

Flow Actuated Circulation Tool (FACT)

Introduction

The development and manufacture of the Pilot Drilling Control Ltd FACT tool has Resulted from the need to be able to divert the flow away from the mud motor & drill bit and into the well bore for clean up operations during tubing work. The tool also has a second important use for rotary drilling.

In holes with multidiameter casing, a higher flow rate is needed at the top of the hole than at the bottom. The FACT tool allows the flow rate in the upper part of the hole to be higher than that in the lower part.



Flow Actuated Circulation Tool (FACT)

Description

The FACT Tool is a Downhole tool for aiding circulation around the well bore either for drilling or completion purposes. This tool does not require drop ball to be operated and is multi-functioned.

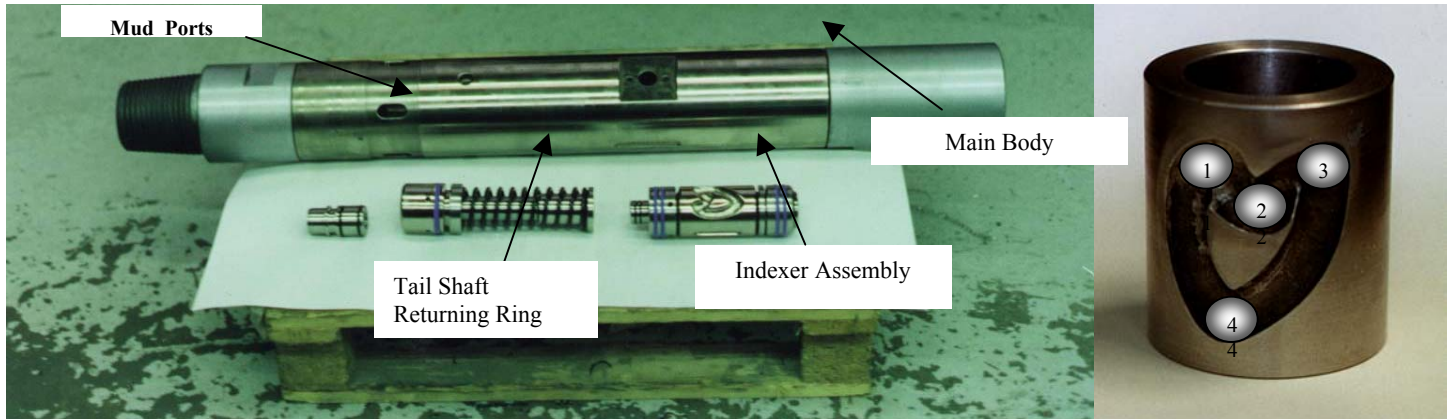
Features

- Patented indexing mechanism
- Tool strength exceeds that of drillstring
- Heavy duty sealing mechanism to avoid wash out
- Short over-all length
- Different choke sizes to allow for various operating flow rates
- Default open and default closed tools available

Benefits

- Enhanced efficiency in clean-up operations
- Lower pump work necessary in multi-diameter holes

Application



CAM Ball Bearing Position

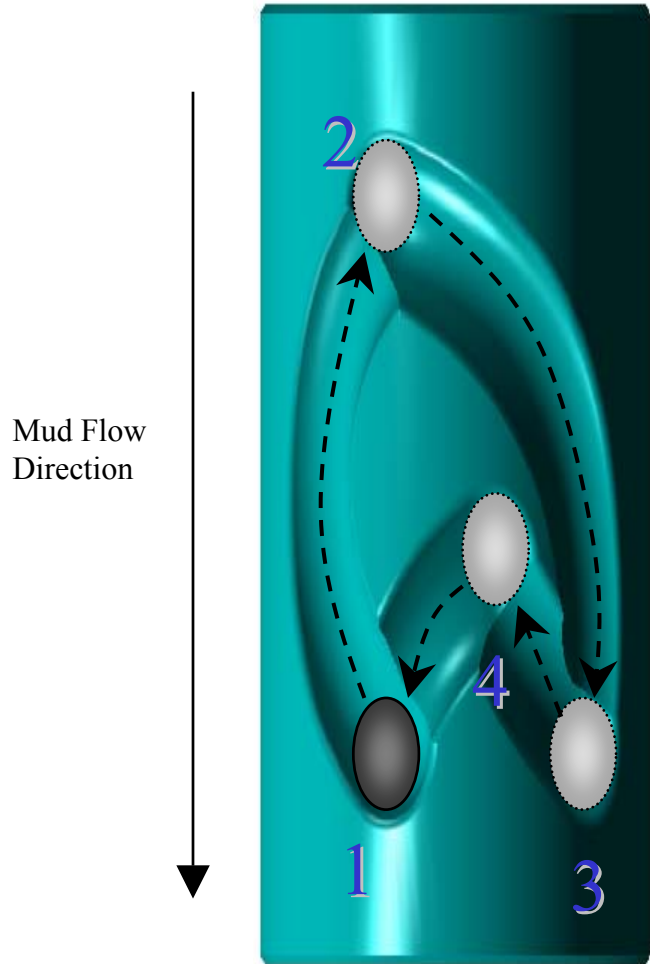
By Pass Tool Components

The by-pass sub is controlled by cycling the mud pumps to set different CAM positions for opening and closing the ports.

The mechanism operating principle is as follows:

1. With the ball bearing in position 1 on the CAM sleeve. (The ports are open)
2. When the mud pumps are switched on the ball bearing moves into position 2 as a result of the flow force on the indexer assembly. The ports remain open.
3. When the mud pumps are switched off the indexer assembly is moved back by the tail shaft returning spring. This causes the ball bearing to move into position 3. Again the ports remain open.
4. When the mud pumps are switched on the flow moves the index assembly causing the ball bearing to move into position 4. This closes the mud ports on the housing
5. When the pumps are switched off the return spring moves the CAM thus returning the ball back to position 1. This opens the mud ports on the housing.

Ball Bearing Positions on the CAM



Ball Position	Tool Position	Mud Flow
1	Port Open	None
2	Port Closed	Yes
3	Port Open	None
4	Port Open	Yes

FACT Tool Physical Dimension

Bypass Tool Size	3 1/8"	4 3/4"	6 3/4"	8"
Number of ports	5	5	4	4
Port Dimension	1/2" x 1 5/16"	5/8" x 1 5/16"	1 1/4" x 3"	1 1/4" x 3"
Tool Choke ID	1/2"	1/2" up to 3/4"	1 1/8"	1 1/2"
Tool OD	3 1/8"	4 3/4"	6 3/4"	8"
Tool Length	33"	36"	39"	40"
Top Connex : Box	2 3/8" reg	3 1/2" IF	4 1/2" IF	6 5/8" reg
Bttm Connex : Pin	2 3/8" reg	3 1/2" IF	4 1/2" IF	6 5/8" reg