



Geo-Vista

Wireline Engineering System

Downhole Casing & Tubing Tractor (CTT)

Downhole Hydraulic Tractor (DHT/DHT-S)

Gyroscope Orientation Tool-Continuous (GOT-C)

Free Point Indicator (FPI/FPI-D)

String Shot Back-off Tool

Plug-Bridge Setting Tool (PST)

Through Tubing Permanent Bridge Plug (TBP)

Down Hole Camera (DHC)

Milling Downhole Cutter-W (MDC-W)

Mechanical Downhole Cutter (MDC)

Ultrasonic Sand Detection Tool (USD)

Shock Gamma Ray Tool-1 (SGR-1)

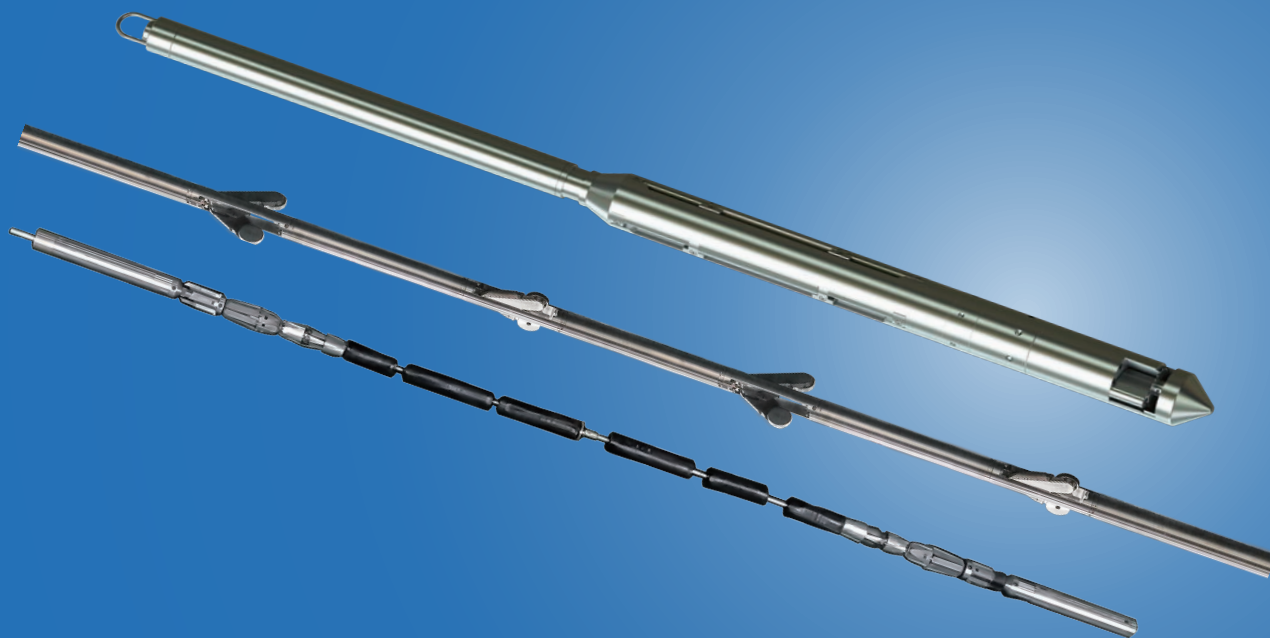
Pipe Conveyed Logging Tool
(PCL-H/PCL-B)

Cablehead Releasable (CHR)

Multi-Conductor Extreme Jar (MCE)

Hole Finder Sub (HFS)

Flywheels Centralizer Sub (FWC)



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Downhole Casing & Tubing Tractor-Surface Panel (CTT-SP)

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Applications

- Power supply & control downhole tools:
 - Downhole Casing & Tubing Tractor (CTT)
 - Milling Downhole Cutter-W (MDC-W)
 - Mechanical Downhole Cutter (MDC)
 - Wireline Hydraulic Plug-Bridge Setting Tool (PST-20)
 - Plug-Bridge Setting Tool (PST)

Features

- Simple to use
- Various safety features

Introduction

Downhole Casing & Tubing Tractor-Surface Panel (CTT-SP) is the surface system required to power and control the downhole tools. It contains a modem to communicate with downhole tools and power supply required. The CTT-SP contains a modem for communication with the downhole tools. A data logging PC communicates with the downhole tools via the CTT-SP modem. The CTT-SP system can be used for the CTT, MDC and PST.

Specifications

Size (in flight case)	22 in. x 9.5 in. x 24.5 in. (558.8 mm x 241.3 mm x 622.3 in.)
Weight (in flight case)	66 lbs. (30 kg)
Description	19 in. Rack mount unit, 3U high supplied with ruggedised flight case
Power requirements	110 Vac, 18 A or 220 Vac, 9 A
Output Capability	0-1000 Vdc, 0-2 A
Modem frequency	4 to 5 kHz



Applications

- Convey downhole tools along horizontal or highly deviated wells
- Available for perforation toolstring

Introduction

CTT is used in horizontal well or high-inclination well to send toolstring. Toolstring includes Production Logging Tools (PLT), casing check tool, CBL Tools, etc. The CTT uses a single-conductor wireline to supply power and transmits signals. With the surface control panel and software, operator could know about speed, conditions, etc. An Electric Centralizer is used in CTT, and it can close electrically that made CTT through horn successfully.

Downhole Tool String

GOT-C-TS	GOT-C-Tension Sub
CTT-CL	Casing Collar Locator
CTT-E	Electronics Assembly
CTT-C1	Centralizer-1
CTT-A	Actuator Assembly
CTT-T	Tractor Assembly
CTT-C2	Centralizer-2

Specifications

Maximum Temperature	300°F (150°C) for 3 hours
Maximum Pressure	15,000 psi (103.4 MPa)
Make-up Length	24 ft.-3.34 in. (7.4 m)
Weight	188.3 lbs. (85.4 kg)
Tool Diameter	2.125 in. (54 mm)
Maximum Tension	10,000 lbs. (4536 kg)
Minimum Hole Diameter	3 in. (76 mm)
Maximum Hole Diameter	9 in. (228.6 mm)
Maximum Creeping Speed	30 ft./min (9.1 m/min)
Power Requirements:	
Operating Voltage	60-660 Vdc
Operating Current	30-2000 mA (Limited by the load)
Maximum Continuous Load	600 lbs. (273 kg)
End Connectors Top	GO Female connection
End Connectors Bottom	GO Male connection



Applications

- Convey downhole tools along horizontal or highly deviated wells

Benefits

- Conveys tools in complex wellbores less expensively than coiled tubing or drillpipe
- Reduces personnel and equipment costs
- Enables fast rig-up, operation, rig-down

Features

- 12.0 feet length in the basic configuration.
- Conform to diameter changes from 3.75 to 15.0 inches depending on drive wheel used.
- Traction control allowing dynamic adjustment of the arm radial force which reduces the amount of slippage and unnecessary wear.
- The DHT release is compatible with any tool in the tool string, including addressable switches for guns.

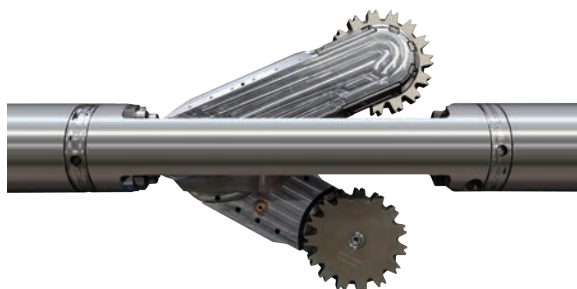


Introduction

The Downhole Hydraulic Tractor (DHT) is designed to transport logging tools and perforating gun in horizontal or highly deviated wells. It is suitable for open hole and cased hole.

Specifications

Maximum Temperature	350°F(175°C)
Maximum Pressure	20,000 psi (137.9 MPa)
Make-up Length	19 ft.-11.4 in. (6.08 m)
Weight	541 lbs. (245.4 kg)
Tool Diameter	3.375 in. (85.7 mm)
Minimum Hole Diameter	3.75 in. (95 mm)
Maximum Hole Diameter	15 in. (381 mm)
Hole Type	Cased hole or Open hole
Maximum Continuous Load	2800 lbs. (1246 kg) (8 pairs - 16 wheels)
Nominal Creeping Speed	30 ft./min (9 m/min)
Maximum Creeping Speed	53.3 ft./min (16 m/min)
Surface Panels Power Supply	220 Vac/50-60 Hz
	380 Vac/50-60 Hz, 3-phase
Electronics Power Supply	120 Vdc
Motor Power Supply	3-phase, 500 Vac



Open Hole

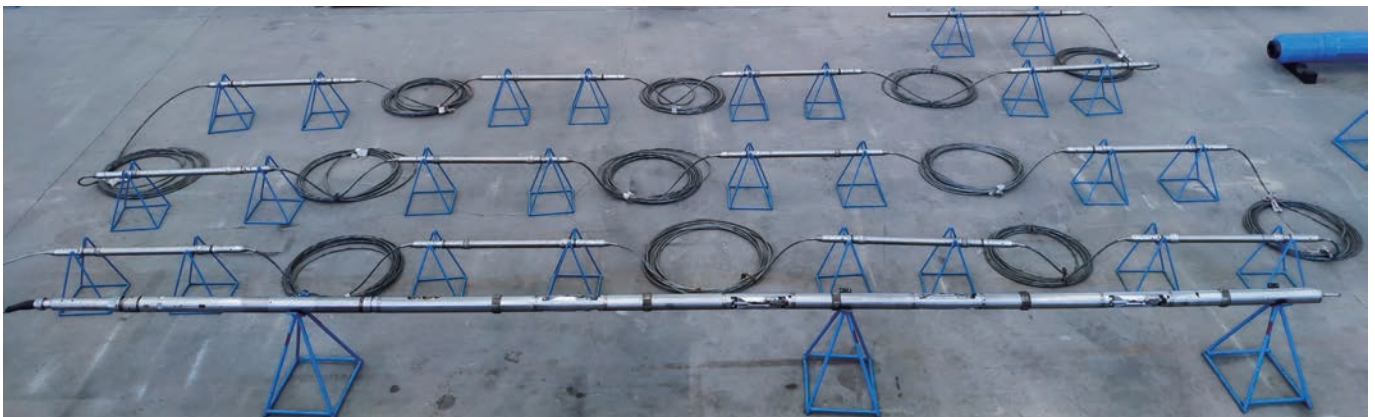


Cased Hole



Introduction

The DHT tractors allows for the addition of a second tractor in the tool string. Depending on the job at hand, the number of drive sondes can be increased to a maximum of eight. Various adapters and subs are also available to combine the tractor with a variety of logging tools or perforating guns.





Slimhole Downhole Hydraulic Tractor (DHT-S)

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Applications

- Highly deviated wells
- H₂S and CO₂ resistance conditions
- Wireline powered interventions
- Perforating operations
- Production logging, analysis behind casing, and cement and corrosion evaluation
- High-temperature wells

Benefits

- Efficiency gains from high-speed, maneuverable, bidirectional, intelligently controlled tracting
- Reduced risk for tubing reentry and sticking with enhanced navigation of independently controlled drive sections and reverse tracting capability in complex completion profiles
- Real-time informed decision making enabled by logging while tracting
- Operational time saving via modular configurability to address well and surface complexities
- Access to hostile condition wells

Features

- Twice as fast as comparable conventional tractors
- H₂S and CO₂ resistance service qualified
- High Pressure and High Temperature rated
- Bi-directional logging while tracting
- Versatile individual drive opening and closing operations
- Debris tolerant
- Explosive services shock resistant
 - Fully combinable with
 - Production logging tools
 - Perforating gun systems
 - Powered intervention services
- Gamma ray and optional active CCL while tracting for any application

Introduction

Slimhole Downhole Hydraulic Tractor (DHT-S) is a 2-1/8 in. diameter and bi-directional high speed tractor provides large pull and push forces that are precisely controlled and monitored.

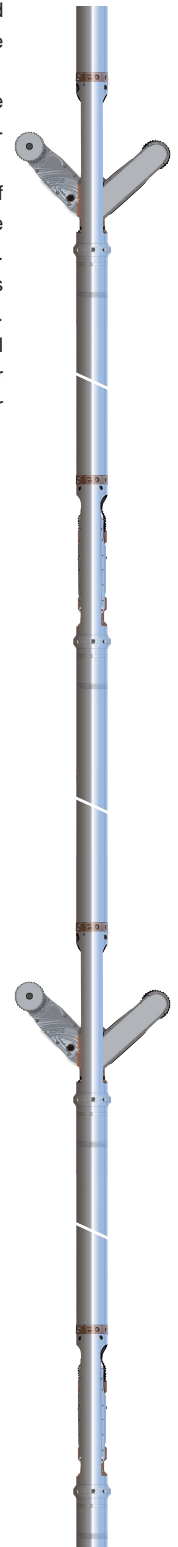
Navigation is guided by data reported in real-time from downhole sensors. The engineer operates each drive section-comprising a set of two wheels-independently in both directions.

Active traction control is built inside the DHT-S, providing continuous control of the radial force applied by the tractor arms. When slippage is detected by the downhole sensors, the radial force can be increased to increase the traction. Once the difficult section of the well is successfully traversed, the radial force is decreased to extend the lifetime of the wheels and other drive components. Because the tractor incorporates an opening cam system design, the radial force that the arms apply is independent of the wellbore size. This means that for their slim diameter, DHT-S can achieve the same tracting force in well inner diameters up to 9.5 in. to support a large range operating of hole size.

Specifications

Maximum Temperature	350°F (175°C)
Maximum Pressure	20,000 psi (138 MPa)
Outside diameter*	2-1/8 in. (54 mm)
Hole Size	2.2 in. (55.9 mm) to 9.5 in. (241.3 mm)
Minimum Length*	
(two drive sections)	22.31 ft. (6.8 m)
Weight* (two drive sections)	176.37 lbs. (80 kg)
Output	Optional Gamma Ray and CCL Logging while tracting
Drive Section Operation	Up and down directions Independent opening and closing
Wireline Requirements	Mono-conductor 7-conductor
Maximum Continuous Load	Each drive section: 264.6 lbs. (120 kg) Up to 8 drive sections
Creeping Speed	60 ft./min (18 m/min)
Operating Voltage	600 Vdc
Operating Current	0.7 A (Each drive section)
Maximum Tension Force	25,000 lbf. (111,000 N)
Maximum Compression Force	20,000 lbf. (89,000 N)
Special Applications	NACE MR0175 compliant for H ₂ S and CO ₂ resistance API RP-67 compliant for explosives operations Cased hole completions

* Configuration dependent





Gyroscope Orientation Tool-Continuous (GOT-C)

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Applications

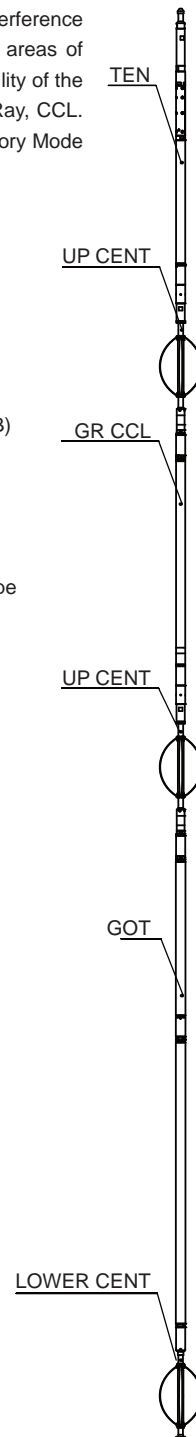
- Measure well trajectory inside the drill pipe, casing, tubing and openhole.
- Measure orientation & trajectory while drilling
- Measure orientation for sidetracking whipstock tool and directional perforation
- Measure directional parameters under magnetic interference conditions (such as cluster wells).

Introduction

Gyroscope Orientation Tool provides accurate and free magnetic interference directional survey in drill pipe, cased holes and production tubing, or in areas of magnetic interference. The GOT also can be run into drill pipes. The flexibility of the design allows the combination with additional services such as Gamma Ray, CCL. Also for direction perforating. GOT-C provides two operating modes: Memory Mode and Real-Time Mode.

Specifications

Maximum Temperature	350°F (175°C) for 4 hours
Maximum Pressure	15,000 psi (103.4 MPa)
Make-up Length	31 ft. (9.48 m) (without SKB)
Weight	134 lbs. (61 kg) (without SKB)
Tool Diameter	2.25 in. (57 mm)
Maximum Hole Diameter	12.0 in. (305 mm)
Maximum Logging Speed	100 ft./min (30 m/min)
Orientation Sensor	Dynamically Tuned Gyroscope
Power Requirements:	
Operating Voltage & Current	200 Vac, 75 mA
Maximum Tensile Force	14000 lbs. (6350 kg)
Sensor Accuracy	
Measurement Range	
Inclination	0°~± 90°
Azimuth	0°~360°
Gravity High Angle	0°~360°
Gyro High Angle	0°~360°
Measurement Accuracy	
Inclination	≤ ± 0.15°
Azimuth	≤ ± 2° (Deviation > 1°)
Gravity High Angle	≤ ± 1.5°
Gyro High Angle	≤ ± 2.0°
Wireline Requirements	Mono-Conductor Slick Line



Applications

- Indicator the free point in the drill pipe/ tubing/ casing



Introduction

The Free Point Indicator Tool (FPI) uses a stretch and a torque sensor to accurately determine the free point in stuck drill pipe, drill collars, tubing or casing. Within the elastic range of the pipe material, the free section of the pipe would deform linearly when the pipes are subjected to a pull or torsion. The FPI measures the stretch and torque over a fixed distance and calculates the amount of free pipe according to what the theoretical deformation should be.

Specifications

Maximum Temperature	350°F (175°C)
Maximum Pressure	20,000 psi (137.9 MPa)
Make-up Length	10 ft.-11.1 in. (3.33 m)
Shipping Length	12 ft.-7.57 in. (3.85 m)
Weight	42.55 lbs. (19.3 kg)
Tool Diameter	1.375 in. (35 mm)
Minimum Hole Diameter	1.75 in. (44.5 mm)
Maximum Hole Diameter	13.375 in. (339.7 mm)
Maximum Logging Speed	60 ft./min (18.3 m/min)
Recommended logging speed (CCL)	30-40 ft./min (9.1 m/min)
Motor Set Time	45-70 sec
Anchoring capabilities	1.5 to 5 in.
Maximum hole deviation	90 deg
Curves Recorded	CCL/torque/stretch Variable
Output Signal	Frequency
Power Requirements:	Signal 1.0 Volt Peak to Peak
Operating Voltage	Upper Motor: 100-110 Vdc (CHV) Lower Motor: 40-50 Vdc (CHV)
Measure Point:	
Sub Bottom to CCL coil Center	9 ft.-6.14 in. (2.899 m)
Upper leg Mount Center to lower Leg Mount Center.	3 ft.-4.68 in. (1.300 m)
Sensor Section	27.625 in. (0.701 m)
Power Requirements:	
Operating Voltage	Upper Motor: 100-110 Vdc (CHV) Lower Motor: 40-50 Vdc (CHV)
Operating Current	Upper Motor: 200 mA (max) Lower Motor: 150 mA (max)
Wireline Requirements	Single Conductor Cable
Tool O.D.	1.375 in. (34.9 mm)
Total length (close/open)	118.5 in.-133.5 in. (301 cm-339.1 cm)
Maximum hole I.D. (with standard spring)	5.5 in. (14 cm)
Minimum hole I.D. (with standard spring)	1.5 in. (38.1 mm)





Applications

- Indicator the free point in the drill pipe/ tubing/ casing



Introduction

The FPI-D uses two sensors, a stretch sensor and a torque sensor to accurately determine the free point in stuck drill pipe, drill collars, tubing or casing. Within the elastic range of the pipe material, the free section of the pipe would deform linearly when the pipes are subjected to a pull or torsion. The FPI-D measures the stretch and torque over a fixed distance and calculates the amount of free pipe according to what the theoretical deformation should be.

Specifications

Maximum Temperature	300°F (150°C)
Maximum Pressure	20,000 psi (137.9 MPa)
Make-up Length	10 ft. - 2.05 in. (3.1 m)
Shipping Length	11 ft. - 3.04 in. (3.43 m)
Weight	31.97 lbs. (14.5 kg)
Tool Diameter	1.375 in. (35 mm)
Minimum Hole Diameter	1.75 in. (44.5 mm)
Maximum Logging Speed	49.21 ft./min (15 m/min)
Motor Set Time	56-70 sec
Anchoring Capabilities	1.5 to 5 in.
Maximum Hole Deviation	90 deg
Communications Speed	1200 bps
Stretch Range	-1.5 mm to 1.5 mm
Torque Range	-9° to 9°
Accuracy	+/- 10%
Distance Between Arms (upper/lower)	1.854 m
Power Requirements:	
Operating Voltage	70 to 100 Vdc (CHV)
Operating Current	60 mA (without motor current) 60 to 150 mA (one motor plus tool power) -120 to -300 mA (two motors closing)
Wireline Requirements	Single Conductor Cable
Curves Recorded	CCL/torque/stretch Variable Frequency

SINK
BAR

CCL

UA

SS

Sensor

LA

Applications

- Stuck releasing, combined with Free-Point Indicator tool.

Introduction

Free Point Indicator String-shot Back-off Tool is a kind of detonation device which can realize positive and negative voltage ignition. The detonating rod is bound with different explosive shells according to different needs. After the free point is determined and a string shot fired to back-off the string in a single run thus saving rig time and the possibility of complication which might arise from making several runs

Specifications

Maximum Temperature	350°F (175°C)
Maximum Pressure	20000 psi (137.9 MPa)
Tool Diameter	1.44 in. (36.5mm)
Make-up Length	9 ft.-0.8in (2.763m)
Shipping Length	9 ft.-3.8in (2.84m)
Weight	8.14 lbs. (3.7 Kg)



Applications

- Non-explosive setting of bridge-plugs & through-tubing plugs
- Used in deviated or horizontal well.
- Be widely used in workover, pay zones isolation and other constructions.

Benefits

- Safe and convenience without explosive.
- Hydraulic setting through-tubing plugs in casing or open hole below the tubing string without pulling out tubing, that helps reduce the wellsite costs by saving time.
- Emergency release if needed

Features

- Surface control and obtaining setting curves
- Exact-setting depth by Casing Collar Locator (CCL).
- Composed of setting unit & emergency release unit.

Introduction

Plug-Bridge Setting Tool (PST) sets through-tubing plugs inside casing or open hole below the tubing string without pull out tubing.

The power-motor pumps oil from piston upper to down. The power piston pulls the bridge-plug rod assembly into the PST. When the bridge-plug rod assembly moves upward, the backups of bridge-plug are released by the compressive force. When the bridge-plug is set completely, the release stud breaks and the PST is released for retrieval.

If the plug is stuck or set completely, but the release stud is not broken. Pull the cable out, the PST shall be free when tensile force is 800 lbf maximum for an emergency release.

Specifications

Maximum Temperature	350°F (175°C)
Maximum Pressure	20000 psi (137.9 MPa)
Tool Diameter	2-1/8 in. (54 mm)
Minimum Restriction	2.18 in. (55.4 mm)
Make-up Length	24 ft.-4.25 in. (7.42 m)
Shipping Length	24 ft.-5.63 in. (7.46 m)
Weight	97 lbs. (44 kg)
Maximum Logging Speed	50 ft./min (16.7 m/min)
Maximum Force Tool Output	10000 lbs. (4535 kgf)
Setting Hole Size	4-1/2 to 7-5/8 in. casing
Plug setting time	25 to 60 min. Affected by the plug size and temperature
Oil	Univis HVI 26 (recommended)
Service	H ₂ S resistant (less than 2%).
Operation	Emergency Release 800 lbf. pull maximum at logging cable head
Power Requirements	
Operating Voltage & Current	0-500 Vdc adjustable, 1 A
Wireline Requirements	Single Conductor Cable



Applications

TBP abandons permanently an uneconomical horizon by Plug-Bridge Setting Tool (PST) and it is widely used in workover, pay zones isolation and other constructions:

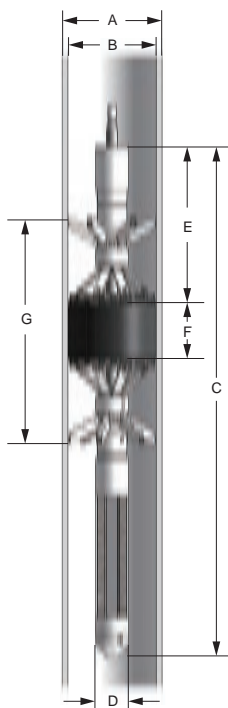
- Between zones, lower zone is producing water
- In perforations, the bottom part of a zone is producing water
- In sand screens, the plug serves as a diverter for sand/gravel consolidation via resins.
- In open hole, the plug differential rating is now a function of formation integrity.

Benefits

- Anchors center plug & tool even in horizontal wells
- Increase production by old well renovation
- No derrick and continuous plug operation resulting within one-day, reduce the wellsite costs by saving time.

Features

- Through-tubing and drillable plug
- Big elements ratio 3:1, strong metal seal support and rugged anchors



Introduction

TBP and capping with cement can be a continuous plug operation resulting within one-day. The plug is set in casing by compressing the seal elements causing expansion as the strong metal seal support and rugged anchors deploy. The compression is set with a long-stroke wireline Plug-Bridge Setting Tool (PST), and released after shearing a 10,000-lbf tension stud. The plug can withstand pressure differential across the plug has been increased to 1000 psi or more in both directions. The drillable plug with a standard casing collar locator is used for depth control.

Specifications

Casing Size-A	4-1/2 in.	5 in.	5-1/2 in.	7 in.	7 5/8 in.
Casing I.D Range-B	3.5 in. (88.9 mm) to 4.02 in. (102.11 mm)	4.0 in. (101.6 mm) to 4.52 in. (114.81 mm)	4.5 in. (114.3 mm) to 5.02 in. (127.51 mm)	6.33 in. (160.78 mm) to 6.53 in. (165.86 mm)	6.50 in. (165.1 mm) to 7.02 in. (178.31 mm)
Maximum Temperature	340°F (171°C)				
Running O.D.-D	1-11/16 in. (42.86 mm)			2-1/8 in. (53.975 mm)	
Minimum Restriction	1.77 in. (44.96 mm)			2.18 in. (55.37 mm)	
Distance Tool Bottom to Seal-E	8.1 in. (205.74 mm)			23.5 in. (596.9 mm)	22 in. (558.8 mm)
Seal Length-F	2.7 in. (68.58 mm)	2.5 in. (63.5 mm)	9 in. (228.6 mm)	4.3 in. (109.22 mm)	4.1 in. (104.14 mm)
Setting Tool	PST				
Set in Perforations	Yes				
Set in Screen	Yes				
Cement Recommended	Yes				
Set in Cross Flow	Yes	Yes	Up only	Yes	Yes
Set in Open Hole	Yes	Yes	Up only	Yes	Yes
Pressure Difference	1000 psi (6.89 MPa)	1000 psi (6.89 MPa)	500 psi (3.45 MPa)	1500 psi (10.34 MPa)	1000 psi (6.89 MPa)
Anchor Slip Force	25000 lbf. (11340 kgf)	25000 lbf. (11340 kgf)	25000 lbf. (11340 kgf)	50000 lbf. (22680 kgf)	50000 lbf. (22680 kgf)
Assemble Length	90 in. (2286 mm)	90 in. (2286 mm)	130 in. (3302 mm)	123 in. (3124.2 mm)	126 in. (3200.4 mm)
Weight	28 lbs. (12.70 kg)	29 lbs. (13.15 kg)	37 lbs. (16.78 kg)	54 lbs. (24.49 kg)	56 lbs. (25.40 kg)
Set Length-C	39 in. (990.6 mm)	39 in. (990.6 mm)	31 in. (787.4 mm)	49.8 in. (1264.92 mm)	47.6 in. (1209.04 mm)
Anchor to Anchor-G	11 in. (279.4 mm)	11 in. (279.4 mm)	14.5 in. (368.3 mm)	23.5 in. (596.9 mm)	22 in. (558.8 mm)
Setting Time (approx.)	20 min	20 min	60 min	60 min	60 min





Applications

- Tubing bridge plug setting
- Be widely used in workover, pay zones isolation and other constructions.

Benefits

- Safe and convenience without explosive.
- Battery power conveyed and hydraulic setting.
- Emergency release if needed.

Features

- Non-explosive , no wireline system setting permanent plugs and retrievable plug.
- Use battery power conveyed by slickline and work with lubricator BOP

Introduction

Hydraulic Plug Setting Tool (PST-5) sets bridge-plug 2-3/8 in, 2-7/8 in. with slickline or E-line.

When the bridge-plug rod assembly moves upward, the bridge-plug set by the compressive force. When bridge-plug is set completely, the weakpoint breaks and the PST-5 is released retrieval.

If the plug is stuck or set completely but the weakpoint is not broken, the PST-5 shall be free when tensile force is 800 lbf maximum for an emergency release while pulling the slickline up.

Use battery power conveyed by slickline the short length of PST-5 can be deployed in lubricator with conventional or retrievable plug.

Specifications

Maximum Temperature	Rechargeable battery 257°F (125°C) Non-rechargeable battery 300°F (150°C)
Maximum Pressure	15,000 psi (103 MPa)
Tool Diameter	1-11/16 in. (43 mm)
Length	13.77 ft. (4.2 m)
Weight	132 lbs. (60 kg)
Upper Connection (Slickline)	15/16 in.-10 UNS
Lower Connection	As Size 5, Baker E4
Maximum Setting Force	10,000 lbs. (4,535 kg)
Maximum Stroke Length	7 in. (177.8 mm)
Setting Hole Size	2-3/8 in. / 2-7/8 in. (60.3 mm / 73.0 mm) Tubing
Plug setting time	5 to 10 min.
	Affected by the plug size and temperature
Operation	Emergency Release-800-lbf. pull



* Wireline type PST-5 is also available as per client requirement. (With special surface panel system)



Wireline Hydraulic Plug-Bridge Setting Tool (PST-20) Memory Hydraulic Plug-Bridge Setting Tool (PST-20M)

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Applications

- Non-explosive setting of packers, plugs and cement retainers normally conveyed with electric line.
- Released of retrievable plugs or packers
- Mechanically punching holes or tubing patches.
- Connected to a wireline tractor (DHT) conveyance for deep water and /or high-angle well interventions.
- Be widely used in workover, pay zones isolation and other constructions.

Benefits

- Non-explosive operation improves safe and reliability.
- Uses the advantage of the fast running capability of wireline and helps reduce the well site costs by saving time.
- Safe and convenience without explosive.
- Battery power conveyed and hydraulic setting. (PST-20M)

Features

- Offers large setting force
- Combine with packers, cement retainers and plugs of different OD.
- Exact-setting depth in conjunction with a casing collar locator.
- Surface control and obtaining some setting or releasing curves.
- Non-explosive , no wireline system setting permanent plugs and retrievable plug. (PST-20M)
- Use battery power conveyed by slickline and work with lubricator BOP. (PST-20M)



Bridge-Plug

Introduction

PST-20 and PST-20M are superior performance, non-explosive hydraulic plug setting tool which can be conveyed by wireline or slickline. The tool features a long setting stroke and high setting force, providing high reliability and quality assurance when setting or retrieving downhole containment equipment such as packers, cement retainers and bridge plugs. The instrument is connected to the packer via the usual adapter kit. When the bridge plug or packer is confirmed to be lowered to the design position via the CCL (wireline mode), the motor-pump is activated for setting and when the setting force is reached, the Plug-Bridge Setting tool is separated from the downhole packer and then retrieved to the surface.

At the wellsite, the tool can be quickly reset ready for another run.

PST-20M is no wireline system, battery power and conveyed by slickline, and can be deployed in lubricator with conventional or retrievable plug.

Specifications

PST-20/PST-20M

Maximum Temperature	350°F (177°C)	O.D.	3-1/2 in. (89 mm)
Maximum Pressure	20,000 psi (137.9 MPa)	Stage	Dual
Length	10.8 ft. (3.3 m) wireline	Stroke Length	13 in. (330 mm)
	13.8 ft. (4.2 m) memory	Set/Retrieve Force	70,000 lbf. (316.4 kN)
Weight	190 lbs. (86 kg)		

Wireline Retrievable Bridge-Plugs

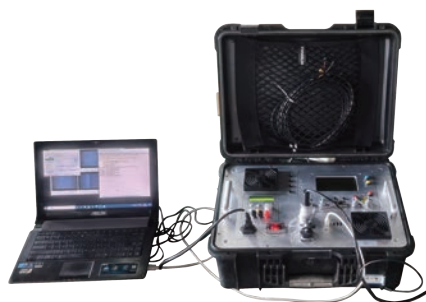
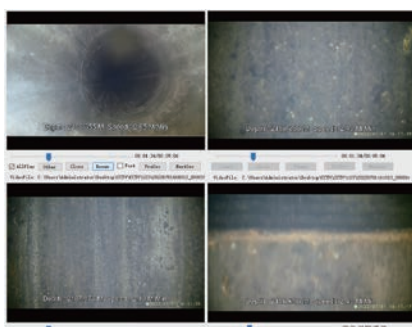
Casing O.D.	Casing Weight	Operating Casing I.D.		Bridge-Plug O.D.	Release Strength
		Minimum	Maximum		
5 in.	15-18 lbs./ft. (22.32-26.79 kg/m)	4.276 in. (108.61 mm)	4.408 in. (111.96 mm)	4.125 in. (104.78 mm)	30,000 lbs. (13608 kg)
5-1/2 in.	20-23 lbs./ft. (29.76-34.23 kg/m)	4.67 in. (118.62 mm)	4.778 in. (121.36 mm)	4.5 in. (114.3 mm)	
	15.5-20 lbs./ft. (23.07-29.76 kg/m)	4.778 in. (121.36 mm)	4.95 in. (125.73 mm)	4.641 in. (117.88mm)	
	13-15.5 lbs./ft. (19.35-23.07 kg/m)	4.95 in. (125.73 mm)	5.044 in. (128.12 mm)	4.781 in. (121.44 mm)	
6-5/8 in.	24-32 lbs./ft. (2.91-47.62 kg/m)	5.675 in. (144.15 mm)	5.921 in. (150.39 mm)	5.5 in. (139.7 mm)	55,000 lbs. (24948 kg)
7 in.	32-35 lbs./ft. (47.62-52.09 kg/m)	6.004 in. (152.50 mm)	6.094 in. (154.79 mm)	5.812 in. (147.63 mm)	
	26-29 lbs./ft. (38.69-43.16 kg/m)	6.184 in. (157.07 mm)	6.276 in. (159.41 mm)	5.968 in. (151.59 mm)	
	23-26 lbs./ft. (34.23-38.69 kg/m)	6.276 in. (159.41 mm)	6.366 in. (161.70 mm)	6.078 in. (154.38 mm)	
	17-20 lbs./ft. (25.30-29.76 kg/m)	6.456 in. (163.98 mm)	6.538 in. (166.07 mm)	6.266 in. (159.16 mm)	
7-5/8 in.	33.7-39 lbs./ft. (50.15-58.04 kg/m)	6.625 in. (168.28 mm)	6.765 in. (171.83 mm)	6.453 in. (163.91 mm)	
	24-29.7 lbs./ft. (2.91-44.20 kg/m)	6.875 in. (174.63 mm)	7.025 in. (178.44 mm)	6.672 in. (169.47 mm)	
8-5/8 in.	32-40 lbs./ft. (47.62-59.53 kg/m)	7.725 in. (196.22 mm)	7.921 in. (201.09 mm)	7.531 in. (191.29 mm)	
9-5/8 in.	40-47 lbs./ft. (59.53-69.94 kg/m)	8.681 in. (220.50 mm)	8.835 in. (224.41 mm)	8.437 in. (214.30 mm)	
	47-53.5 lbs./ft. (69.94-79.62 kg/m)	8.535 in. (216.79 mm)	8.681 in. (220.50 mm)	8.218 in. (208.73 mm)	



PST-20

Applications

- Downhole Fluid Identification
(Gas, Water, Oil etc.)
- Fishing operations
- Perforation inspection
- General problem identification



Introduction

The DHC tool has two operating modes: Memory and Real-Time. The Memory mode can record downhole videos, and the media files can be played back on the surface. The Real-Time mode allows for real-time viewing of downhole conditions. With high-efficiency LEDs and the latest image sensing technology, the tool ensures the highest probability of quality pictures, providing high-resolution images that eliminate guesswork from a range of diagnostic tests and troubleshooting operations.

Downhole Tool String

DHC-FV	Front Video Assembly
DHC-SV	Side Video Assembly
DHC-ME	Memory Electronic Assembly
DHC-RE	Real-Time Electronic Assembly
DHC Battery Sub	Battery Assembly
DHC-SC	Slipover Centralizer

Specifications

Maximum Temperature	300°F (150°C)
Maximum Pressure	10,000 psi (70 MPa)
Make-up Length	13 ft.-8.39 in. (4.18 m)
Weight	94.14 lbs. (42.7 kg)
Tool Diameter	2.125 in. (54 mm)
Minimum Hole Diameter	2.44 in. (62 mm) I.D.
Maximum Hole Diameter	10 in. (25.4 cm) (centralizer)
Recommended Logging Speed	16.4 ft./min (5 m/min)
Resolution Ratio	16 million pixels
Frame Rate	1080 p: 60 fps
Front Camera Angle	60°
Side Camera Angle	45° (3-9 cameras)
Memory	128 GB / Camera
Power Requirements	Real-Time 220 Vac
	Memory Battery 18 cells
	57.6 Vdc (Nominal)
	44-59 Vdc (Range)
Wireline Requirements	Real-Time 7-Conductor
	Memory Mono-Conductor
	Slick Line
	Coiled Tubing

Note: Every camera with microphone.



Applications

- Perform downhole tubing cutting under difficult conditions
- Precise milling compressed pipe or tubing packer milling for recovery
- Precise milling pipe or tubing even under compressed
- Packer milling for recovery

Benifits

- Saves time and rig costs
- Prevents damage to outer strings
- Reduces logistical and environmental risks
- No need to pull the string and the cutting is done by milling
- Milling multiple materials

Features

- Transports easily
- Operates at higher temperatures than chemical cutters

Introduction

MDC-W is a high-performance downhole tubing cutter that can achieve efficient and safe cutting operations without the need for explosives or corrosive chemicals. The instrument is equipped with three grinding blades to mill downhole tubing. Downhole data is transmitted to the surface via cables, allowing engineers to control cutting operations in real-time.

The instrument is designed with a safety protection mechanism to prevent it from getting stuck.

There is no need to replace blades for different grades of steel or alloys, such as J55, N80, L80 ,P110,G105 and so on.

Specifications

Maximum Temperature	300°F(150°C)
Maximum Pressure	15,000 psi (103 MPa)
Tool Diameter	2.125 in. (54 mm)
Make-up Length	7.84 ft. (2.389 m)
Transport Length	8.2 ft. (2.5 m)
Weight	113.5 lbs. (51.5 kg)
Maximum Tensile Force	22,100 lbs. (10000 kg)

Minimum Cutting Pipe O.D	2.875 in. (73 mm)
Maximum Cutting Pipe O.D	3.5 in. (89 mm)

Wireline Requirements	Single or Multi-Conductor Cable
Power Requirements	
Operating Voltages	50 Vdc-600 Vdc at cablehead
Current	160 mA-200 mA while opening/closing anchor at 110 V
	200 mA-2000 mA while cutting

Borehole Deviation	Vertical to Horizontal
--------------------	------------------------

*Combinable with Downhole Casing & Tubing Tractor (CTT) in high deviation or horizontal well

Pipe Types

O.D (in.)	Weight Min (lbs./ft.)	Weight Max (lbs./ft.)	Min I.D (in.)
2.875 Tubing	6.4	6.4	2.441
3.5 Tubing	7.7	17.0	2.440
3.5 Pipe	13.3	15.5	2.602



Applications

- Difficult or controlled pipe recovery situations
- Precise cuts

Benifits

- Saves time and rig costs
- Prevents damage to outer strings
- Reduces logistical and environmental risks
- Cutting multiple materials

Features

- Transports easily
- Operates at higher temperatures than chemical cutters
- Controlled by real-time

Introduction

MDC is designed to cleanly cut downhole tubulars without using dangerously corrosive chemicals or explosives. The tool has a rotating cutting head with retractable anchor arms that will cut the pipe. It uses a saw blade mechanically cut the drill pipe, tubing and casing.

Downhole data is transmitted to surface via the wireline to enable the engineer to control the cutting operation. It is an efficient and safe cutting tool.

MDC can cutting different grades of steel or alloys, such as J55, N80, L80 P110 ,G105 and so on.

Specifications

Maximum Temperature	300°F(150°C)
Maximum Pressure	15,000 psi (103 MPa)
Tool Diameter	3.25 in. (82.5 mm)
Make-up Length	9.35 ft. (2.85 m)
Shipping Length	9.68 ft. (2.95 m)
Weight	115.7 lbs. (52.5 kg)
Maximum Tensile Force	22,100 lbs. (10,000 kg)

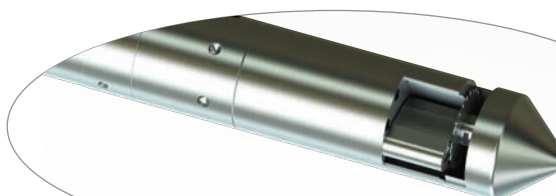
Minimum Cutting Pipe O.D	4.5 in. (114 mm)
Maximum Cutting Pipe O.D	7 in. (178 mm)

Wireline Requirements	Single or Multi-Conductor Cable
Power Requirements	
Operating Voltages	60 Vdc - 600 Vdc at cablehead
Current	30 mA-2000 mA
Borehole Deviation	Vertical to Horizontal

*Combinable with Downhole Casing & Tubing Tractor (CTT) in high deviation or horizontal well

Pipe Diameters

Pipe O.D (in.)	Weight Min (lbs./ft.)	Weight Max (lbs./ft.)	Min I.D (in.)
4.5	9.5	21.5	3.500
5	11.5	24.1	4.000
5.5	14	38	4.000
6.625	20	32	5.675
7	17.0	50.1	5.500



Applications

- Identify the sources of sand production
- Understand sand production dynamics
- Better reservoir management decisions by eliminating sand production problem
- Improve well performance and extend productive life

Features

- Record in memory way

Introduction

USD is designed for diagnostic studies of wells. Autonomous memory instrument is equipped with a highly sensitive ultra sound sensor. The sand coming out of the formation generates noise at ultrasonic frequencies. The device counts the number of sand particles. The device counts the number of sand particles by calculating the frequency and amplitude response of the ultrasound signal. It deletes the noise of leakage of liquid and gas. Delete all sounds caused by mechanical shocks. The tool for the qualitative analysis of the sand and can delete background noise caused by liquid or gas leaks and mechanical shock of the moving tool.

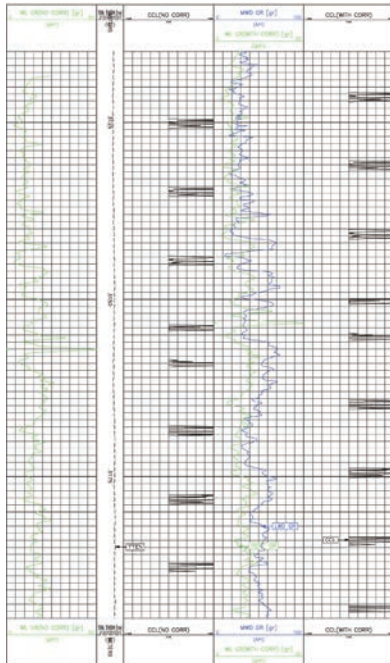
Specifications

Maximum Temperature	302°F (150°C)
Maximum Pressure	15,000 psi (103 MPa)
Tool Diameter	1.69 in. (43 mm)
Length	2.6 ft. (0.8 m)
Weight	8.8 lbs. (4.0 kg)
Sensor Dynamic Range	90 dB
Sensor Operating Freq Range	< 300 kHz
Sensor Operation Mode	Stationary / Continuous
Sensor Nb Spectral Channels	1024 (512 + 512)
Memory	
Capacity	8 GB
Sampling	0.5 to 255 sec



Applications

- Depth measurement by CCL and Gamma Ray for perforating operation



Introduction

The SGR-1 is used with wire line perforating guns when very accurate depth control is required. The Gamma/CCL tool is physically attached to the top of a perforating gun after taking the measurement of distance from the ccl to the Gamma Ray measure point and the distance to the top shot in the gun. The assembly is then run into the well. After proper depth has been verified, the Gamma/Gun assembly is positioned opposite the zone to be perforated, and the gun may be fired with the Gamma Ray tool still on the line. Safety is achieved by normally powering the tool on a positive current and then switching to a negative current to fire the gun. A special safety firing circuit prevents the gun from being fired with the Positive polarity current. Different models of the tool may feature either a Scintillation detector or a Geiger Mueller detector with a special shock mounting designed to withstand the blast and shock of the perforator.

Specifications

Maximum Temperature	350°F (175°C) for 20 hours	
Maximum Pressure	18,000 Psi (124 MPa)	
Tool Diameter	1.69 in. (43 mm)	
Minimum Hole Diameter	2.5 in. (63.5 mm)	
Make-up Length	7 ft.-9.94 in. (2.386 m)	
Shipping Length	8 ft.-9.75 in. (2.686 m)	
Weight	42 lbs. (19.1 kg)	
Recommended Logging Speed	20 ft./min (6 m/min)	
Maximum Logging Speed	30 ft./min (9 m/min)	
Curves Recorded	Gamma Ray	
Sensitivity Approximately	1.3 counts/API unit	
Operating Voltage / Current	85 Vdc at 45 mA at cable head	
Detector Type	0.84 in. X 6 in. Scintillation	
Cable Type	Single Conductor	
Accuracy	Uncalibrated correlation device only	GR
Stability	+/-15% of count rate over full temperature range	
Shock	>1000 g	
Depth of Investigation	12.0 in. (304.8 mm) estimated for a 7.88 in. (200.2 mm) water-filled borehole	
Vertical Resolution	8.00 in. (203.2mm) given proper formation contrast	
Measure Point (GR)	18 in. (457.2 mm) from bottom sub	
Measure Point (CCL)	60 in. (1524 mm) from bottom sub	
Line Utilization	GR & CCL: 1 & Armor	
H2S Qualified	No	
Measure Point:		
Shock Sub Bottom to		
GR Detector Center	2 ft.-11.92 in. (0.912 m)	Shock Sub
Shock Sub Bottom to		
CCL Coil Center	6 ft.-6.72 in. (2.000 m)	
GR Detector Center to		
CCL Coil Center	3 ft.-6.84 in. (1.088 m)	

CCL

GR

Shock Sub





Applications

- Conveyed downhole tools in high deviated, horizontal or hostile well by tubing or drilling pipe.
- Simply structure and design for easy operation at wellsite.
- No need vacuum pump and circulation system.

Introduction

Pipe convey logging system used in horizontal wells and the difficulty logging equipment, which can at high temperature, high pressure, high conductivity mud media of downhole to achieve the docking cable and instruments, the system can remain unchanged in the conventional logging projects. The premise and guarantee the quality of measurement tasks to complete, it can be coring, repeat formation test, dip logging, perforating and so on. Using this system can not only measured by conventional logging the best information, but can also be micro-resistivity scanning operations. In the course of a logging operation, can measure all standard measurements, with significant economic benefits.

Specifications

Maximum Temperature	350°F (175°C)
Maximum Pressure	20000 psi (137.9 MPa)
Plug Diameter	1.5 in. (38 mm)
Contact Resistance	<0.1 ohm
Insulation Resistance	>200 M ohm
Max. Latch Dev	90°
Docking Locking Power	1000 lbs.-1200 lbs.





Applications

- The hole deviation exceeds the limits of the instrument's freefall.
- Difficult hole conditions warrant PCL-B use such as: washouts, ledges, restrictions, excessive dogleg deviation, high hydrostatic pressure.
- The customer simply elects to reduce this uncertainty.

Introduction

The Pipe Conveyed Logging Tool-B (PCL-B) is used to provide assurance that the logging tools will be able to successfully survey the intended interval of the wellbore.

Specifications

PCL-B	
Maximum Temperature	350°F (175°C)
Maximum Pressure	20,000 psi (137.9 MPa)
PCL-B-IC (3 1/2 IF Connector sub)	
Shipping Length	7 ft. (2.1 m)
Weight	88 lbs. (40 kg)
Tool Diameter	5 in. (127 mm)
PCL-B-UC (2 7/8 UPTBG Connector sub)	
Shipping Length	5 ft.-0.8 in. (1.76 m)
Weight	97 lbs. (44 kg)
Tool Diameter	3.5 in. (89 mm)
PCL-B-QC (Quick change Assembly)	
Shipping Length	2 ft.-11.4 in. (0.9 m)
Weight	66 lbs. (30 kg)
Tool Diameter	3.38 in. (86 mm)
PCL-B-X1 (4 1/2-3 1/2 Crossover schedule)	
Shipping Length	3 ft.-11.2 in. (1.2 m)
Weight	94.8 lbs. (43 kg)
Tool Diameter	6.5 in. (165 mm)
PCL-B-X2 (2 7/8-3 1/2 Crossover schedule)	
Shipping Length	2 ft.-5.5 in. (0.75 m)
Weight	61.7 lbs. (28 kg)
Tool Diameter	5 in. (127 mm)
PCL-B-FS (Female sub)	
Shipping Length	1 ft.-8.6 in. (0.52 m)
Weight	26.4 lbs. (12 kg)
Tool Diameter	1.4 in. (34 mm)
PCL-B-MS (Male sub)	
Shipping Length	1 ft.-9.7 in. (0.55 m)
Weight	17.6 lbs. (8 kg)
Tool Diameter	1.4 in. (35 mm)
PCL-B-SB (Sinker bar)	
Shipping Length	10 ft. (3.05 m)
Weight	66 lbs. (30 kg)
Tool Diameter	1.65 in. (42 mm)

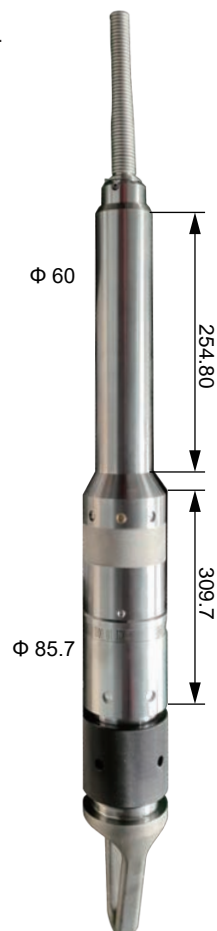


Introduction

Wireline logging Cablehead-B (CHB) connect 7-conductor logging cable and logging tool for open-hole and cased-hole.

Specifications

Maximum Temp	400°F (204°C)
Maximum Pressure	23,000 psi (160 MPa)
Maximum OD	3.625 in. (85.7 mm)
Minimum Hole	4.5 in. (114 mm)
Shipping Length	3.36 ft. (1.04 m)
Makeup Length	2.83 ft. (0.86 m)
Bottom Connector	28-pin Male Plug (Use only 10 banana plugs)
Cable OD	15/32 in. (11.91 mm)
	17/32 in. (13.49 mm)
	0.474 in. (12.04 mm)
Weakpoint	6,000 lbs. (2700 kg) (Optional: 3,000 lbs. (1350 kg),
	4,000 lbs. (1800 kg), 5,000 lbs. (2250 kg), 7,000 lbs. (3150 kg),
	8,000 lbs. (3600 kg) and 9,000 lbs. (4050 kg)
Maximum Tensile Force	130,000 lbs. (59,000 kg)
Maximum Compression Force	130,000 lbs. (59,000 kg)
Torque	600 lb-ft (815 N·m)



28-pin Male Plug
(Use only 10 banana plugs)

Features

- Electrically releasable from the surface.
- Withstands more than the safe working load of the strongest wireline.
- Includes safeguards against accidental release.
- Top section removable for rig up and storage.
- Includes a load cell to determine the downhole wireline tension. This is a crucial feature for the efficient assessment of apparent stuck tools. It is now possible to know the magnitude of the downhole pull and determine whether the wireline or the tool is stuck. A variety of special electrical features maximize the reliability and efficiency of the CHR.
- Tool is equipped with redundant circuitry and conductor utilization: three latching relays switched with separate lines, two heaters, and four conductors powering the heaters.
- Diodes isolate the conductors from the heaters to keep a shorted conductor from disabling a heater.

Applications

- The CHR offers the ability to pull harder than a conventional cable head on stuck tools.
- Releasing the latch produces less shock than breaking a conventional wireline weakpoint.

Introduction

The Cablehead Releasable (CHR) has an electrically activated wireline release system as opposed to the tension activated release system of conventional cable heads. Tension activated heads require a safety factor to avoid premature release of the wireline. This safety factor keeps you from utilizing the full safe load on the wireline when trying to free stuck tools from the borehole. The CHR allows you to utilize this extra tension to free stuck tools. This additional tension has proven very successful at freeing stuck tools and avoiding fishing operations. This extra pull also allows you to safely run heavy tool strings in deep wells. This extra pull also allows you to safely run heavy tool strings in deep wells.

Specifications

DIMENSIONS AND RATINGS

Max Temp:	350°F (175°C)
Max Press:	20,000 psi (137,9 MPa)
Max OD:	3.625 in. (92 mm)
Min Hole:	4.5 in. (114 mm)
Length:	6.24 ft. (1.90 m)
Weight:	135 lbs. (61.23 kg)
OD of Released Parts	1.75 in. (4.45 cm)
Maximum Tensile Force	130,000 lbs. (59,000 kg)
Maximum Compression Force	130,000 lbs. (59,000 kg)
Torque	600 lbs.-ft. (815 N-m)





Applications

- Prevents stuck or lost tool string.
- Provides a short, compact design and doesn't require additional tools to enhance its operation.
- Allows electrical "pass through" to the logging companies' wireline tool string.
- Provides multiple run and activation capability.
- Uses mechanical operation. No time delay issues, or concerns with pressure and temperature.
- Accommodates instant relatching.

Introduction

The Multi-Conductor Extreme Jar (MCE) is a field-proven, cost-effective way to help prevent stuck tool strings and expensive fishing jobs during wireline logging operations.

Precision engineered to operate reliably, the MCE provides instant, unlimited activations, with no waiting periods or time delays. Once line tension exceeds the setting of the jar (indicating a stuck condition), the MCE activates and frees the stuck tool string.

Specifications

Maximum Temperature	400°F (200°C)
Maximum Pressure	25,000 psi (172 MPa)
Tool Diameter	3.375 in. (86 mm)
Make-up Length (Open)	13 ft.-5.4 in. (4.1 m)
Make-up Length (Closed)	12 ft.-9.5 in. (3.9 m)
Shipping Length	15 ft.-1.10 in. (4.6 m)
Weight	260 lbs. (118 kg)
Maximum Tensile	210,000 lbs. (95,254.4 kg)
Minimum Setting	1,000 lbs. (453.6 kg)
Maximum Setting	8,000 lbs. (3628.7 kg)
Voltage Rating	1000 V



Applications

- Open hole and cased hole wireline operations, particularly stationary formation tester operations
- High deviations and horizontal wells using alternative conveyance such as pipe or tractor
- Complex well trajectories wells
- Washed-out and rugose hole profiles

Introduction

The Hole finder Sub (HFS) is flexibly connected to the instrument string, and the top wheel prevents the top from dying on the well wall. It can be bent according to the wellbore trajectory, guiding the instrument string to smoothly pass through the expansion section.

Specifications

Length 1 ft.-4.14 in. (410 mm)

HFS-7.45:

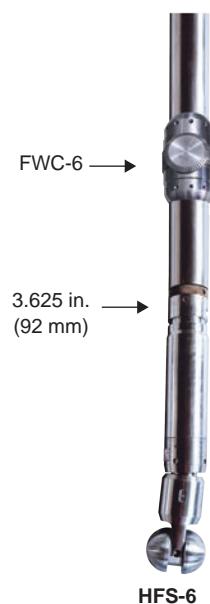
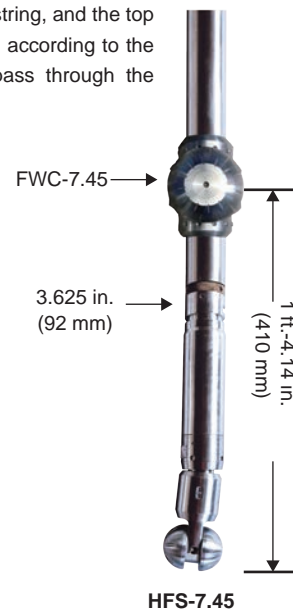
Tool Diameter 7.8 in. (198 mm)

Minimum Hole Diameter 8.5 in. (216 mm)

HFS-6:

Tool Diameter 5.79 in. (147 mm)

Minimum Hole Diameter 6 in. (152 mm)



Applications

- For highly deviated well or horizontal well

Introduction

Flywheels Centralizer Sub is frequently added to a toolstring to eliminate or mitigate the risks that jeopardize safe and fast wireline interventions in modern complex wells.

These devices are clamped on at multiple points along the toolstring body their inclusion reduces the surface area in contact with the wellbore and friction forces acting on the toolstring.

Specifications

FWC-6:

Shipping Length	8.17 in. (207.5 mm)
Weight	16.75 lbs. (7.6 kg)
Tool Diameter	5.79 in. (147 mm)
Minimum Hole Diameter	6 in. (152 mm)
Maximum Hole Diameter	7.4 in. (188 mm)



FWC-7.45:

Shipping Length	8.17 in. (207.5 mm)
Weight	36.1 lbs. (16.4 kg)
Tool Diameter	7.8 in. (198 mm)
Minimum Hole Diameter	8.5 in. (216 mm)
Maximum Hole Diameter	28 in. (711 mm)





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