drilling costs in different types of hole formations and situations. It was originally developed to increase circulation rates and for enhanced well cleaning, but has evolved to now have many uses in drilling, completions and work over phases of well production and servicing.

Examples:

1: Plugging and squeeze operations for stimulation and cementing.

2: Special operations involving introduction of certain types of fluids into specific formations.

3: Washing operations in Directional, Horizontal and highly Deviated wells.

4: Hydro- blast washing of Wellhead, Casing or BOP’s to remove lodged solids and debris.

5: Cleaning solids and debris pertaining to milling operations.
2. Auto-lock Operational Sequence -2

Pump Down Locking Ball
OPEN PORT Trip Pipe/Fill Pipe

Tool can be hydraulically reset (unlocked) downhole by dropping 2 steel deactivation balls. Locking Ball and Activation Ball will Shear and Flow to Bit resumed.
3. Main Parts

The Circulation sub

The Basket to catch the balls
## 4. Models and Sizes

### Specification

<table>
<thead>
<tr>
<th>Model</th>
<th>PTF121</th>
<th>PTF165</th>
<th>PTF203</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool OD (in.)</td>
<td>4 3/4&quot; (121mm)</td>
<td>6-1/2&quot; (165mm)</td>
<td>8&quot; (203mm)</td>
</tr>
<tr>
<td>Tool ID (in.)</td>
<td>1 1/4&quot; (31.75mm)</td>
<td>2&quot; (50mm)</td>
<td>2.36&quot; (60mm)</td>
</tr>
<tr>
<td>Tool Length (mm)</td>
<td>1100</td>
<td>1200</td>
<td>1300</td>
</tr>
<tr>
<td>Max Tension (kN)</td>
<td>2200</td>
<td>3200</td>
<td>7920</td>
</tr>
<tr>
<td>Max flow rate (L/s)</td>
<td>23</td>
<td>47</td>
<td>65</td>
</tr>
<tr>
<td>Min flow rate (L/s)</td>
<td>11</td>
<td>23</td>
<td>35</td>
</tr>
<tr>
<td>Min Torque (kN·m)</td>
<td>40</td>
<td>68</td>
<td>150</td>
</tr>
<tr>
<td>Flow area before dropping ball (mm²)</td>
<td>1256</td>
<td>1750</td>
<td>3316.6</td>
</tr>
<tr>
<td>Flow area at outer circulation (mm²)</td>
<td>615.4</td>
<td>780</td>
<td>1775.9</td>
</tr>
<tr>
<td>Flow area under normal circulation (mm²)</td>
<td>632.5</td>
<td>1260</td>
<td>1358.3</td>
</tr>
<tr>
<td>Max allowed Temp (℃)</td>
<td>150</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td>Max differential (MPa)</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Ball Diameter (mm)</td>
<td>36, 38, 40</td>
<td>55, 57.5, 60</td>
<td>62, 63, 65</td>
</tr>
<tr>
<td>Drawdown (fresh water) before pre-start (MPa)</td>
<td>0.4 (18L/s)</td>
<td>0.6 (20L/s)</td>
<td>0.7 (63 L/s)</td>
</tr>
<tr>
<td>Min starting displacement</td>
<td>12L/s</td>
<td>18L/s</td>
<td>28L/s</td>
</tr>
<tr>
<td>Shearing drawdown for non-metal ball</td>
<td>5-7Mpa</td>
<td>7-10Mpa</td>
<td>9-12Mpa</td>
</tr>
</tbody>
</table>
5. Features & Advantages

- Work mode actuated and changed by dropping a ball and controlling displacement
- By-pass and normal work mode can be switched multiple times
- Any work mode can be checked by recording the times of ball dropping;
- Ball sizes are selectable
- Easy to train and operate
- Trip times reduced;
- Non-production time is significantly decreased;
6. Operating procedure

1) Adjust displacement to 13L/s, and drop the non-metal ball to seat;
2) Once the non-metal ball is in place, the standpipe pressure is increased;
3) At this moment, increase the displacement to the Min actuating value, so as to move the tool to the by-pass position;
4) Once displacement reaches the Min actuating value, the by-pass mode is active;
5) The drilling fluid which is now blocked by the ball, will go through the by-pass pores to the annulus rather than to the bit;
6) At this time, the standpipe pressure is significantly reduced, indicating the tool has been switched to by-pass mode;
7) To reverse situation, drop two specially sized steel balls, and which will plug the two by-pass pores once in place;
8) Under the now increased pressure, the non-metal ball will be sheared and pass through the seat into the ball catcher basket and the two steel balls will also flow down to the basket and the piston will resume position.

9) Standpipe pressure will decrease, indicating the tool has reversed back to normal flow through mode;
10) Repeated switch can be obtained by dropping another group of balls (one non-metal ball and two metal balls).
Multiple Activation Bypass

When Ordering, please specify:

1. Size / Model Number
2. Connections required
3. Mud weight and base
4. Wellbore information
5. Any special requirements

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