

Subsea Production Systems Project Handbook, Total Absheron					Document Number AZ-ABS-14-OS01-070227	
					Revision: 01	Status: AFC
Document Type: REP	System: 11	Family Equip.: N	Discipline: SPS	Class: 1	Date: 25-July-2019	
ORIGINATOR Reference: X-397876-01 Rev 01					Page 1 of 125	

	 ABSHERON EPS PROJECT	
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Subsea Production Systems Project Handbook, Total Absheron

Rev.	Status	Date	Revision memo	Issued by	Checked by	Approved by
01	AFC	25-Jul-2019	Accepted for Construction	Brent Gable	Frank Duensing	Oliver Pearce
00	IFA	18-Jul-2019	Issued for Approval	Brent Gable	Frank Duensing	Oliver Pearce

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TABLE OF REVISIONS

Revision	Modification
00	Issued for Approval
01	Accepted for Construction

ABSSHERON EPS PROJECT

Subsea Production Systems Project Handbook



Doc. Title: Subsea Production Systems Project Handbook, Total Abscheron

Doc. Number: X-397876-01	Revision: 01
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CLIENT Doc. Number: AZ-ABS-14-OS01-70227	Release Date: 30-Jun-2019
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Creator: B. Gable	Reviewer: B. Gable
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Approver: O. Pearce

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Please see the latest Operation and Maintenance Manuals for the specific Absheron equipment for technical information references and to gain access to the latest updates and revisions. For accurate drawing information please use the latest documents transmitted.

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1. Field layout and Project Overview

The Absheron field is located offshore Azerbaijan in the Caspian Sea in 500m of water, about 100km south east of Baku, 25km north east of Shah Deniz field and 33km south of Oil Rocks production and processing facilities.

A Production Sharing Agreement (PSA) was signed in 2009 between the state owned company SOCAR and Absheron partners (SOCAR Absheron LLC 40%, TOTAL E&P Absheron B.V. 40%, ENGIE E&P Absheron B.V. 20%). A successful exploration discovery was made on 2 reservoir intervals (Fasila B & D) in 2012.

Full field pre-development studies were carried out from 2012 until 2015, but the proposed development plan (based on 4 wells) was not agreed by all parties. Mid 2016, decision was taken to start Absheron development with an Early Production Scheme (EPS).

Absheron EPS consists in a single well (ABD-001) connected to SOCAR operated Oil Rocks facilities. The production will be routed through a 33-35 km insulated 12" line to a dedicated receiving platform bridge linked to SOCAR Oil Rocks existing facilities. On the platform, gas and liquids will be separated. HP gas, LP gas and condensate / water will be metered separately, and the three streams will flow to SOCAR Oil Rocks facilities for further processing, storage and export. Produced water will be treated and re-injected by SOCAR in its own operated fields.

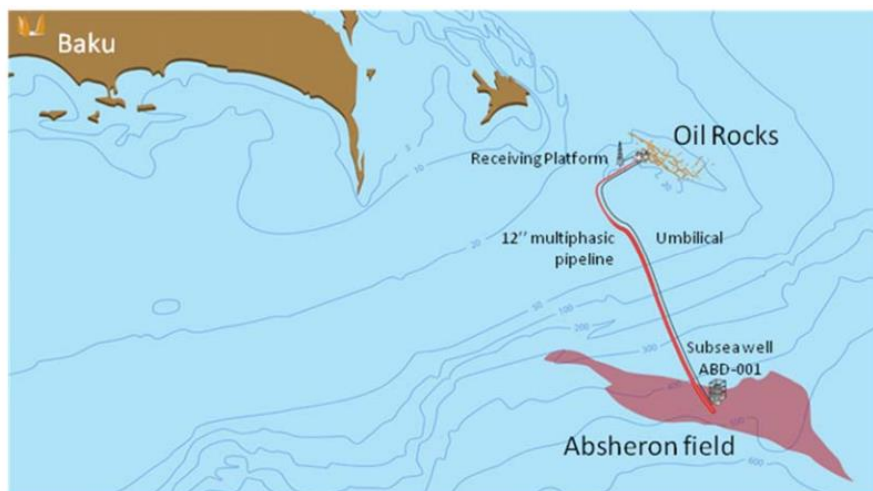


Figure 1: Overview of Absheron field development

The design production rates of the EPS are: 152 mmscfd (4.3 Sm³/d) of HP gas, 12 kStb/d (1.9 kSm³/d) of condensate and 500 Stb/d (80 Sm³/d) of water (including condensed water). The development well will be spud in Q3 2017 and the objective is to start production by Q4 2019. Total E&P Absheron B.V. (TEPAb) is the operator during the current pre-development phase. After the Development Plan (DP) is approved by the Azeri authorities, the operatorship will be transferred to a Joint Operating Company named JOCAP, where SOCAR and TEPAb will have 50% interest each.

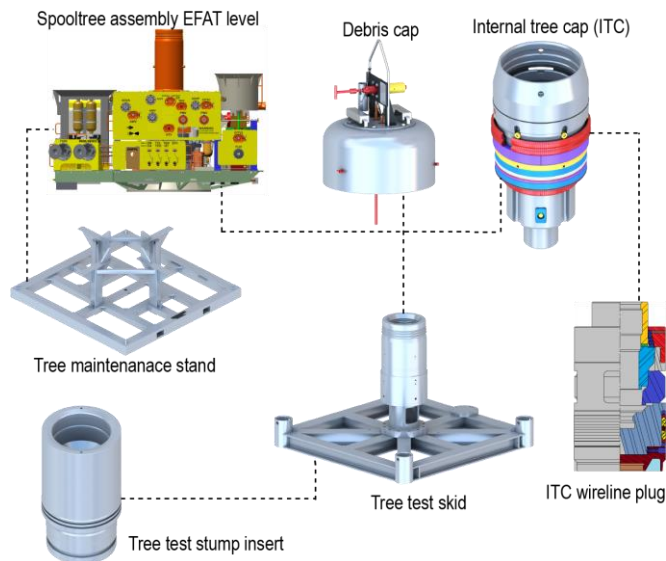
2. Reference Documents

Item	Title	Company Doc. Number	Doc. Number
1	Controls Package Interconnection and Block Diagram	AZ-ABS-13-OS01-020106	SK-066003-19-06
2	Controls Package Hydraulic and Chemical Distribution Diagram	AZ-ABS-13-OS01-020107	SK-066003-19-03
3	Controls Package Electrical Distribution Diagram	AZ-ABS-13-OS01-020108	SK-066003-19-04
4	Scope of Supply, Tree and Tubing Hanger Tooling	AZ-ABS-12-OS01-020047	SD-051968-01
5	Simplified Circuit Schematic, G3 Spooltree Total Absheron	AZ-ABS-12-OS01-020048	SD-051968-02
6	Scope of Supply, Connection Systems	AZ-ABS-14-OS01-020197	SD-051980-01

3. Production Tree System

3.1 Tree System

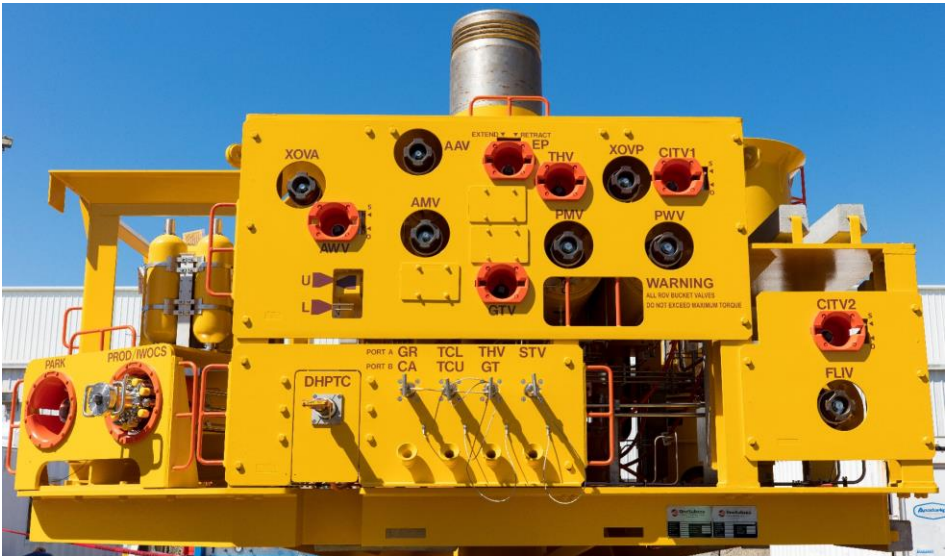
3.1.1 Scope of Supply



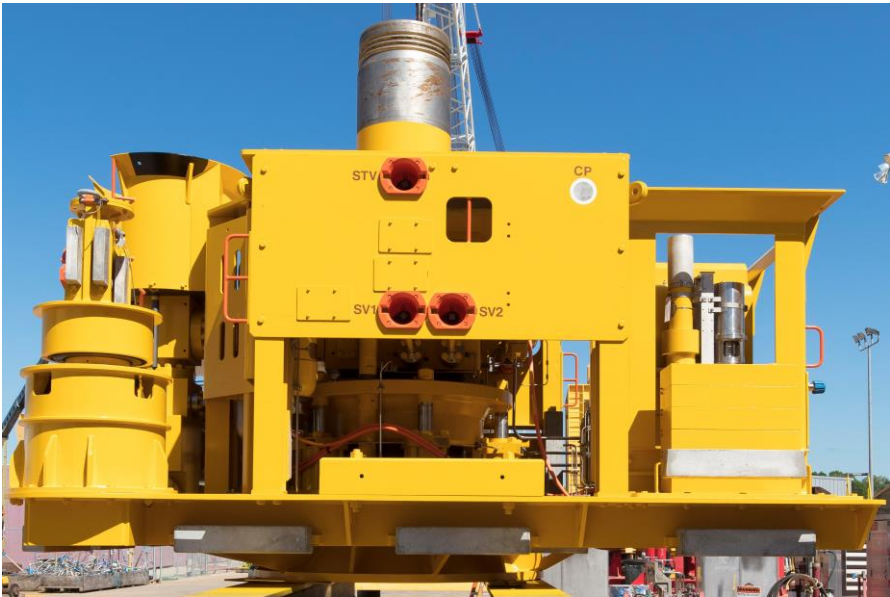
3.1.2 Production Tree Views

Spool Tree Assembly
PN: 2289597-12-01/2289597-12-02
WT: 102,251 lbs

FRONT VIEW



REAR VIEW



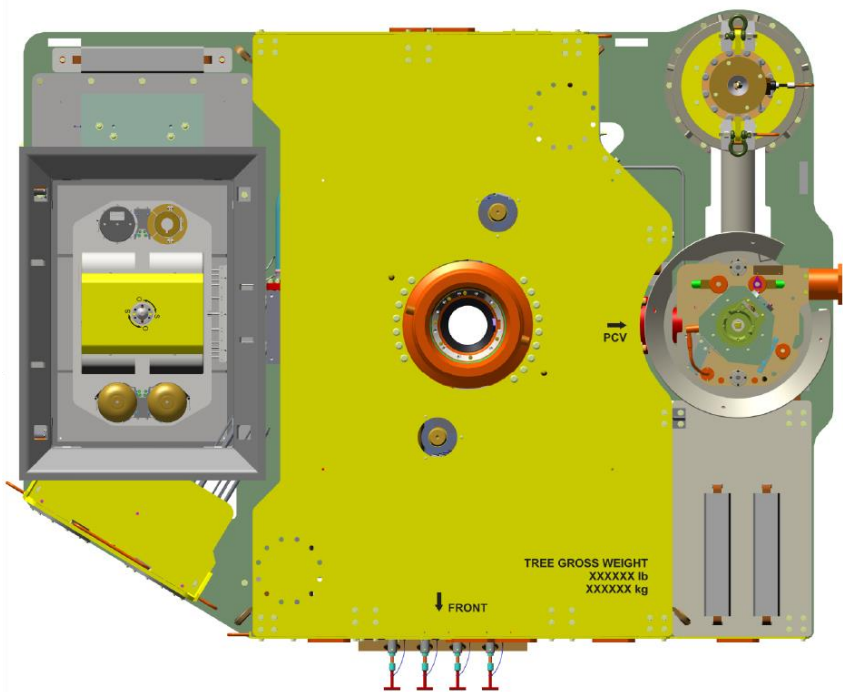
PRODUCTION VIEW



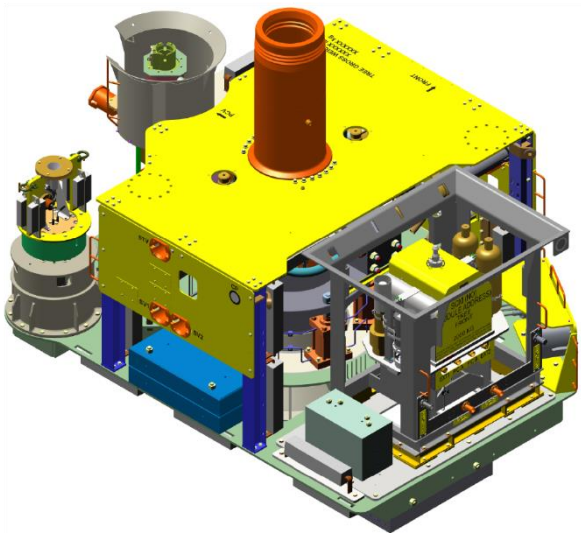
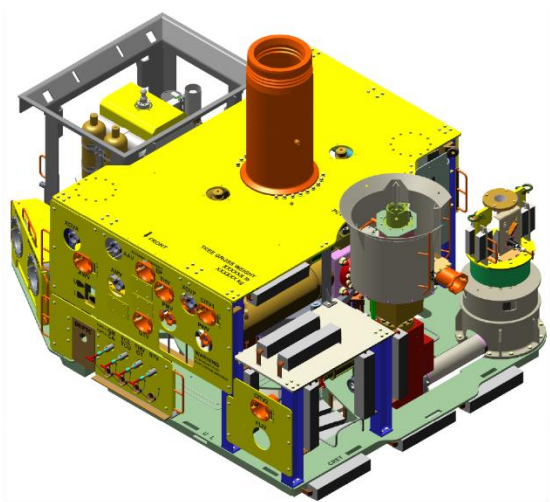
ANNULUS VIEW



TOP VIEW

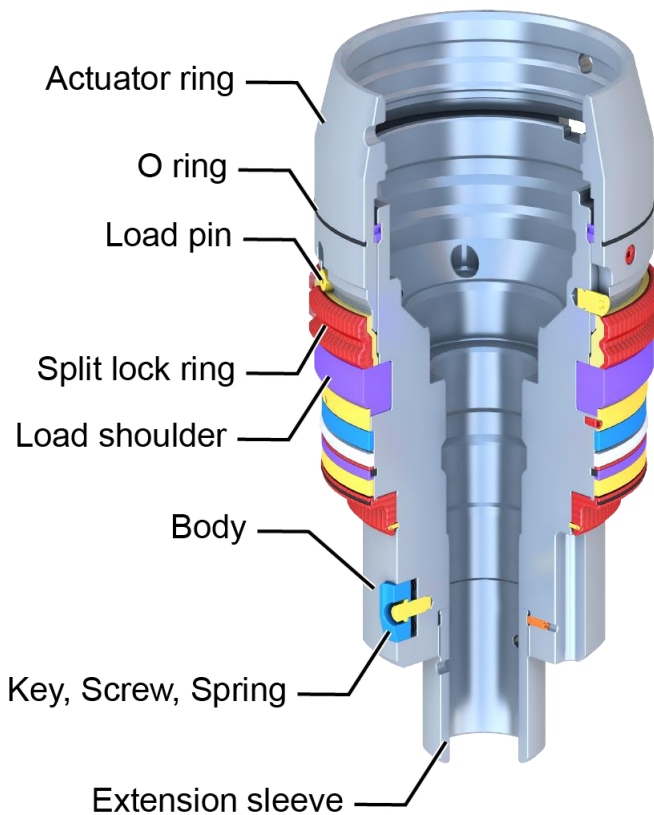


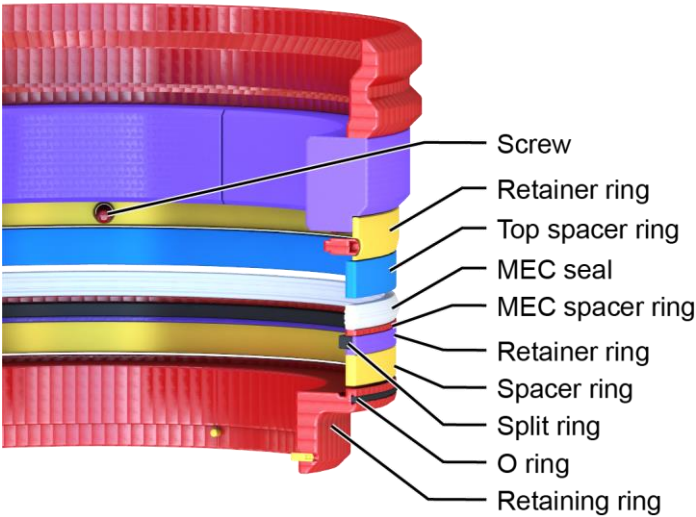
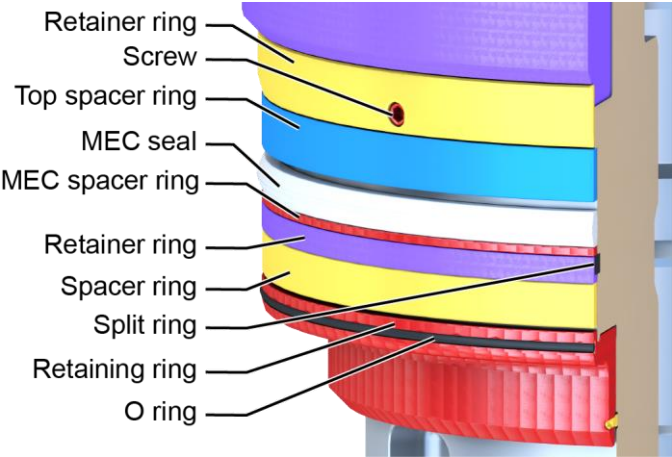
ISOMETRIC VIEW



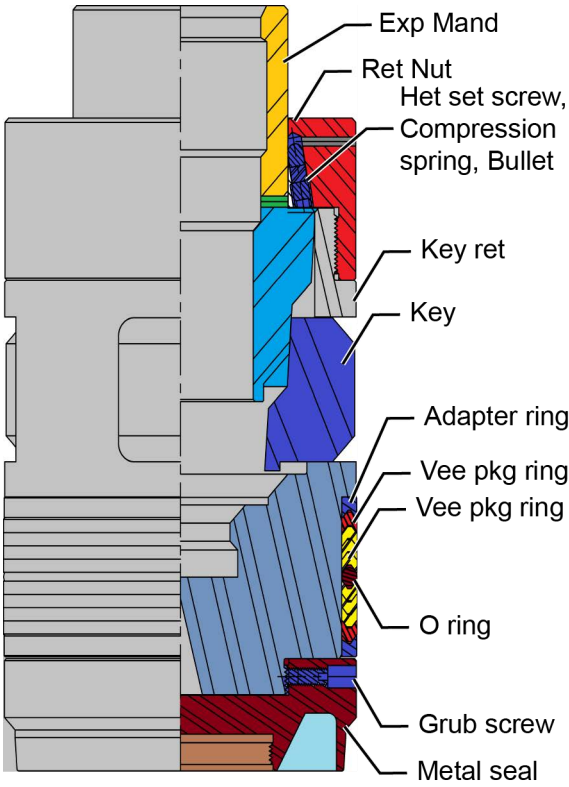
3.1.3 ITC & ITC Wireline Plug

Internal Tree Cap (ITC)
PN: 2404392-01-01
WT: 1,306 lbs



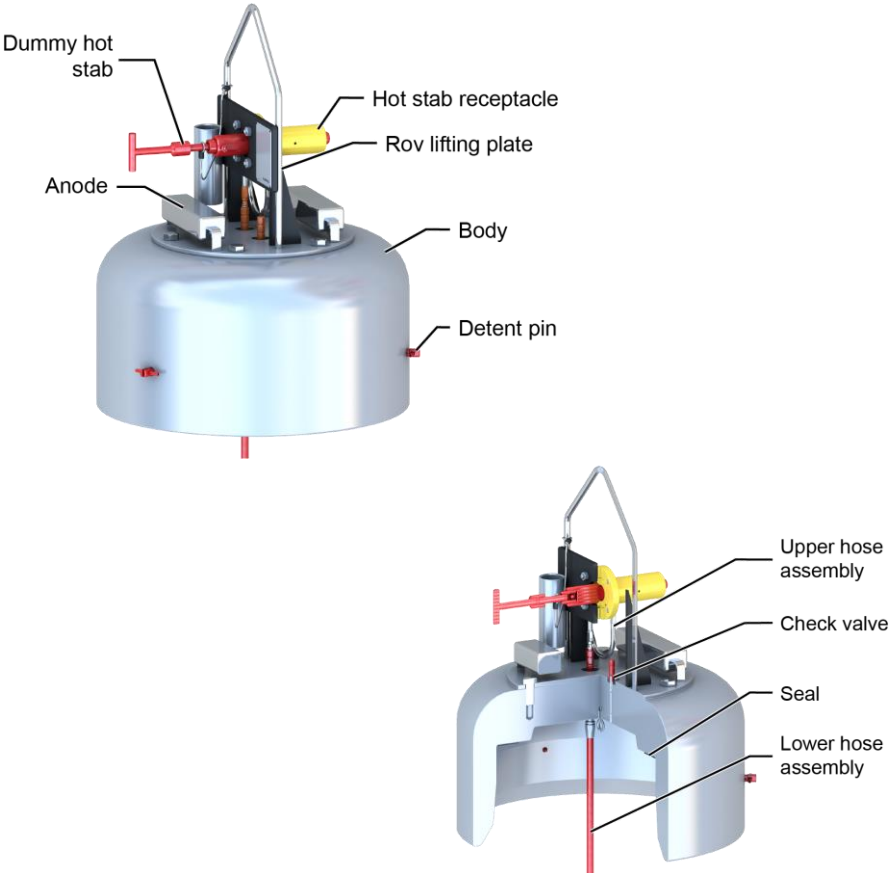


ITC Wireline Plug
PN: 2394983-01
WT: 46 lbs

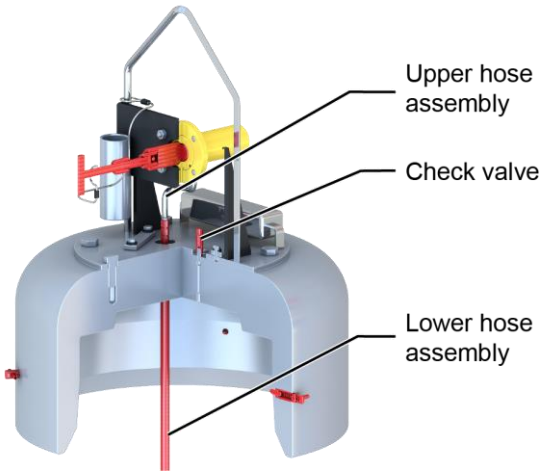
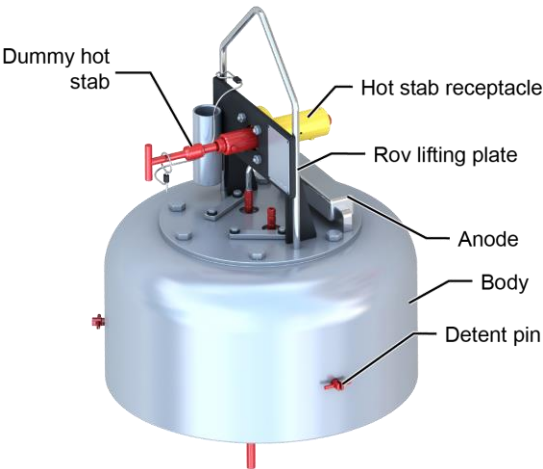


3.1.4 Debris Cap Assembly

Debris Cap Assembly
PN: 2181899-14
WT: 430 lbs

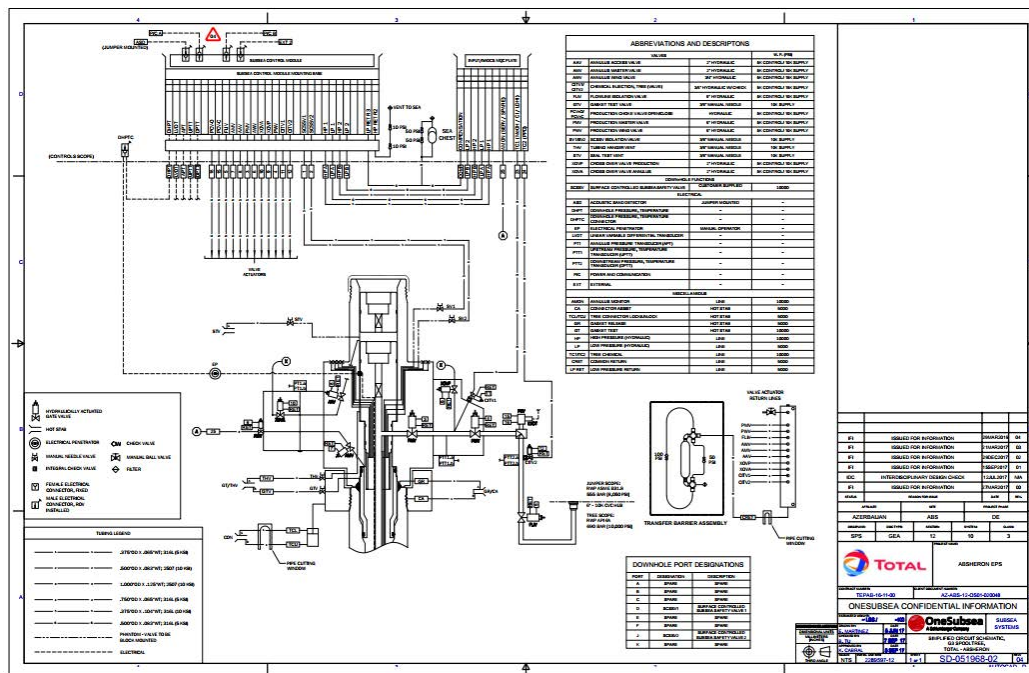


Debris Cap Assembly (Spare)
PN: 2181899-05-01
WT: 488 lbs

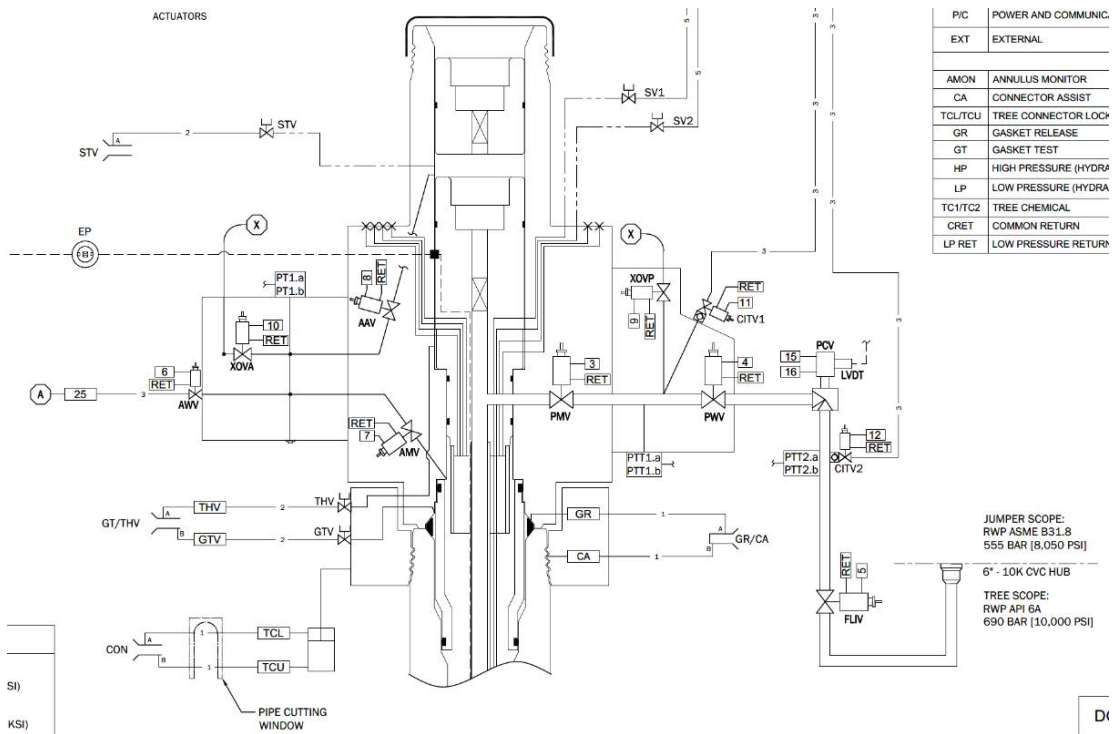


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3.1.5 Tree Schematics

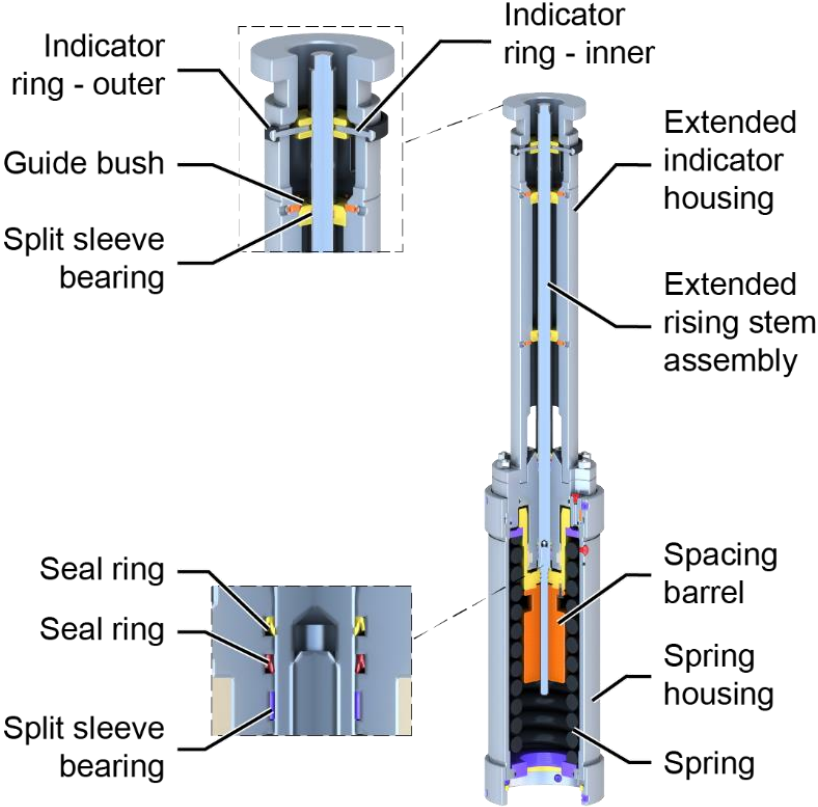


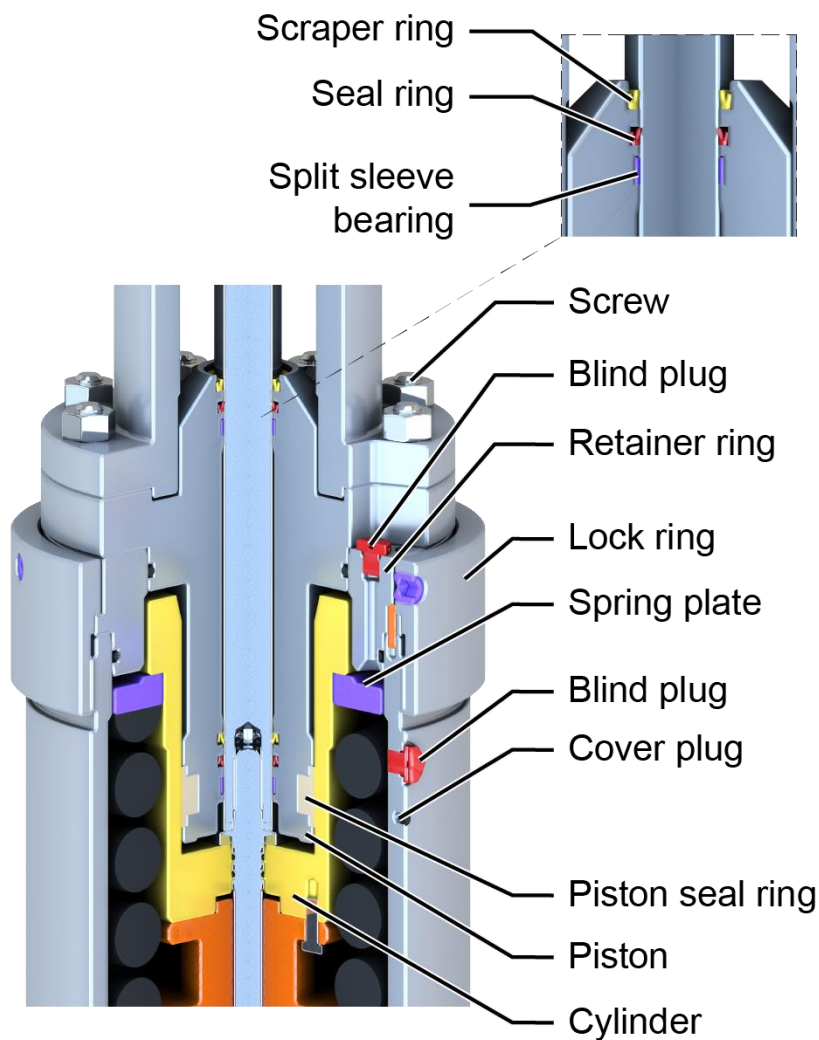
PROJECT HANDBOOK: Total Absheron - Revision 01

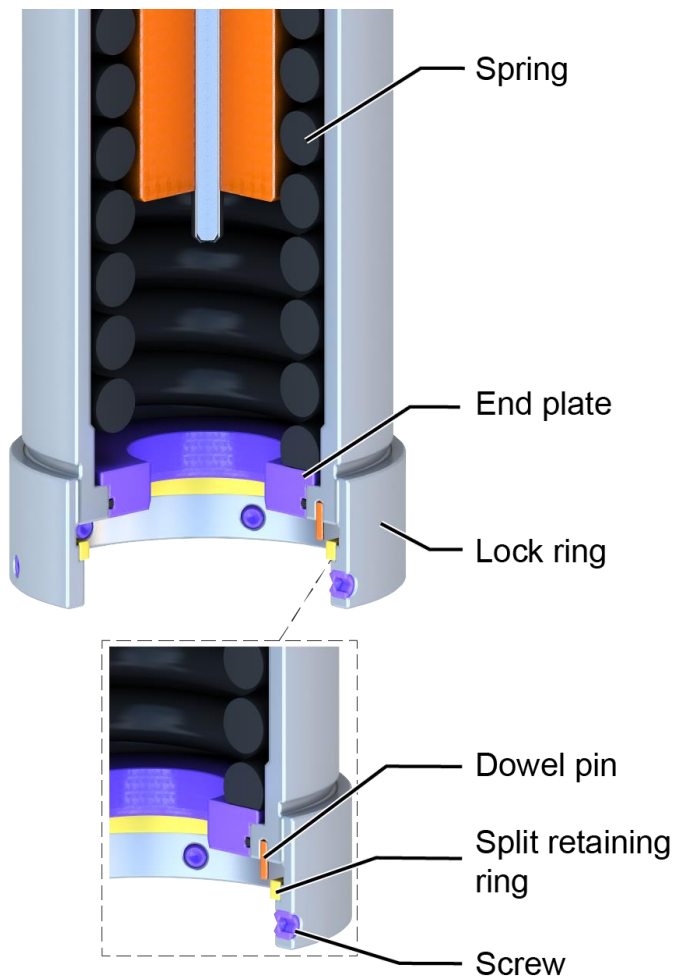


3.1.6 Valves & Actuators Assemblies

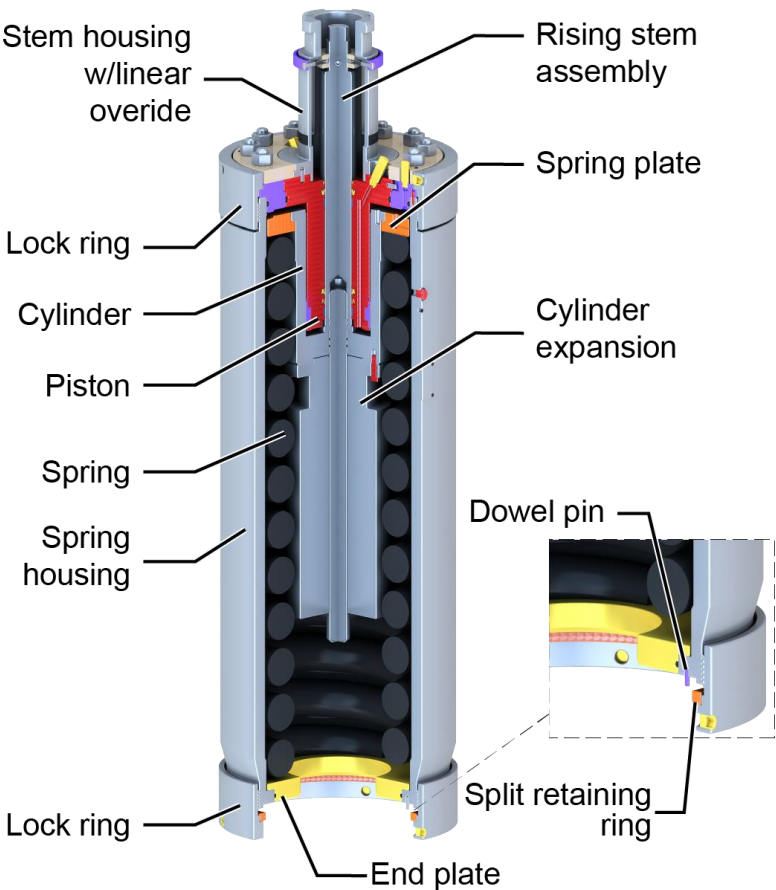
2 1/16"-10K Actuator Assembly
PN: 2290732-42-02
WT: 621 lbs

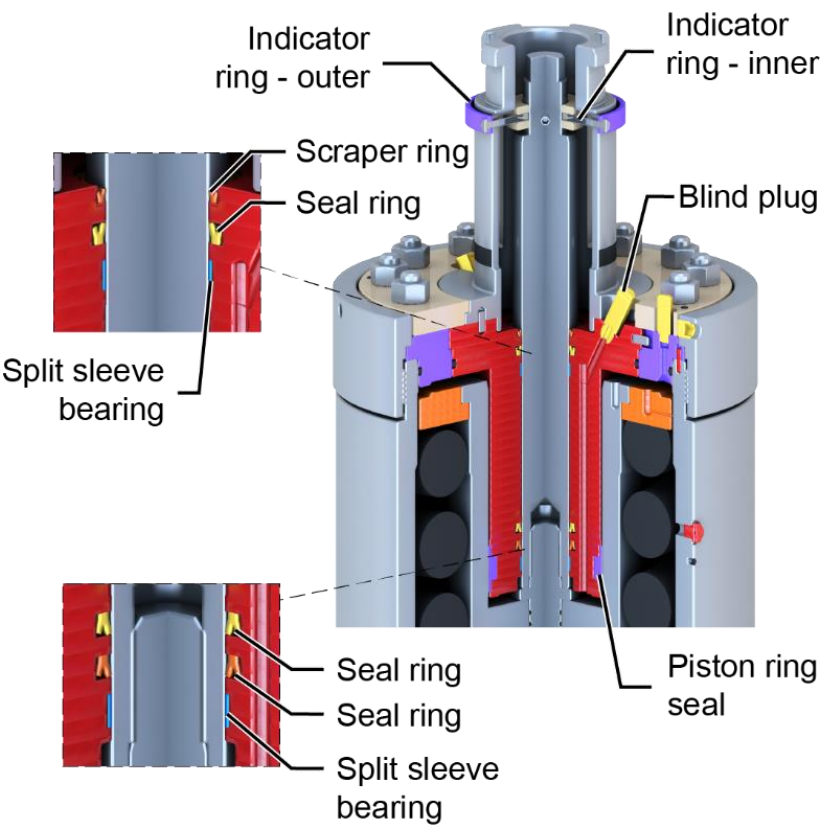






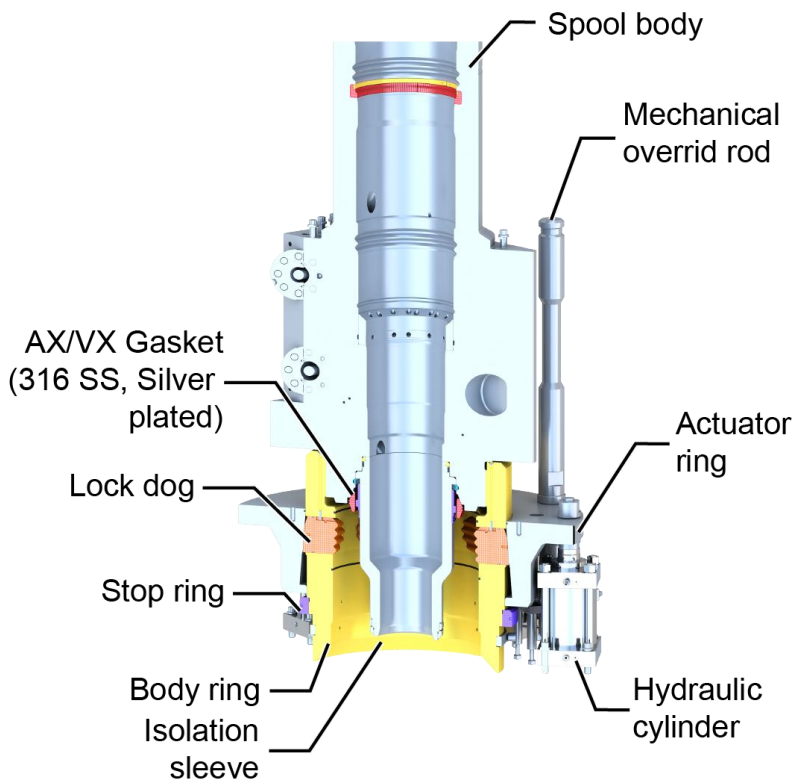
5 1/8"-10K 'CM' Actuator Assembly
PN: 2290735-41-01
WT: 2347 lbs



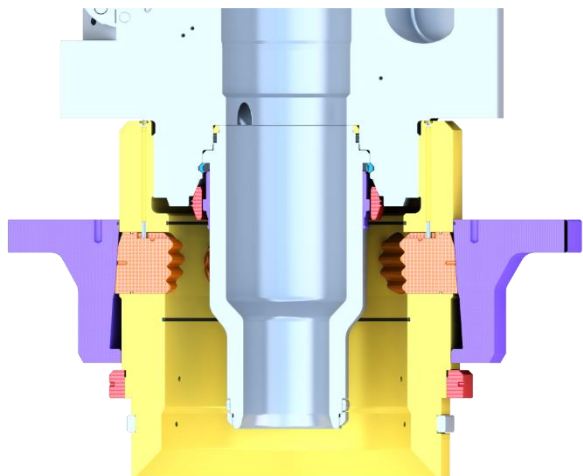


3.1.7 Wellhead Connector

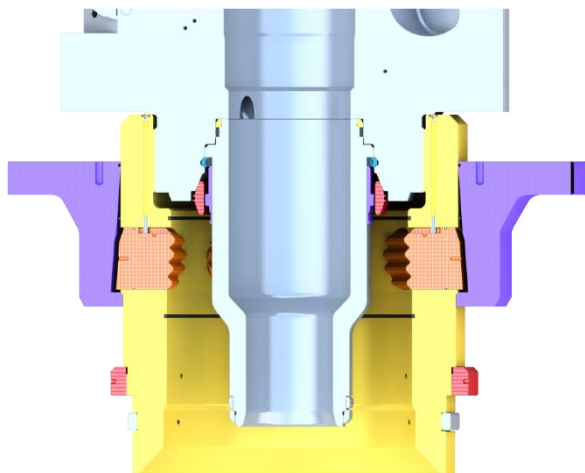
Wellhead Connector
PN: 2250981-01-01
WT: 8478 lbs

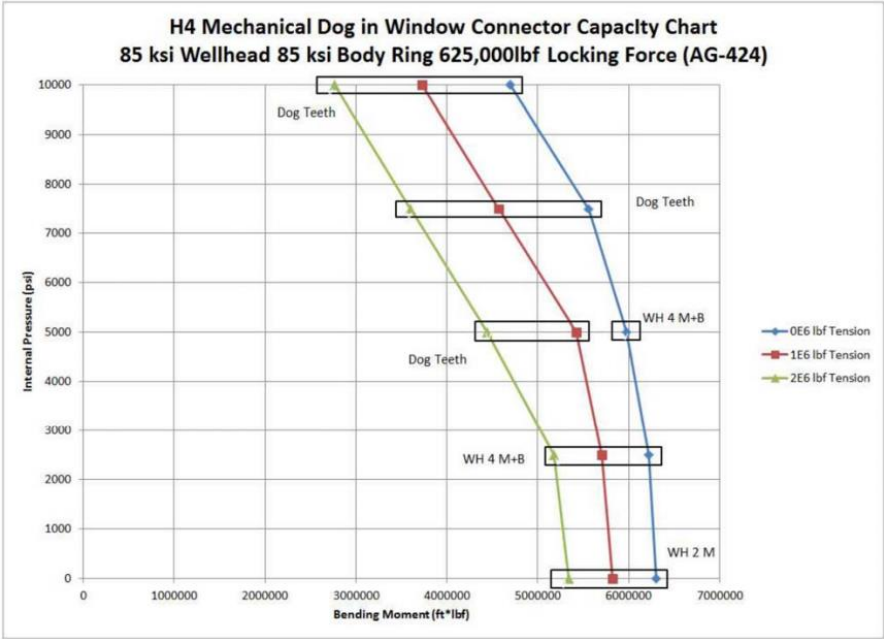


LOCKED



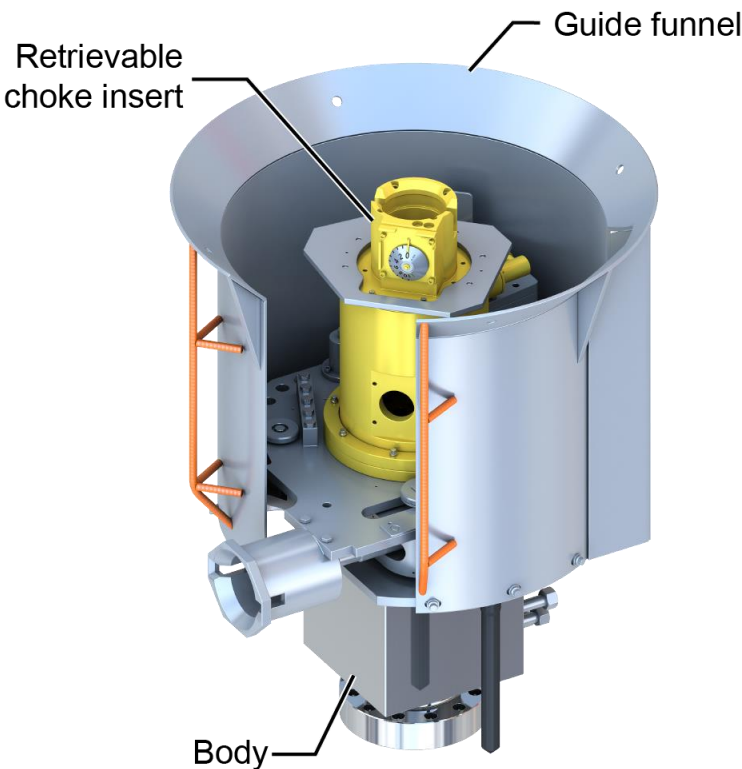
UNLOCKED





3.1.8 Choke Assembly

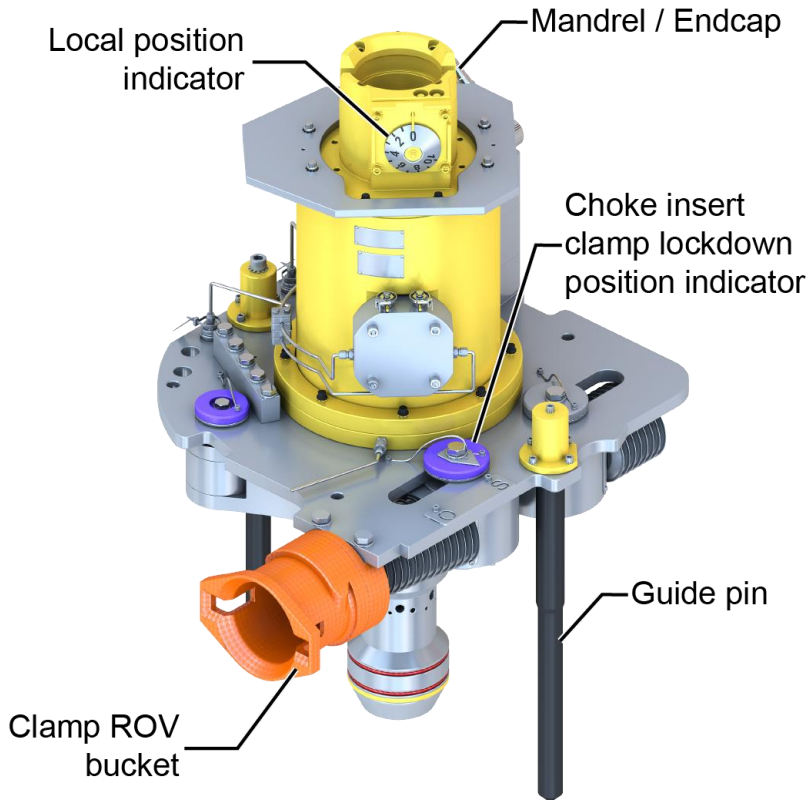
Choke Assembly
PN: 2343823-01
WT: 3500 lbs



Retrievable Choke Insert

PN: 2343828-03 (Cv65), WT: 1985 lbs

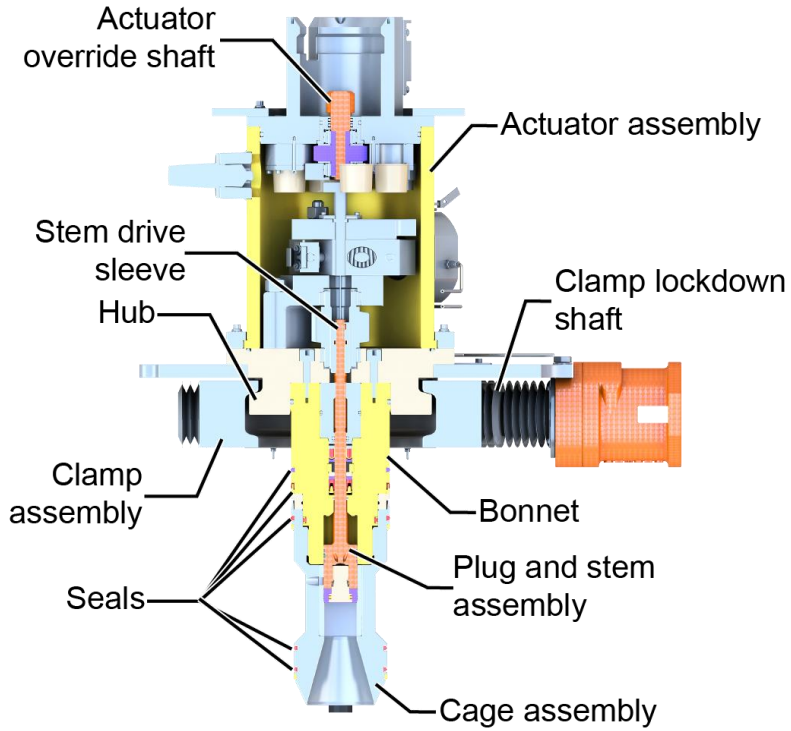
PN: 2343828-01 (Cv241), WT: 2125 lbs



Retrievable Choke Insert

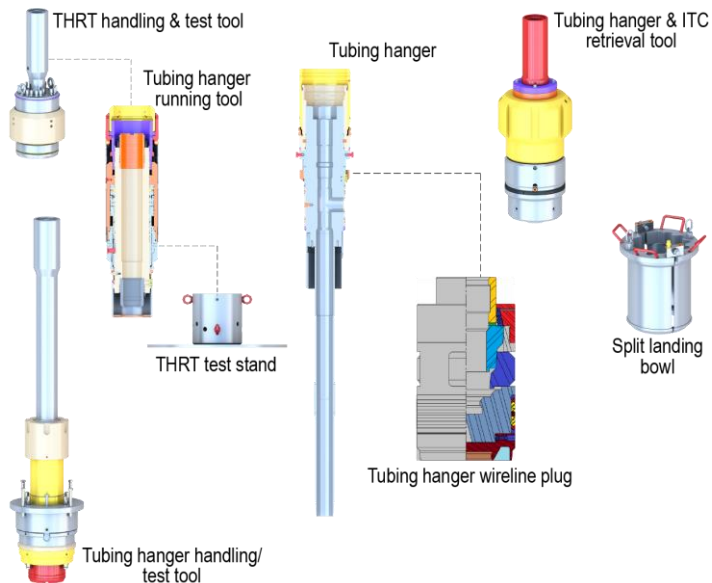
PN: 2343828-03 (Cv65), WT: 1985 lbs

PN: 2343828-01 (Cv241), WT: 2125 lbs



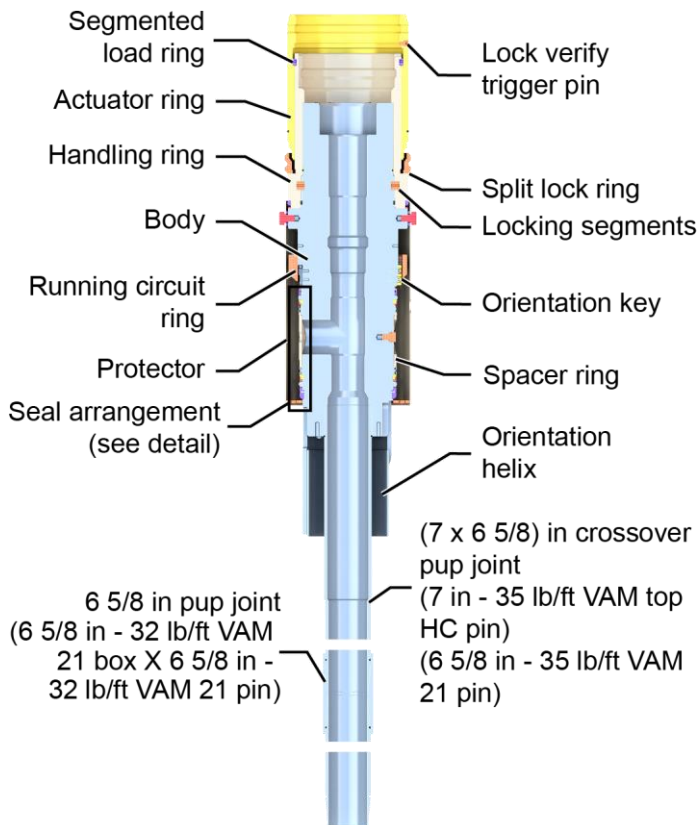
3.2 Tubing Hanger and Installation Tooling

3.2.1 Tubing Hanger Scope of Supply

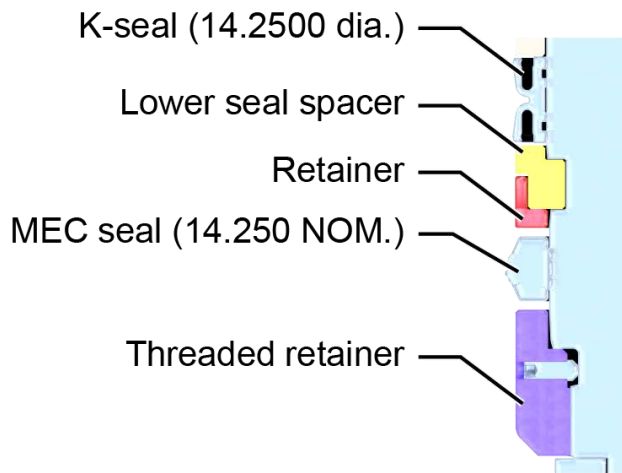
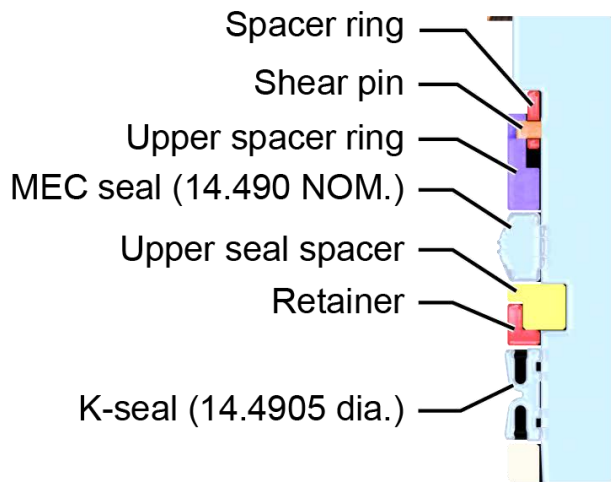


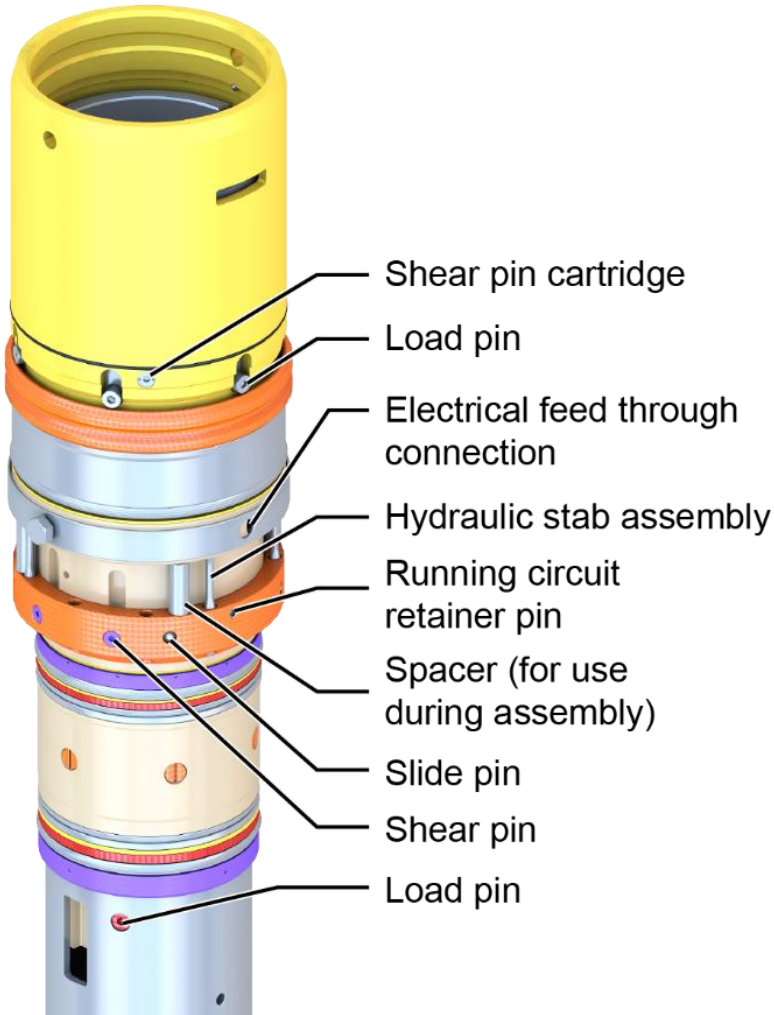
3.2.2 Tubing Hanger Assembly

Tubing Hanger
PN: 2404391-01-02
WT: 3079 lbs

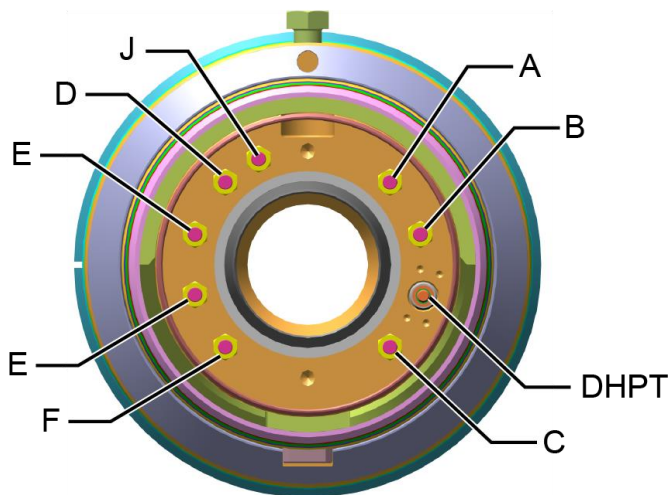


Seal Arrangement





Tubing Hanger – Bottom View



Production outlet

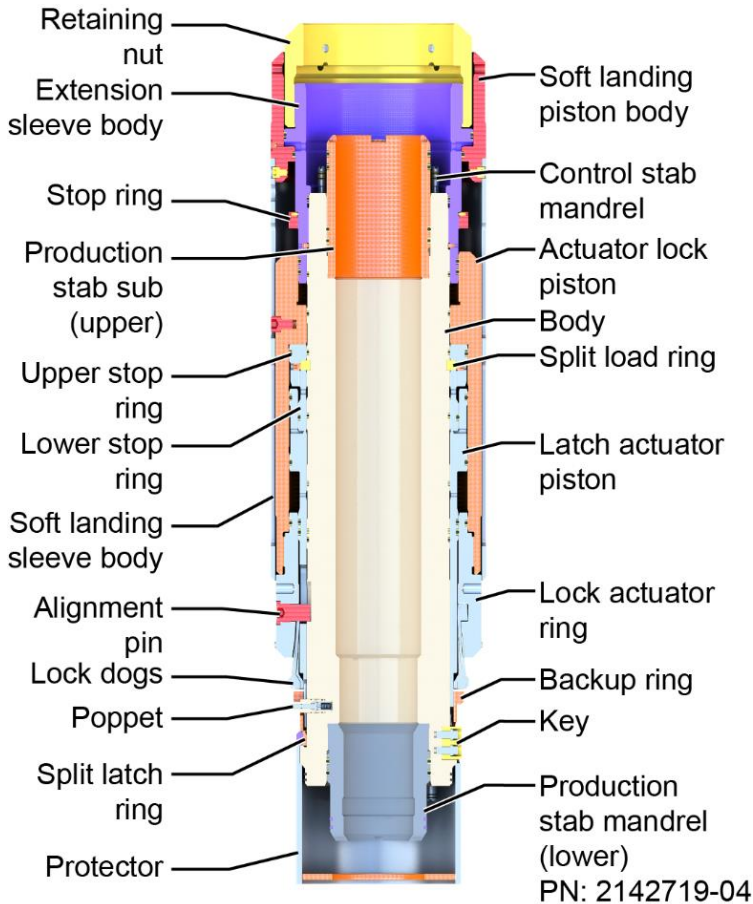
Port	Description
A	BLANK OFF
B	BLANK OFF
C	BLANK OFF
D	SCSSV1
E	BLANK OFF
F	BLANK OFF
J	SCSSV2
K	BLANK OFF

3.2.3 Tubing Hanger Running Tool

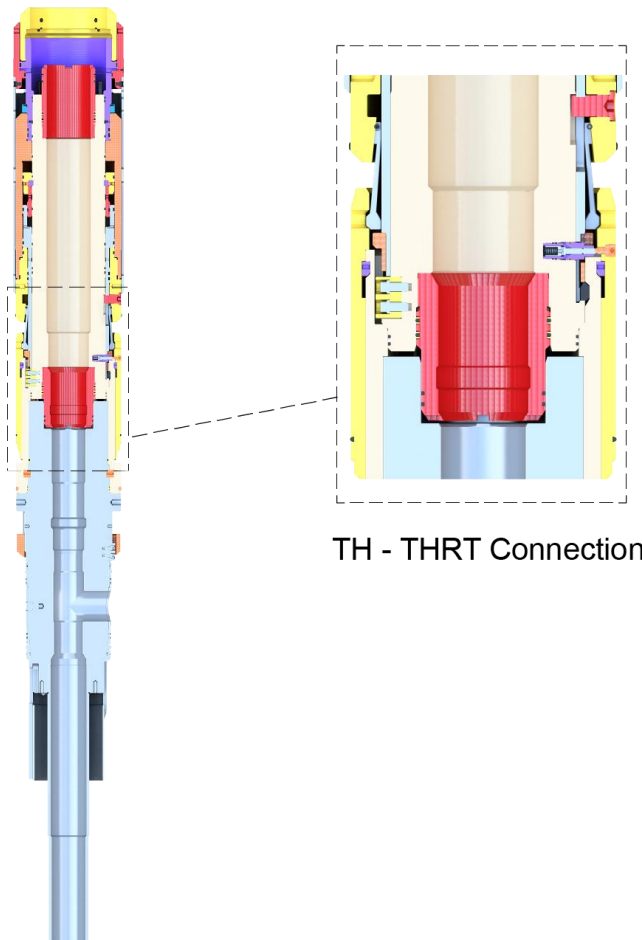
Tubing Hanger Running Tool

PN: 2141700-02

WT: 3261 lbs



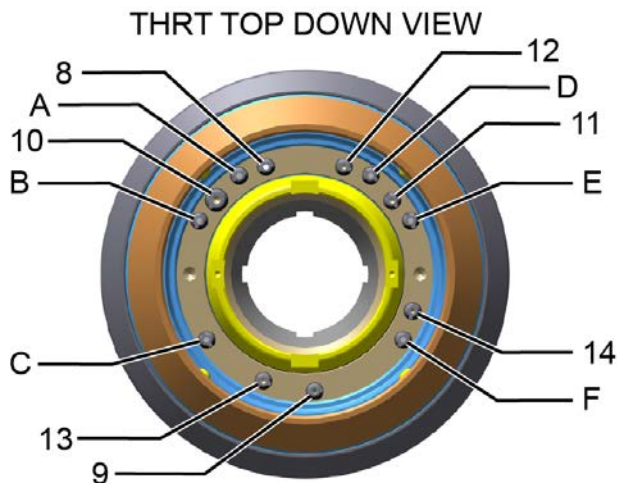
3.2.4 Tubing Hanger – THRT Stack Up



TH - THRT Connection

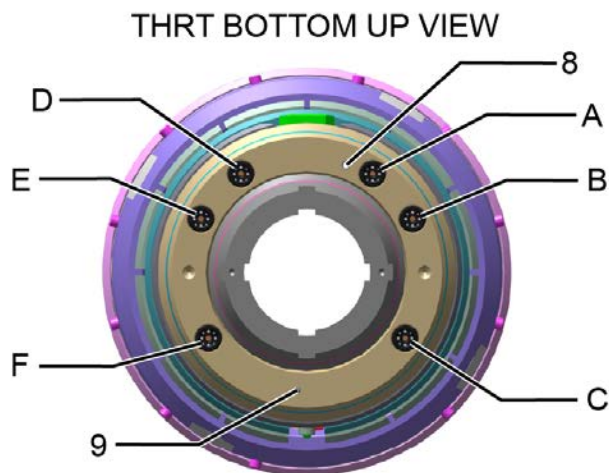
3.2.5 THRT Line functions and Working Pressure

PN: 2141700-02



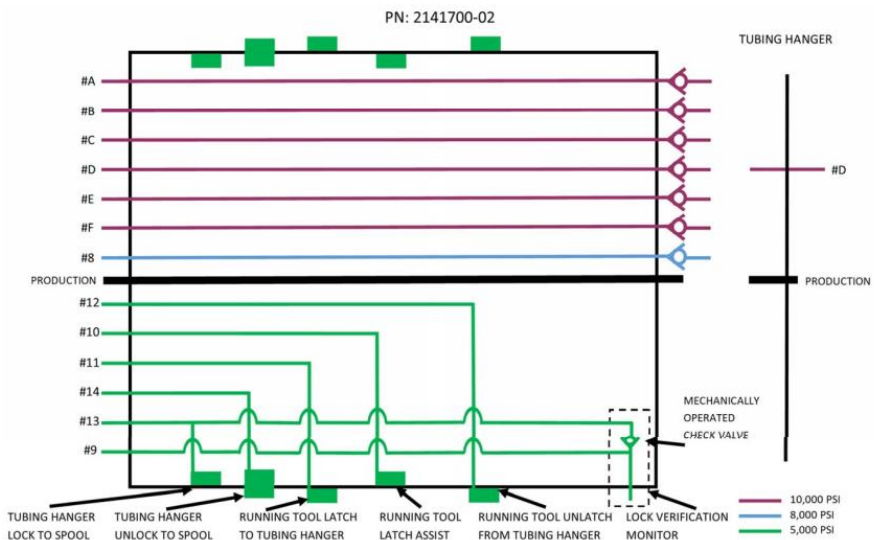
LINE No.	FUNCTION	W.P. (KSI)
A	SPARE	10
B	SPARE	10
C	SPARE	10
D	SCSSV	10
E	SPARE	10
F	SPARE	10
8	VENT/TEST RETURN	8
9	T.H. LOCK VERIFY	5
10	T.H.R.T. LATCH ASSIST	5
11	T.H.R.T. LATCH	5
12	T.H.R.T. UNLATCH	5
13	T.H. LOCK	5
14	T.H. UNLOCK	5

PN: 2141700-02



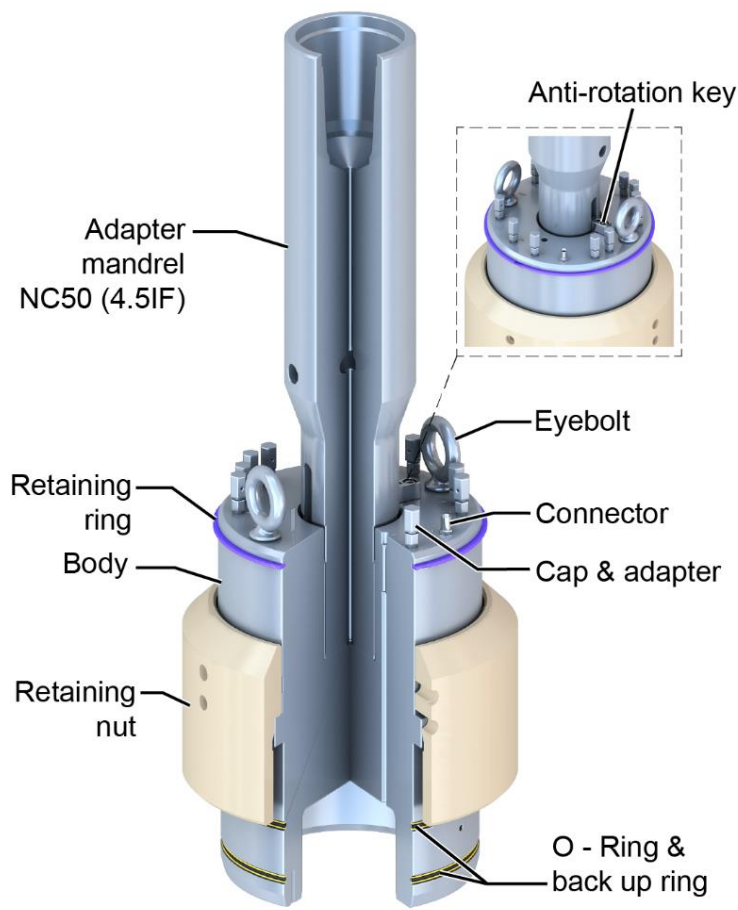
LINE No.	FUNCTION	W.P. (KSI)
A	SPARE	10
B	SPARE	10
C	SPARE	10
D	SCSSV	10
E	SPARE	10
F	SPARE	10
8	VENT/TEST RETURN	8
9	T.H. LOCK VERIFY	5
10	T.H.R.T. LATCH ASSIST	5
11	T.H.R.T. LATCH	5
12	T.H.R.T. UNLATCH	5
13	T.H. LOCK	5
14	T.H. UNLOCK	5

3.2.6 THRT Hydraulic Schematic

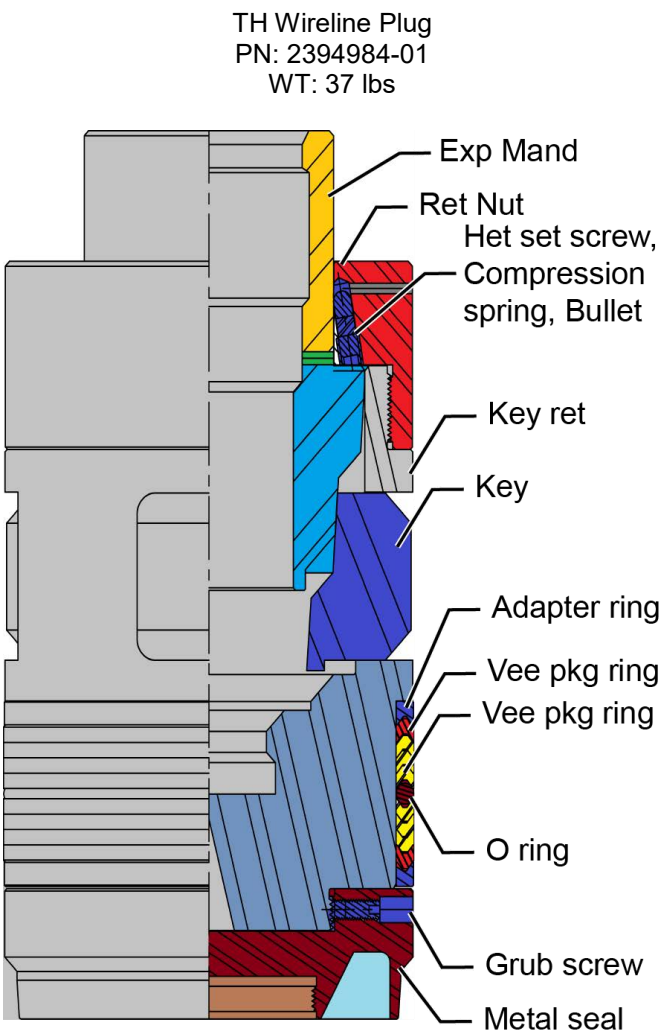


3.2.7 THRT Handling and Test Tool

THRT Handling and Test Tool
PN: 2142736 -01
WT: 880 lbs

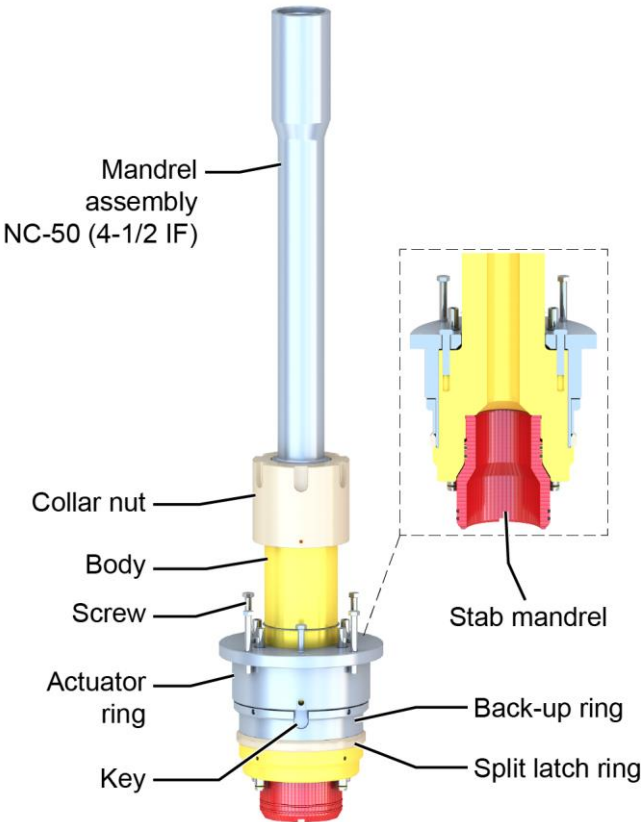


3.2.8 TH Wireline Plug



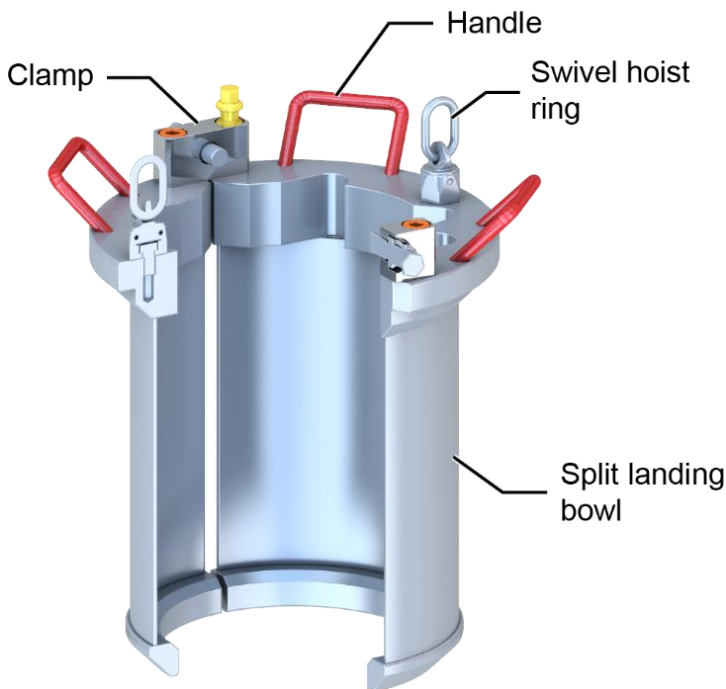
3.2.9 Tubing Hanger Handling / Test Tool

Tubing Hanger Handling / Test Tool
PN: 2142721-10
WT: 1199 lbs



3.2.10 Tubing Hanger Spilt Landing Bowl

Spilt Landing Bowl
PN: 2182564-04
WT: 277 lbs

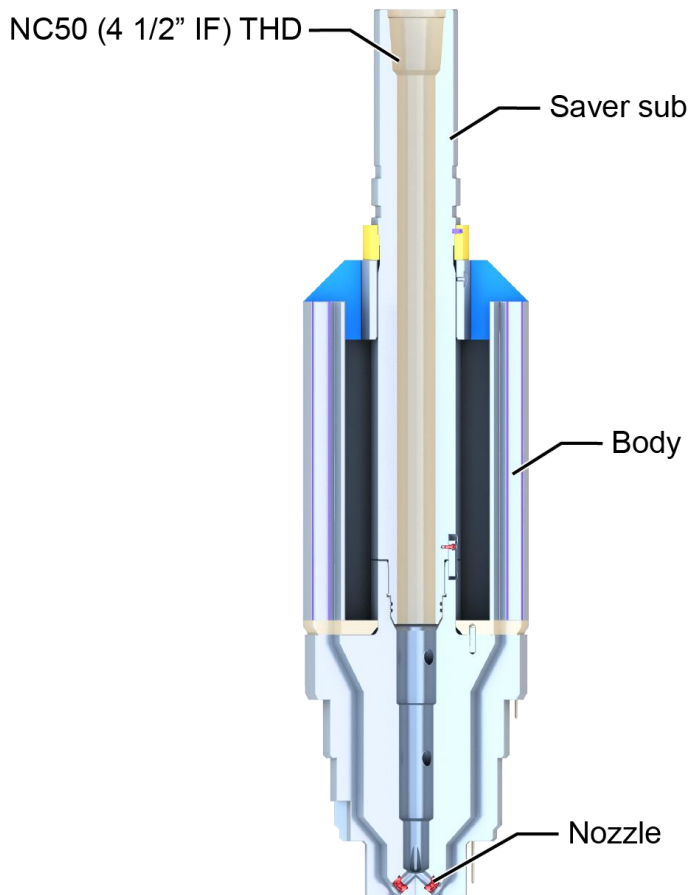


3.2.11 Tubing Hanger Mill and Flush Tool

Tubing Hanger Mill and Flush Tool

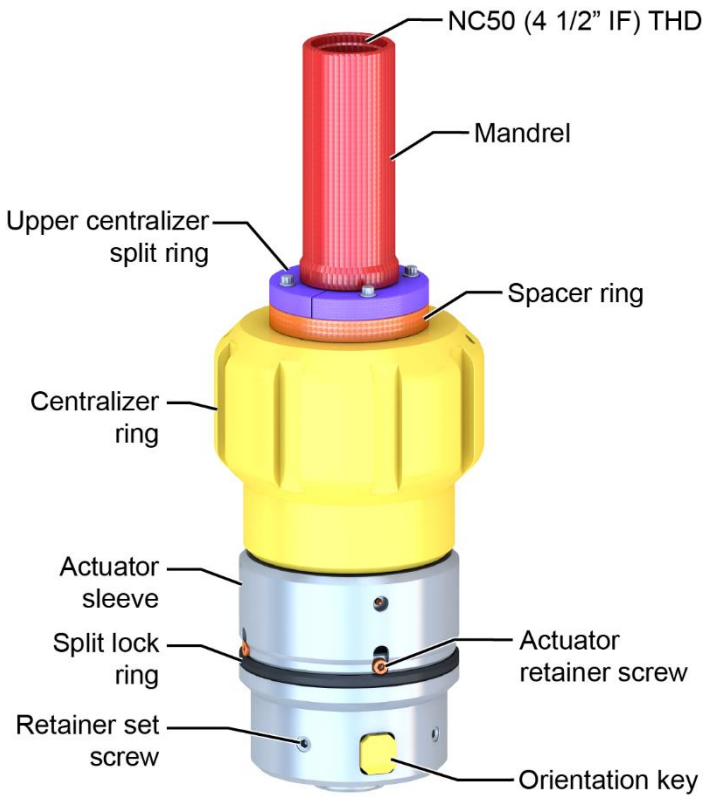
PN: 2181425-01

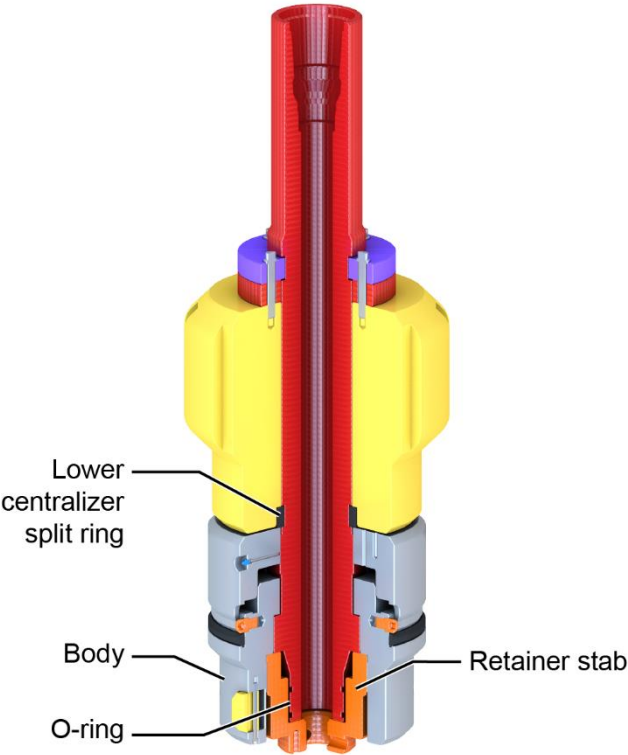
WT: 849 lbs



3.2.12 Tubing Hanger Retrieval Tool

Tubing Hanger Retrieval Tool
PN: 2141825-01
WT: 2050 lbs

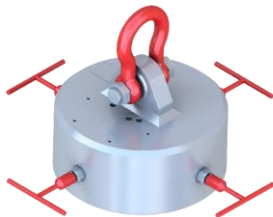




3.3 Spooltree Tooling

3.3.1 Tooling Scope of Supply

External tree handling tool (THT)



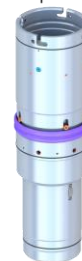
Isolation sleeve installation tool



Tree running tool



Bore protector



Boll weevil test tool



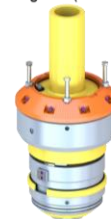
Combined BOP weight set test & bore protector retrieval tool



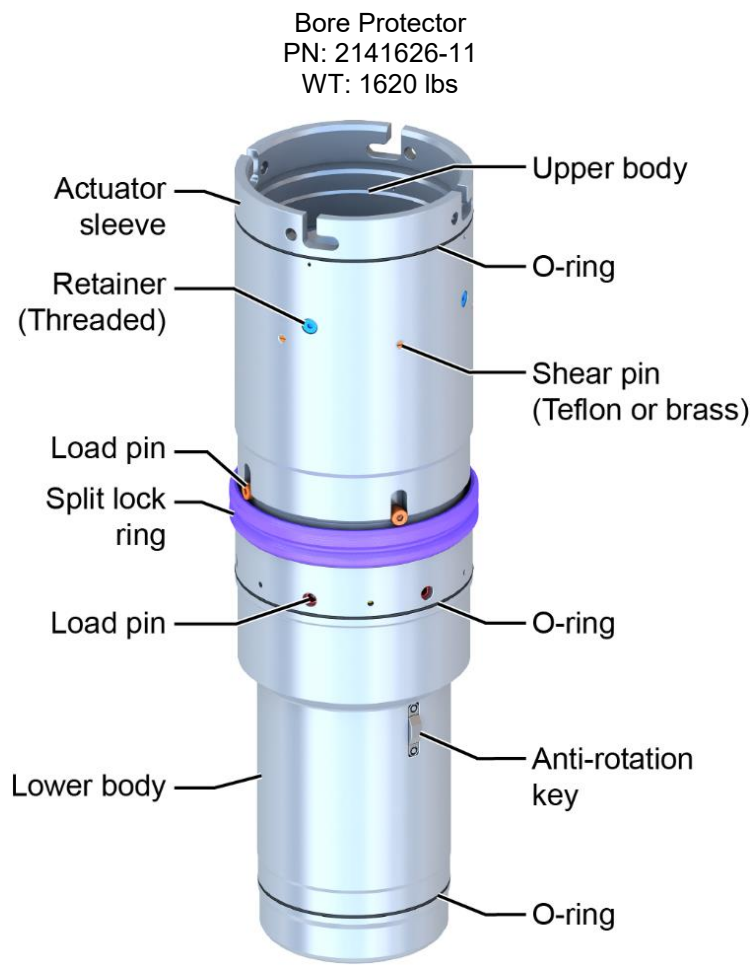
Bore protector running/retrieval tool

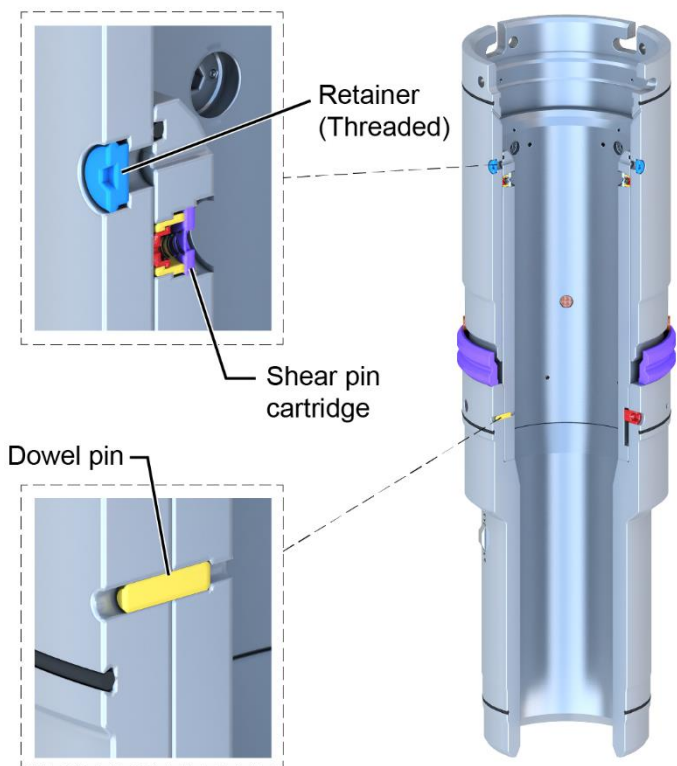


Mechanical internal tree cap running tool (MITCRT)



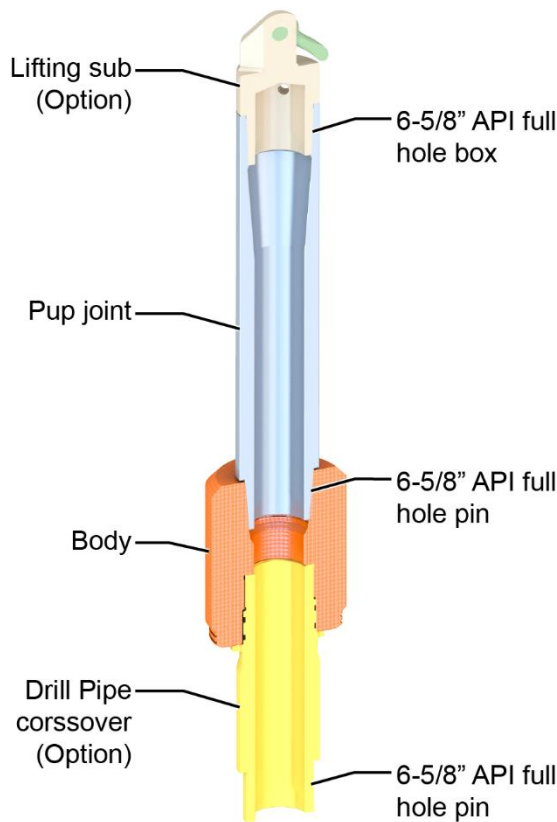
3.3.2 Bore Protector





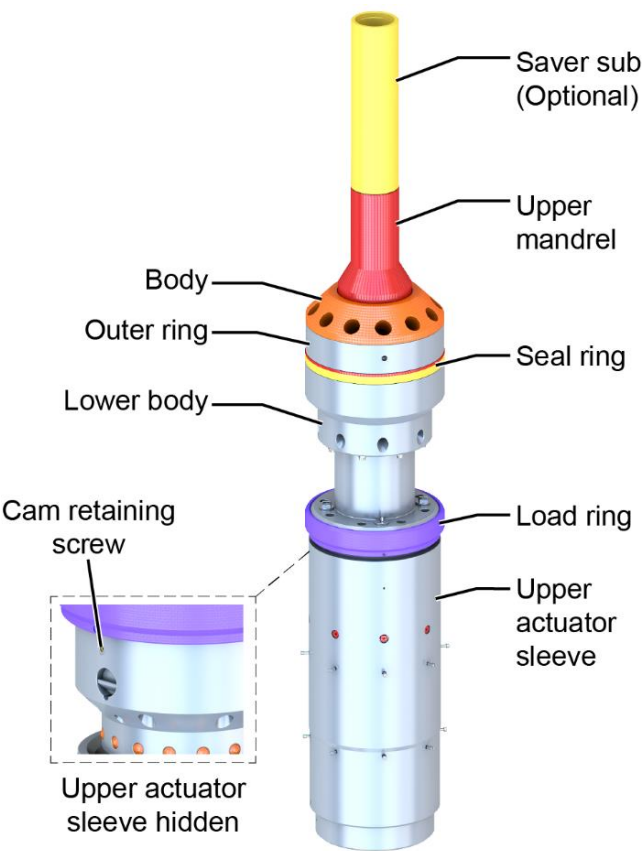
3.3.3 Boll Weevil Test Tool

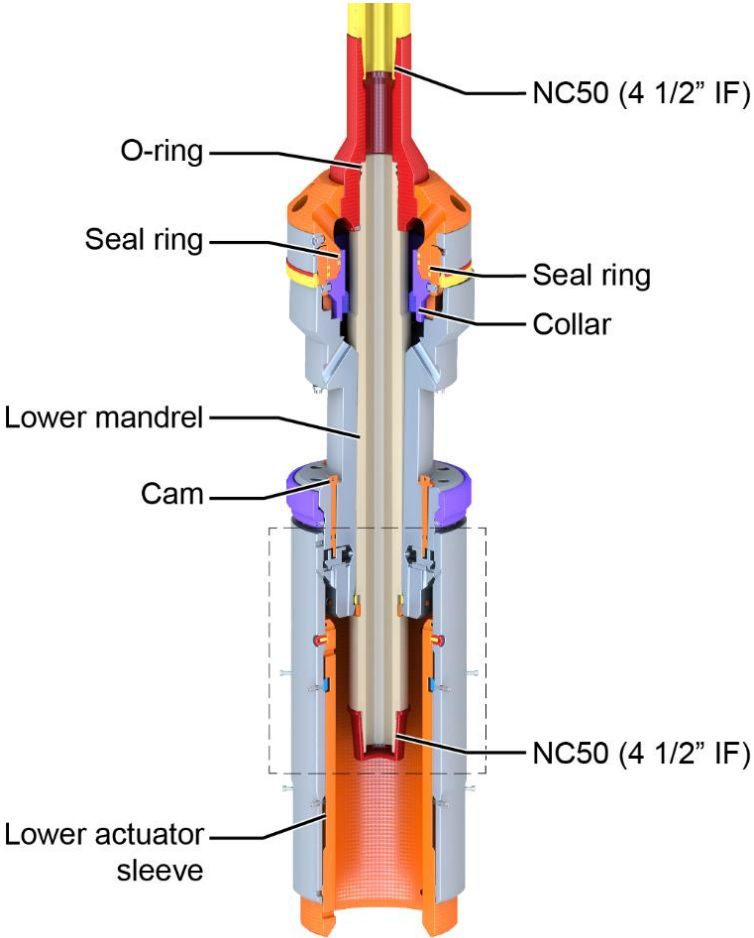
Boll Weevil Test Tool
PN: 2155548-01
WT: 1045 lbs

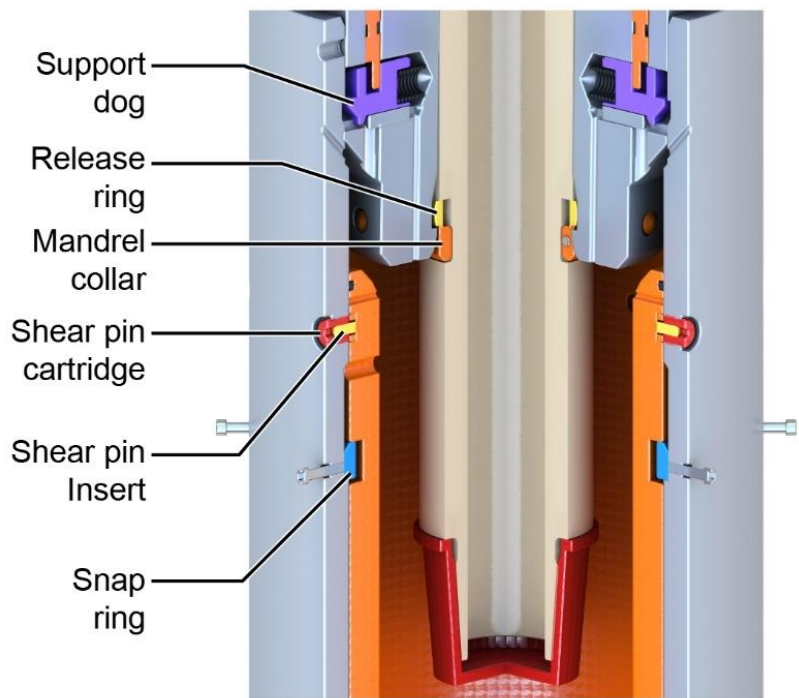


3.3.4 Combined BOP Weight Set Test and Bore Protector Retrieval Tool

Combined BOP Weight Set Test and Bore Protector Retrieval Tool
PN: 2142424-08
WT: 3229 lbs





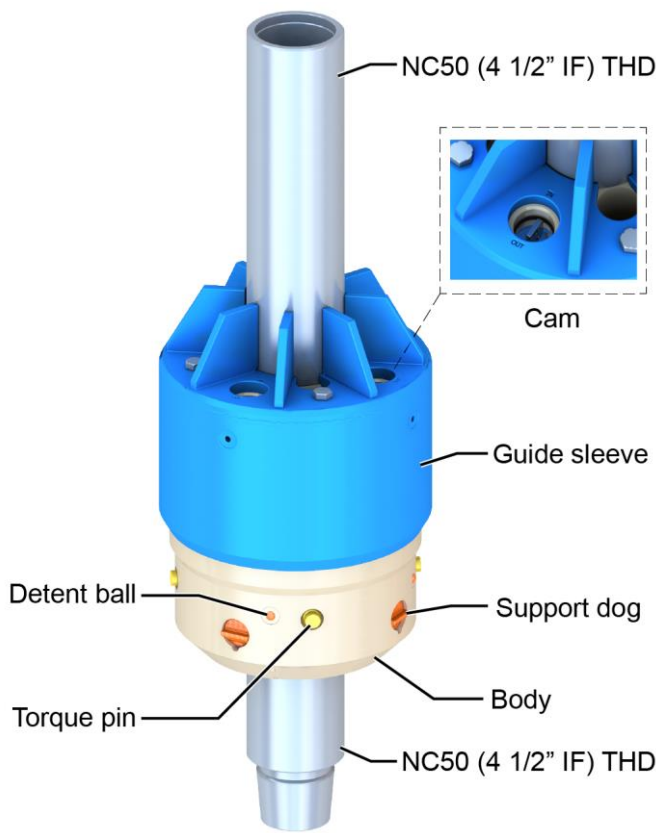


3.3.5 Bore Protector Running Tool / Retrieval Tool

Bore Protector Running/Retrieval Tool

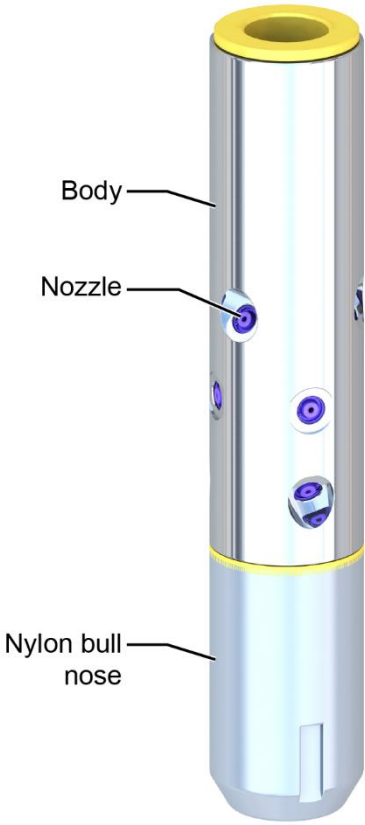
PN: 2027776-01

WT: 1272 lbs



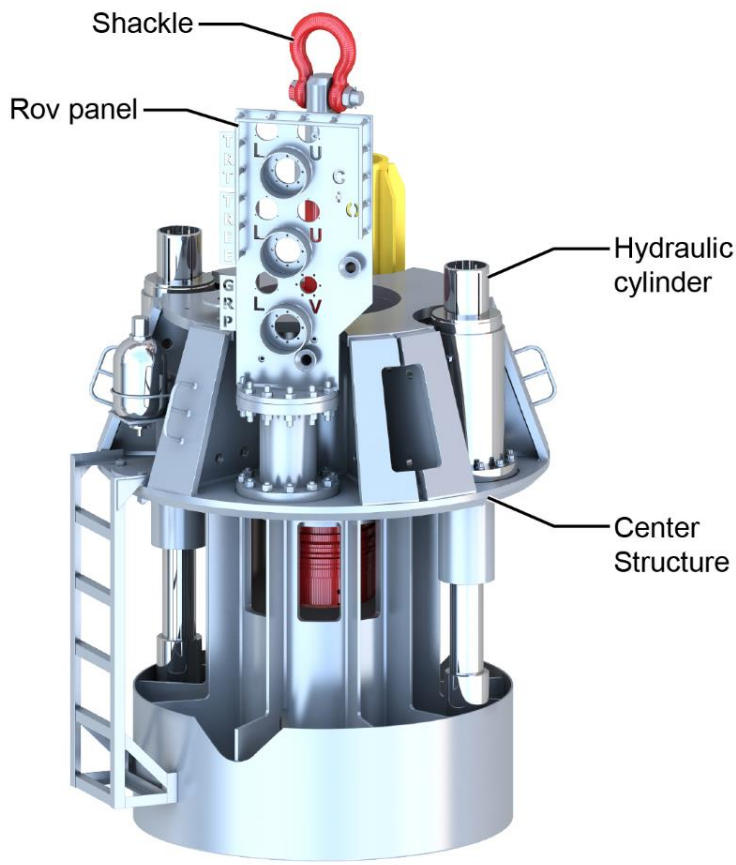
3.3.6 Jetting Sub

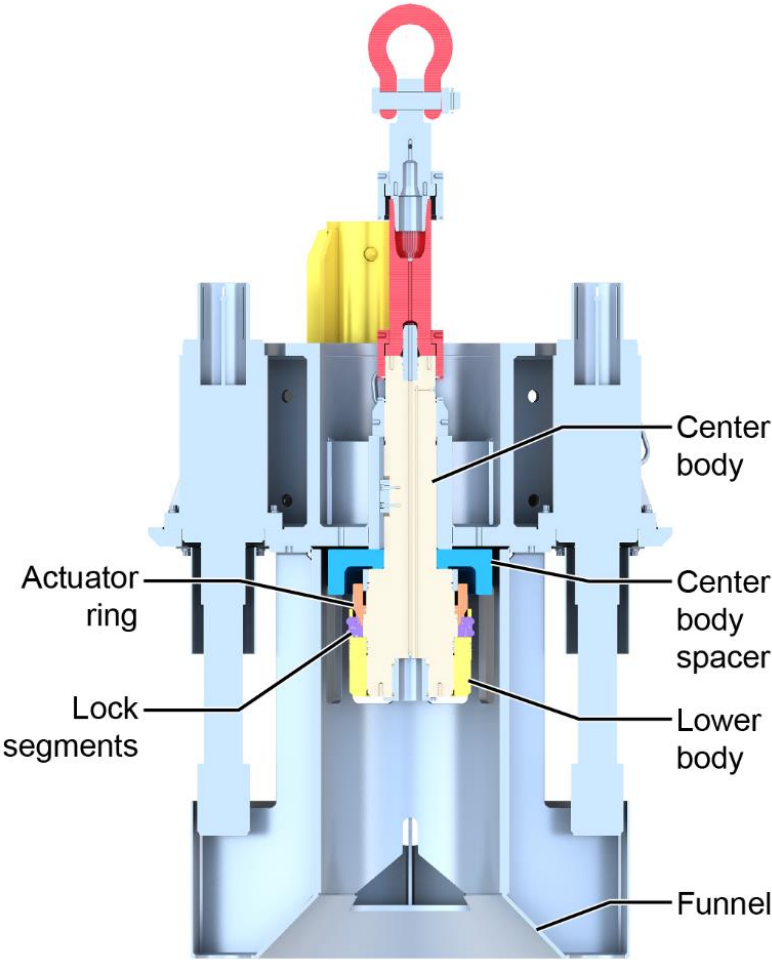
Jetting Sub
PN: 262466-04
WT: 232 lbs



3.3.7 Tree Running Tool

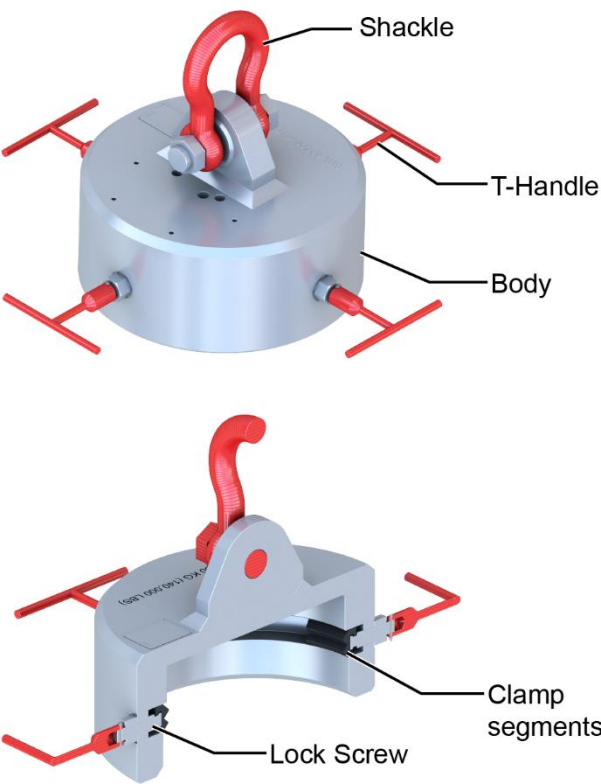
Tree Running Tool
PN: 2055145-26
WT: 3229 lbs





3.3.8 External Tree Handling Tool (THT)

Tree Handling Tool (THT)
PN: 2142462-06
WT: 2318 lbs

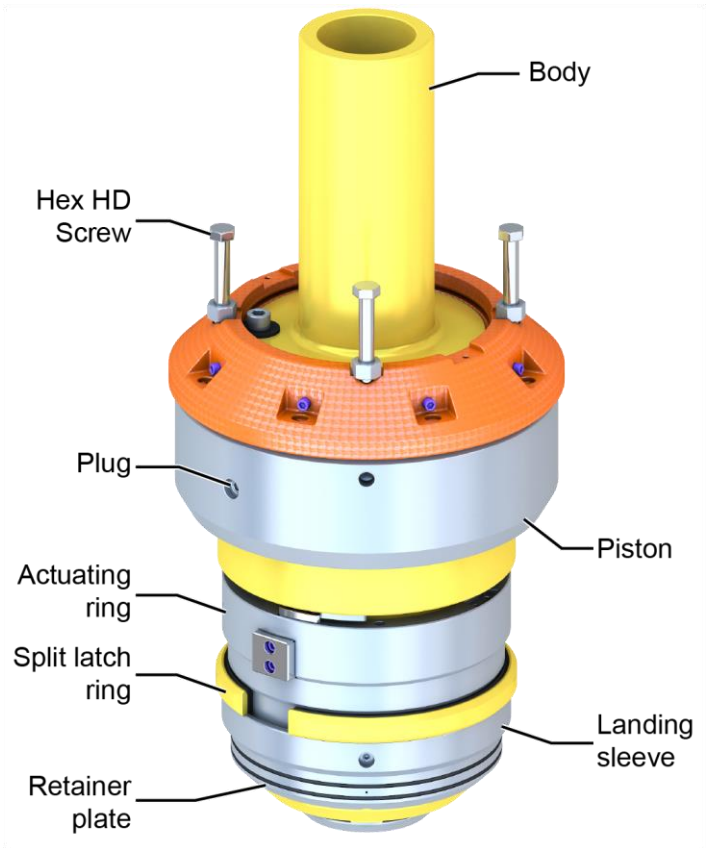


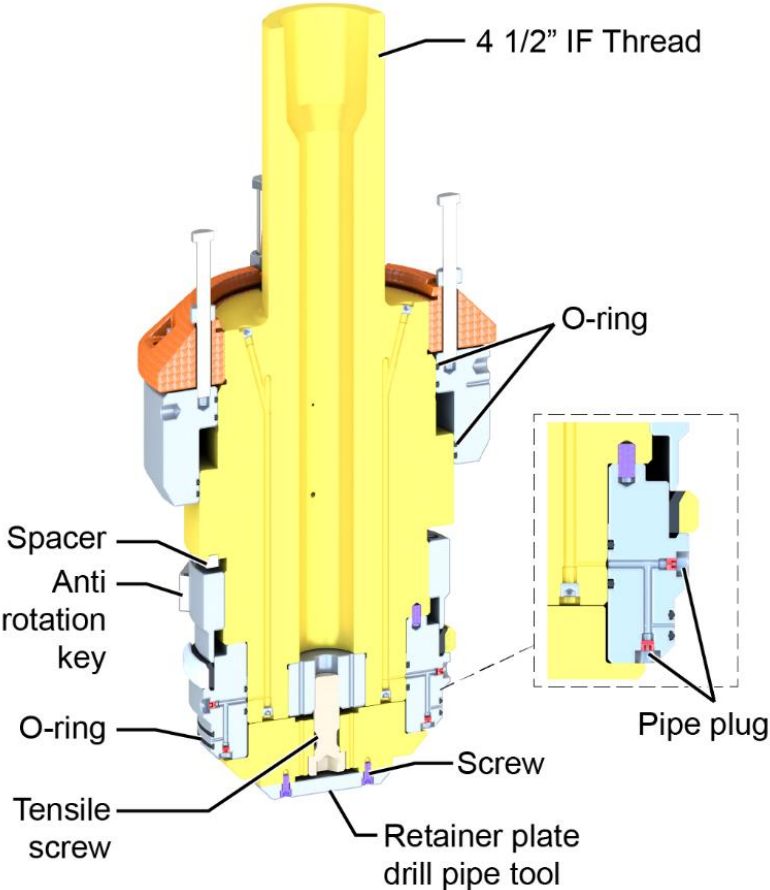
3.3.9 Mechanical Internal Tree Cap Running Tool (MITCRT)

Mechanical Internal Tree Cap Running Tool (MITCRT)

PN: 2169970-20

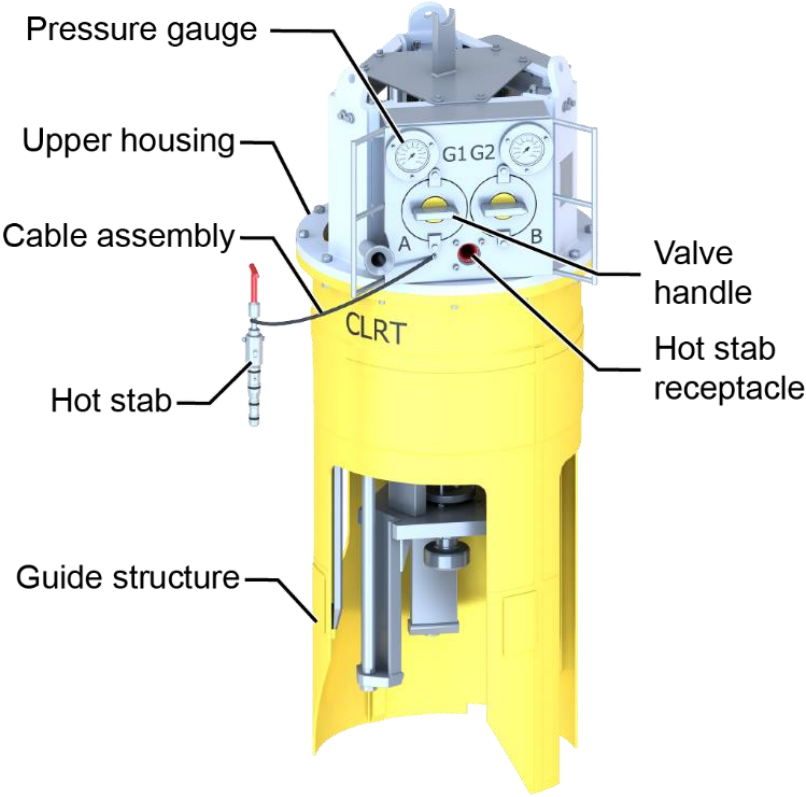
WT: 1197 lbs





3.3.10 Clamp Style Choke Running Tool (CLRT)

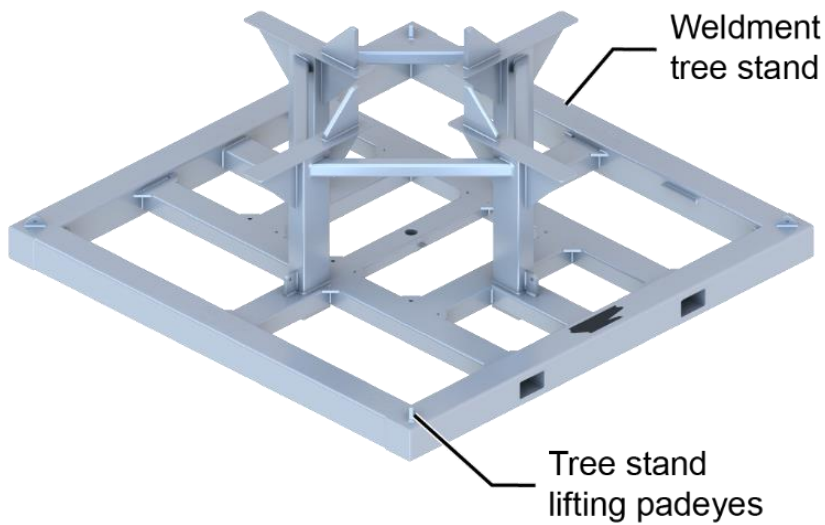
Clamp Style Choke Running Tool
PN: 2219440-01
WT: 3143 lbs



3.3.11 Tree Maintenance Stand

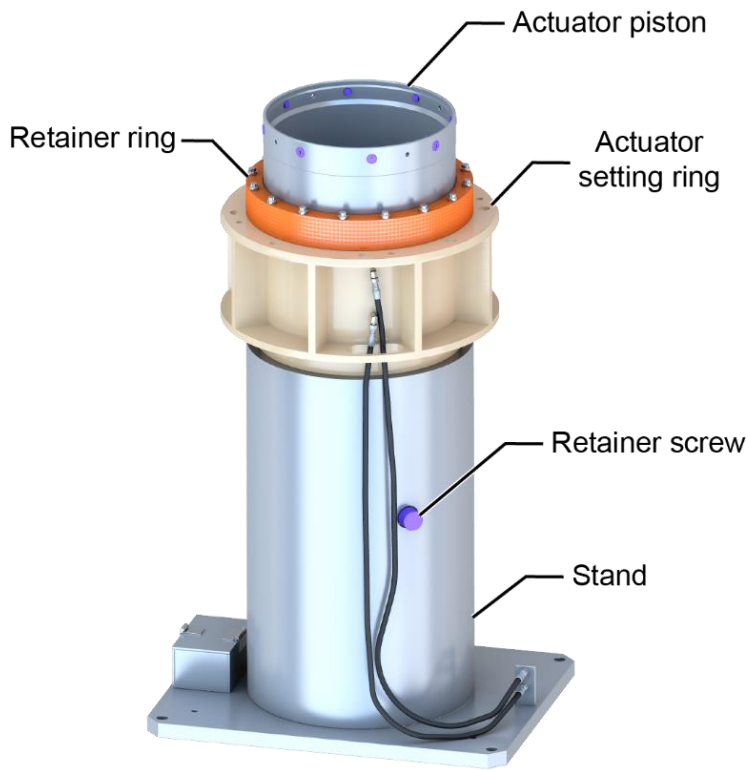
PN: 2063496-21

WT: 5359 lbs



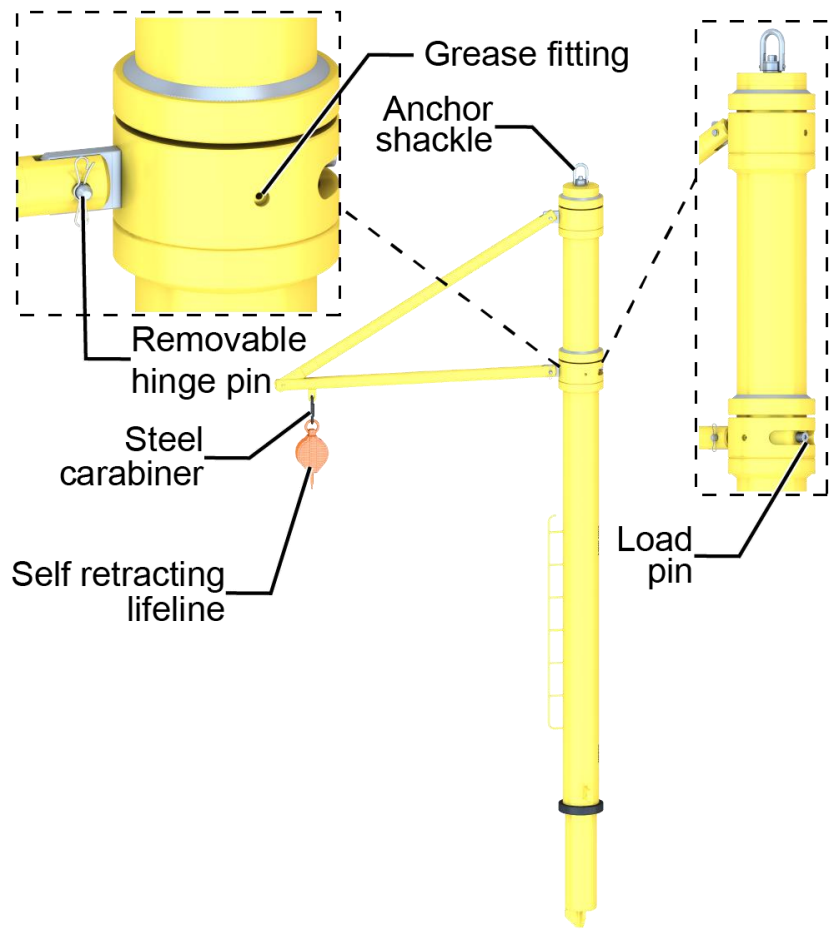
3.3.12 Isolation Sleeve Installation Tool

Isolation Sleeve Installation Tool
PN: 2182907-01
WT: 3380 lbs



3.3.13 Safety Davit

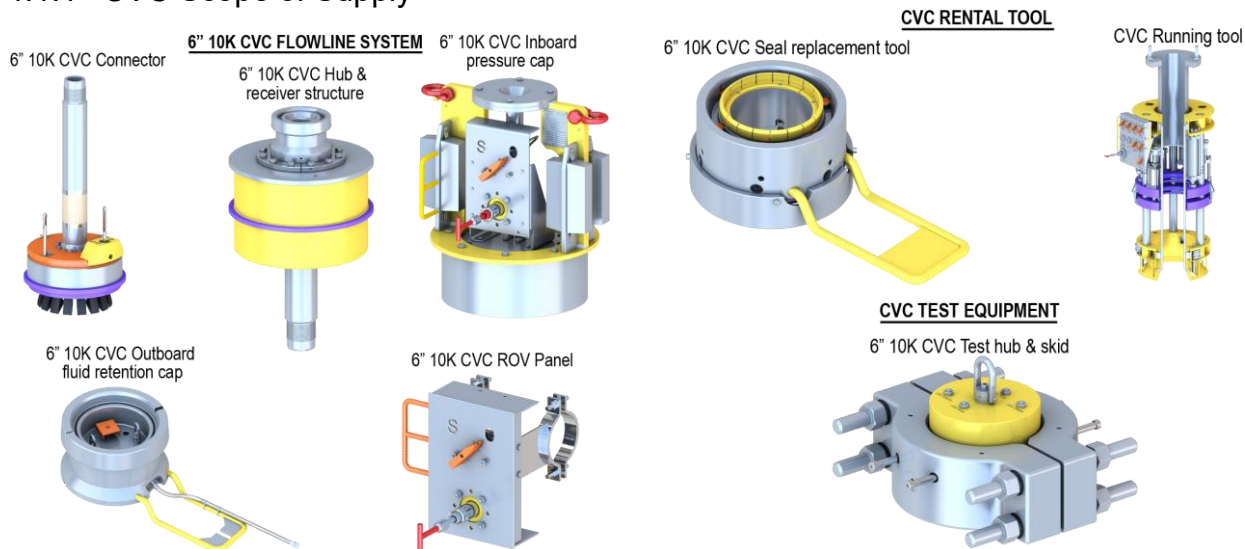
Safety Davit
PN: 2330880-03
WT: 1370 lbs



4. Connection Systems

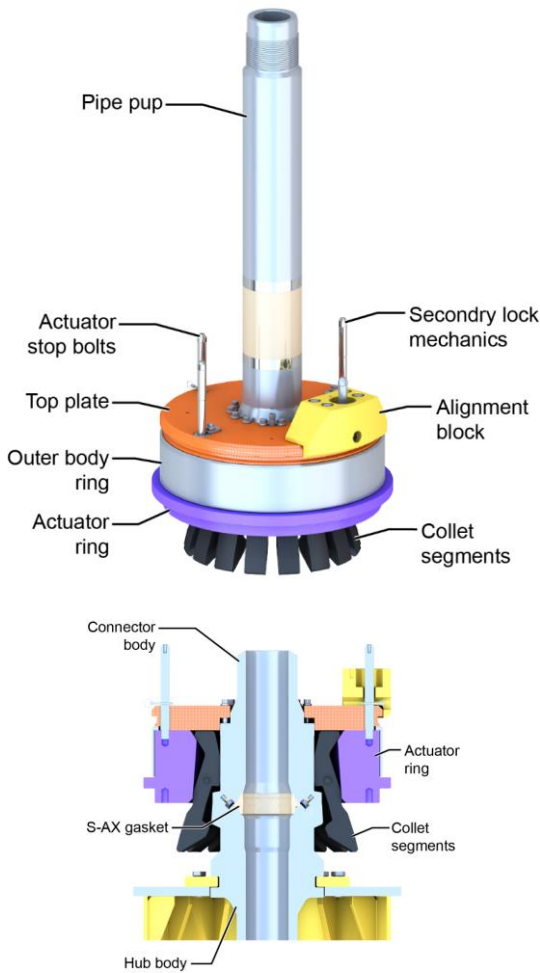
4.1 CVC Connection System

4.1.1 CVC Scope of Supply

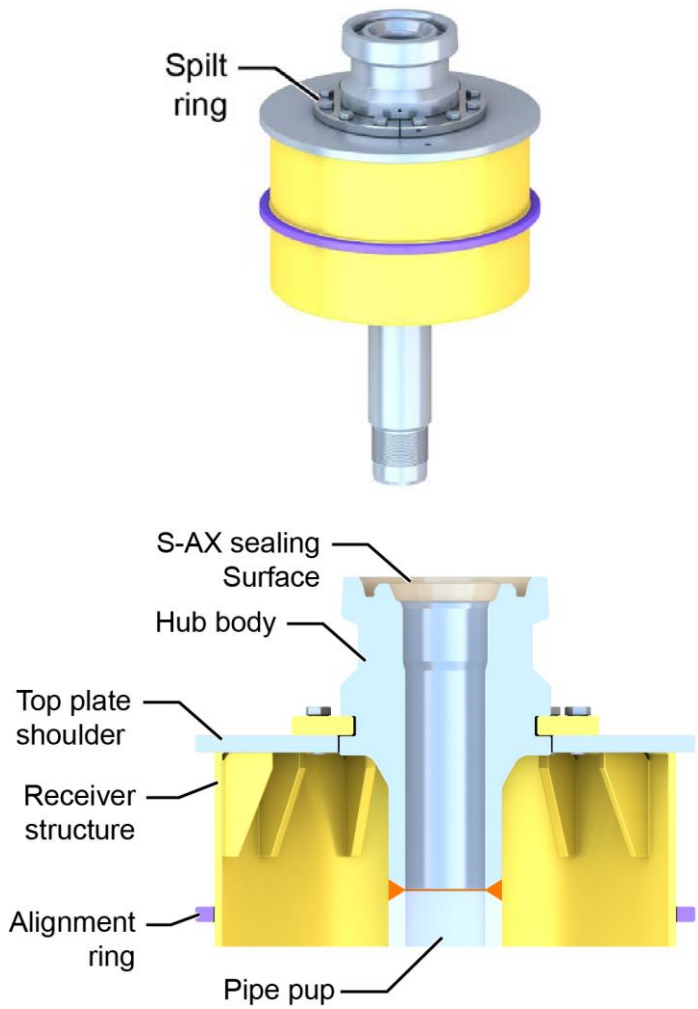


4.1.2 6"-10K CVC System

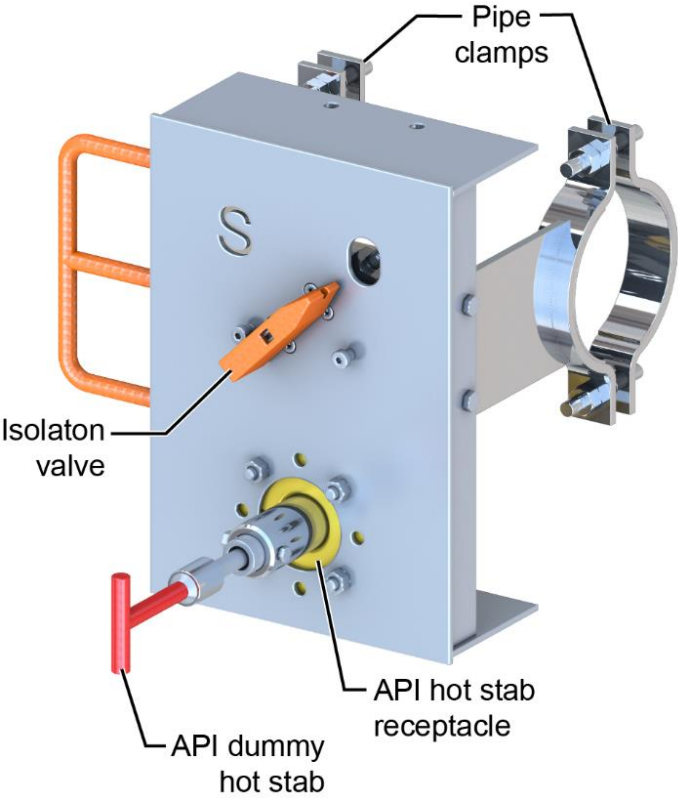
6"-10K CVC connector
PN: 2405120-01
WT: 2376 lbs



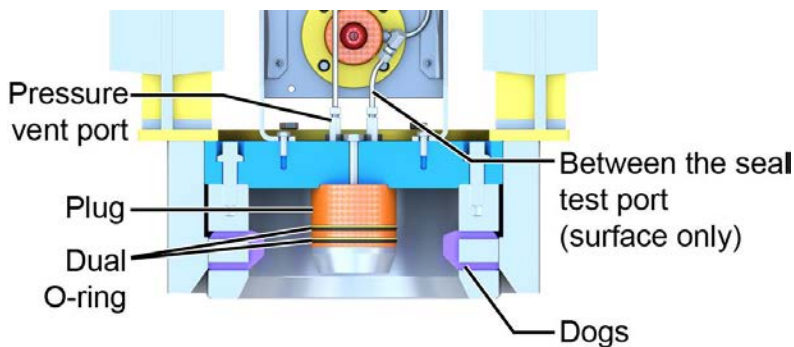
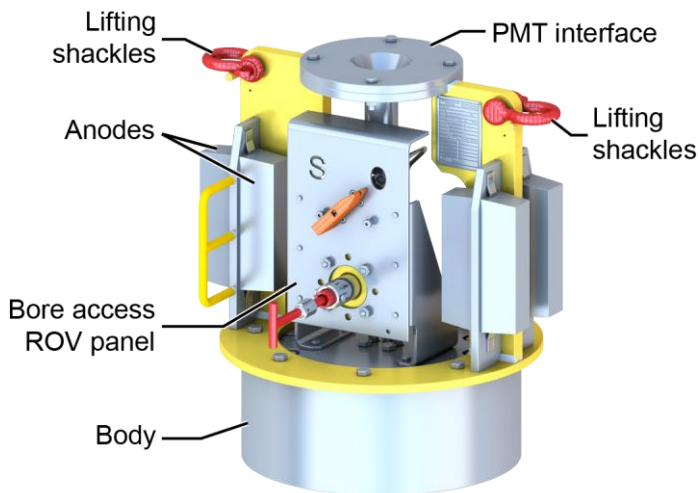
6"-10K CVC Hub and Receiver Structure
PN: 2405122-01
WT: 2376 lbs



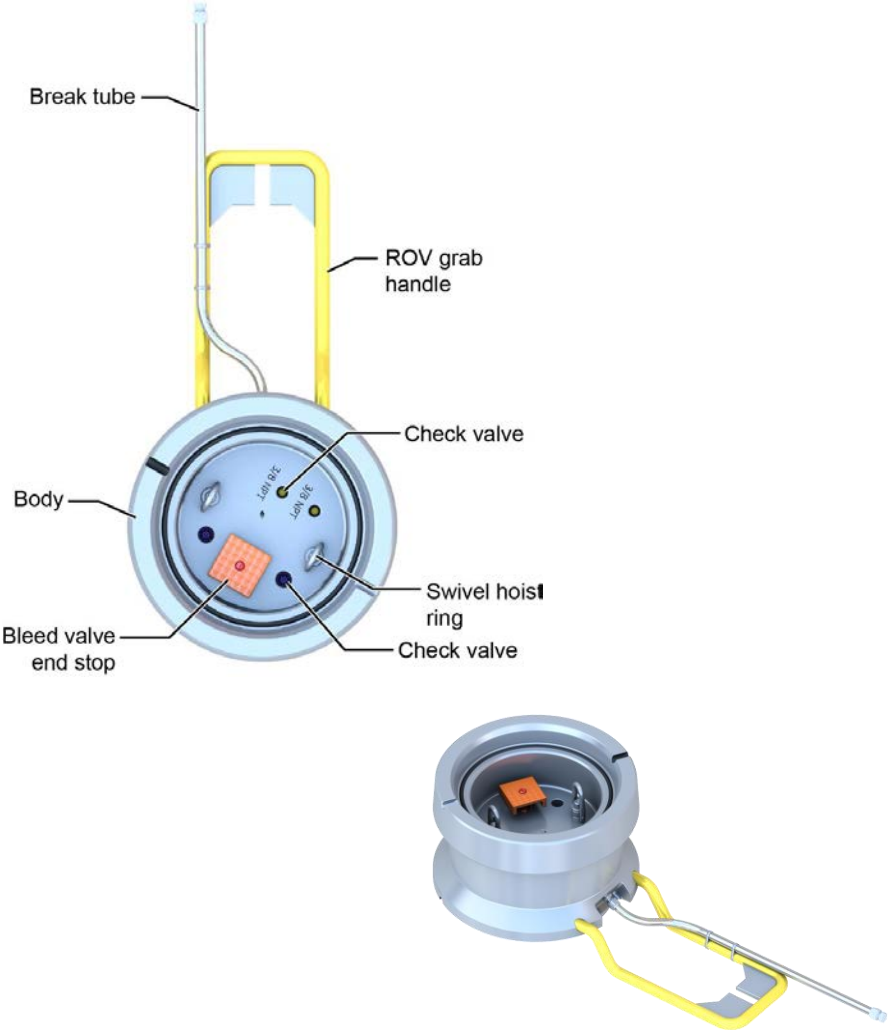
6"-10K CVC ROV Panel
PN: 2247143-59
WT: 108 lbs



6"-10K Inboard Pressure Cap (Elastomeric Seal)
PN: 2399518-01
WT: 1425 lbs

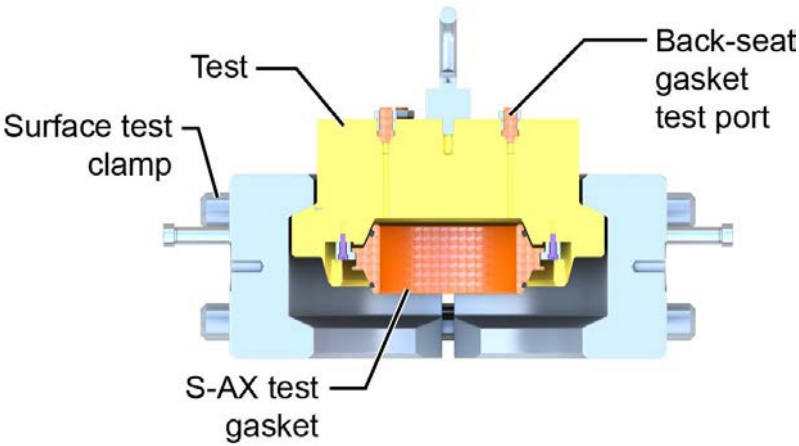
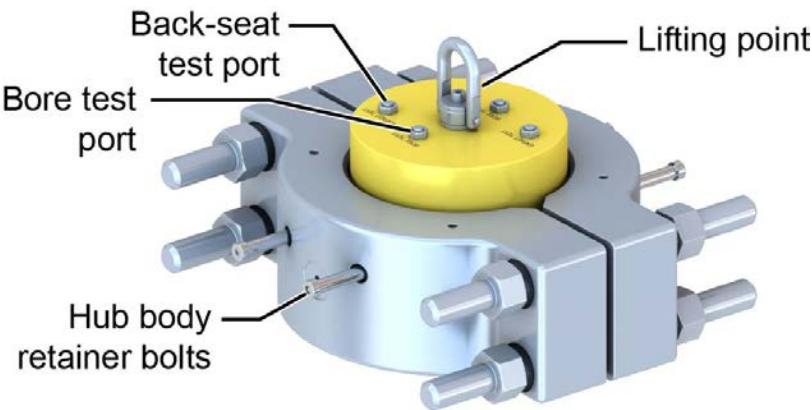


6"-10K CVC Outboard Fluid Retention Cap
PN: 2366004-08
WT: 78 lbs

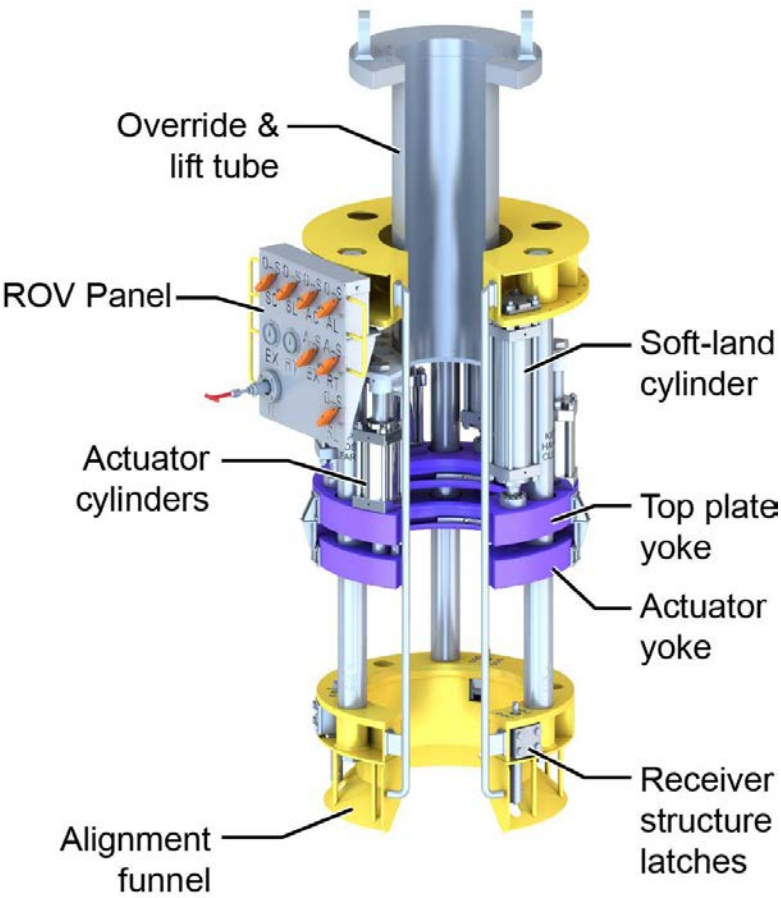


4.1.3 6"-10K CVC System Rental Tooling

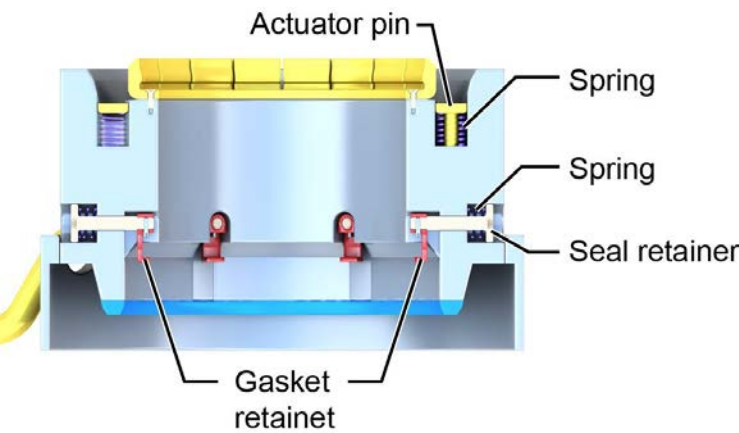
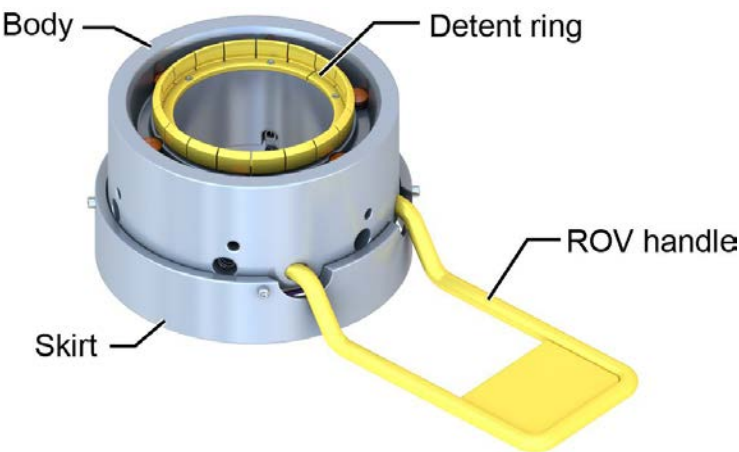
6"-10K CVC Inboard Surface Test Cap
PN: 50312301T3-01
WT: 722 lbs



CVC Running Tool
PN: 2155807-20
WT: 9,977 lbs



6"-10K CVC Seal Replacement and Retrieval Tool
PN: 2035677-02
WT: 55 lbs



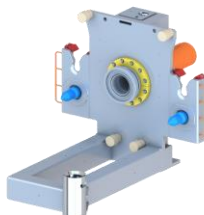
4.2 OCS Connection System

4.1.4 OCS Scope of Supply

12" 10K OCS 500-H FLOWLINE SYSTEMS



12" 10K Outboard pigging connector



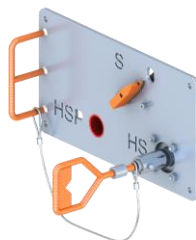
12" 10K Inboard pigging hub & receiver structure



12" 10K Outboard fluid retention cap



12" 10K Inboard high pressure cap



OCS 500-H Inboard ROV panel



OCS 500-H Rigid landing porch retrievable guid post



OCS 500-H Inboard debris cap

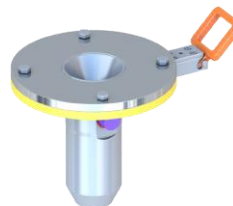
OCS 500-H RENTAL TOOLING



OCS 500-H Inboard/Outboard
hub cleaning tool/head



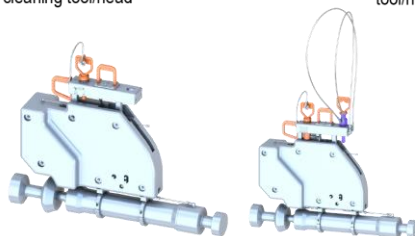
OCS 500-H Seal replacement/retrieval
tool/head



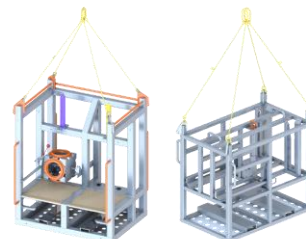
PMT Receptacle adapter



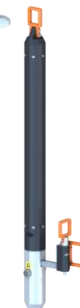
OCS Modified class 7 torque
tool/tool control unit



OCS 500-H Stroking tool

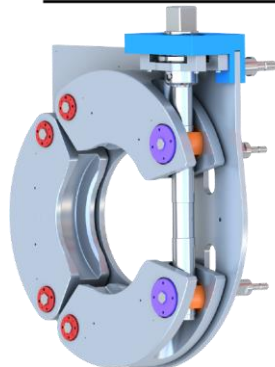


OCS 500-H Tooling baskets stroking,
seal replacement & hub cleaning tool



OCS 500-H Tooling
removable guide post

OCS 500-H SPARE PART



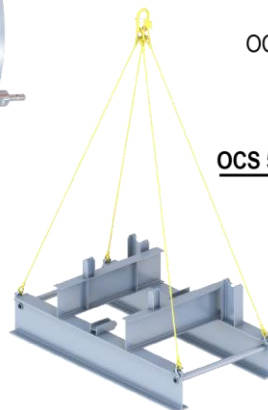
OCS 500-H Outboard
clamp assembly

OCS 500-H TEST EQUIPMENT



OCS 500 Surface test cap

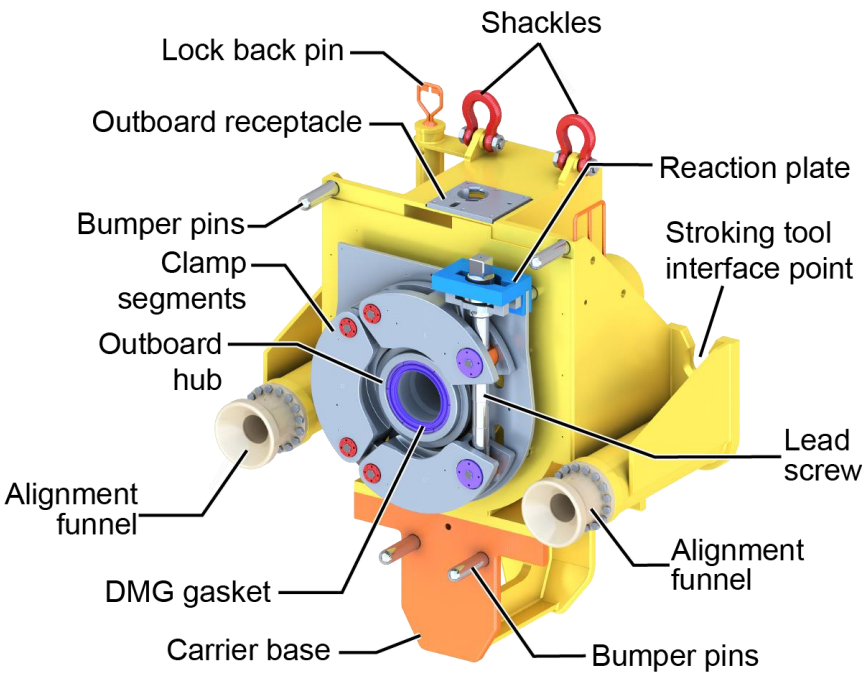
OCS 500-H MISCELLANEOUS PART

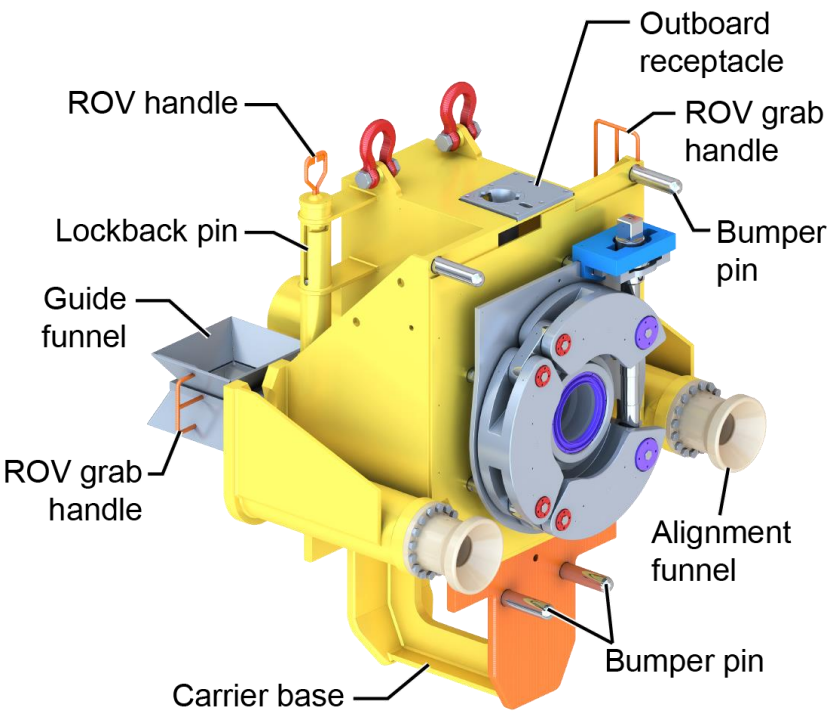


OCS 500-HP Cap & Outboard connector
transportation and storage stand

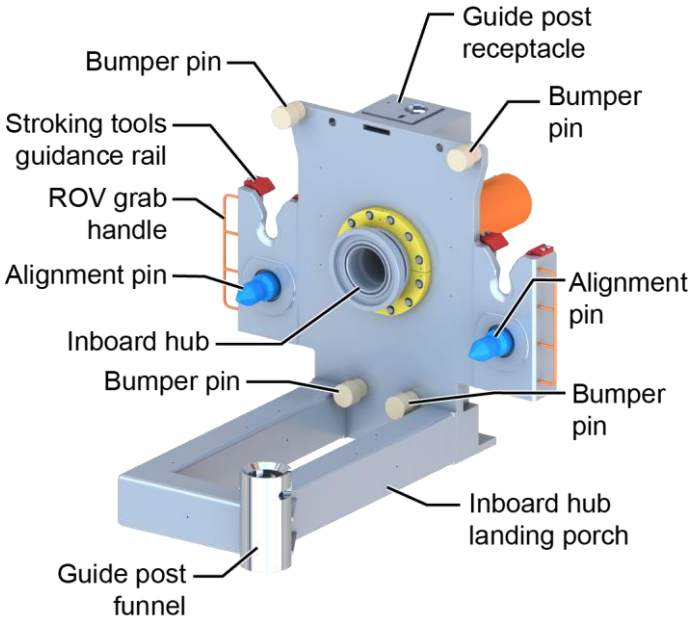
4.2.2 12"-10K OCS 500-H Systems

OCS 500-H 12"-10K Outboard Pigging Connector
PN: 2402884-01
WT: 15,080 lbs

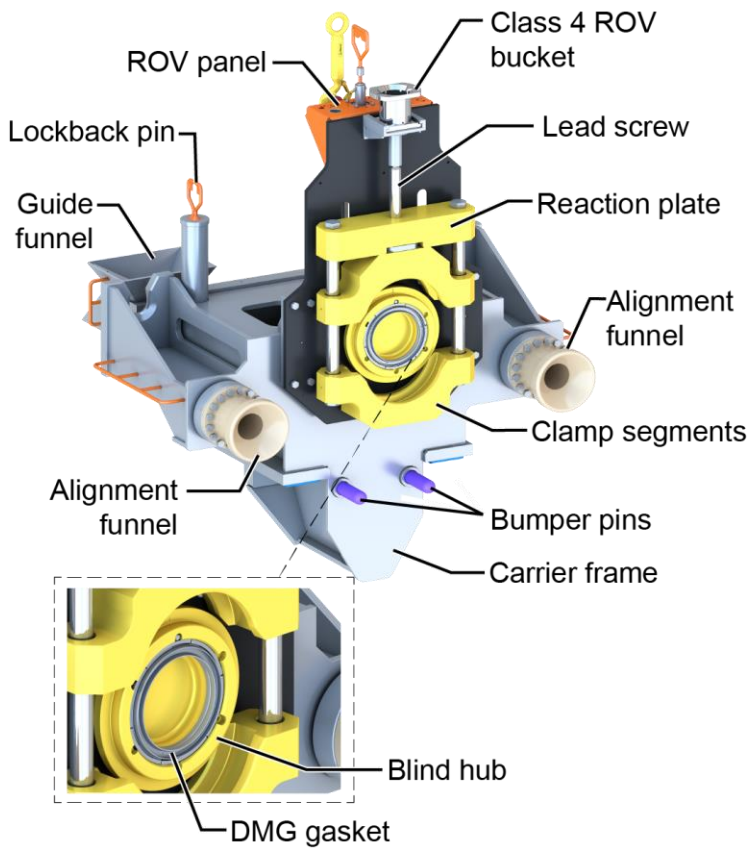


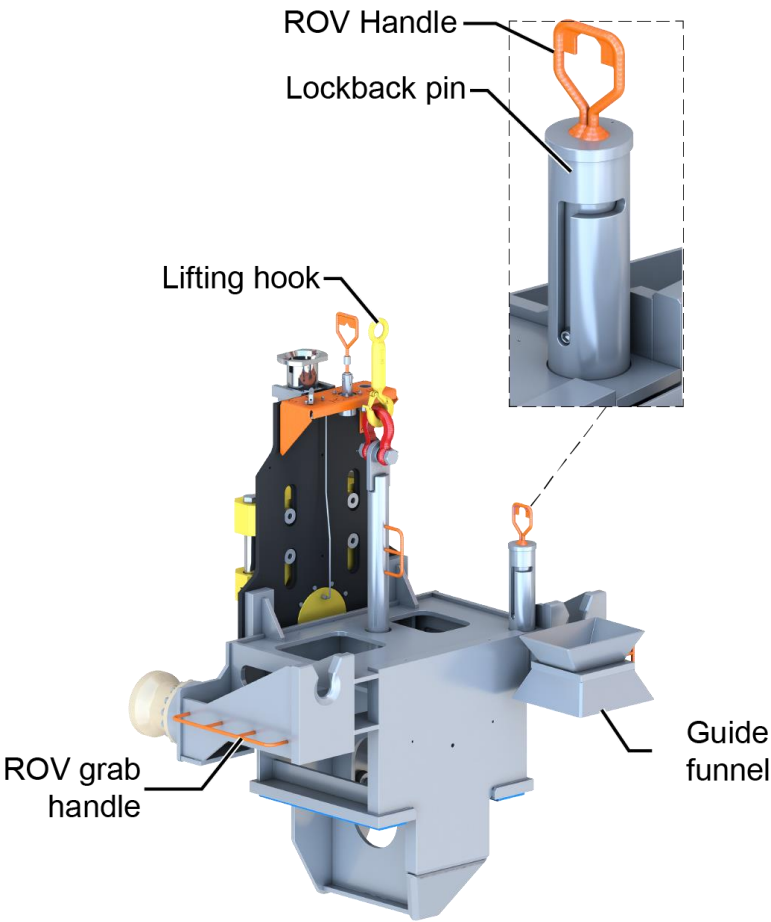


OCS 500-H 12"-10K Inboard Pigging Hub and Receiver Structure
PN: 2402885-01
WT: 11,426 lbs

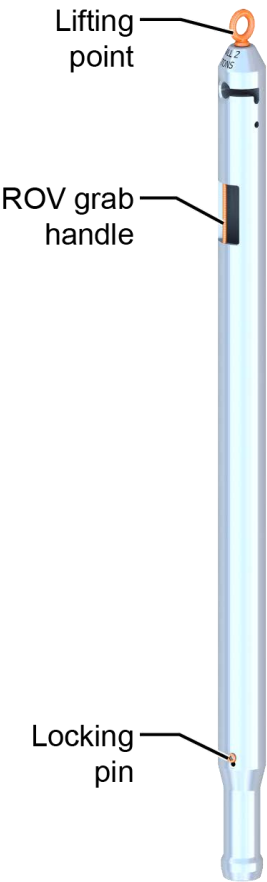


OCS 500-H 12"-10K Inboard HP Cap
PN: 2402887-01
WT: 10,701lbs

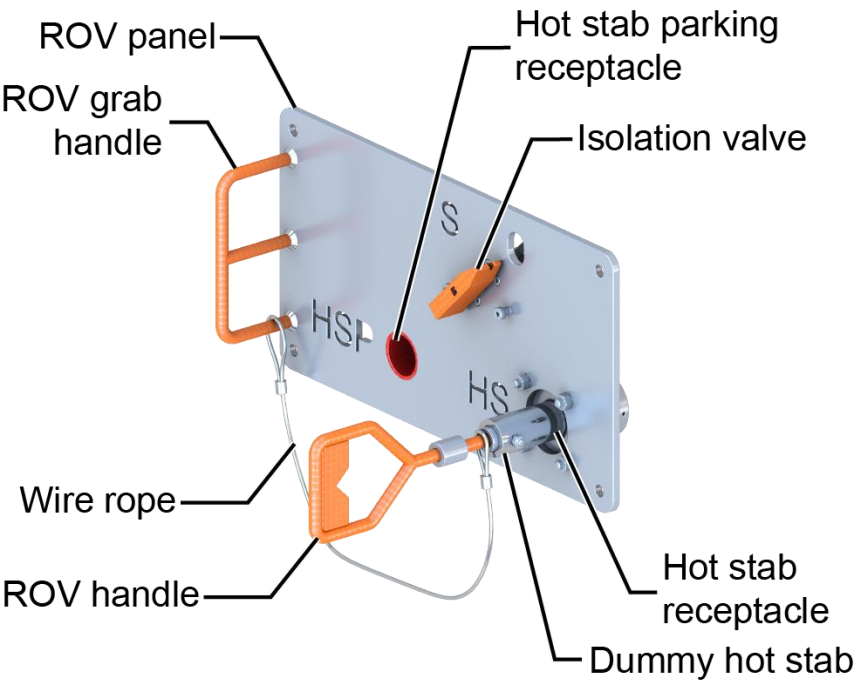




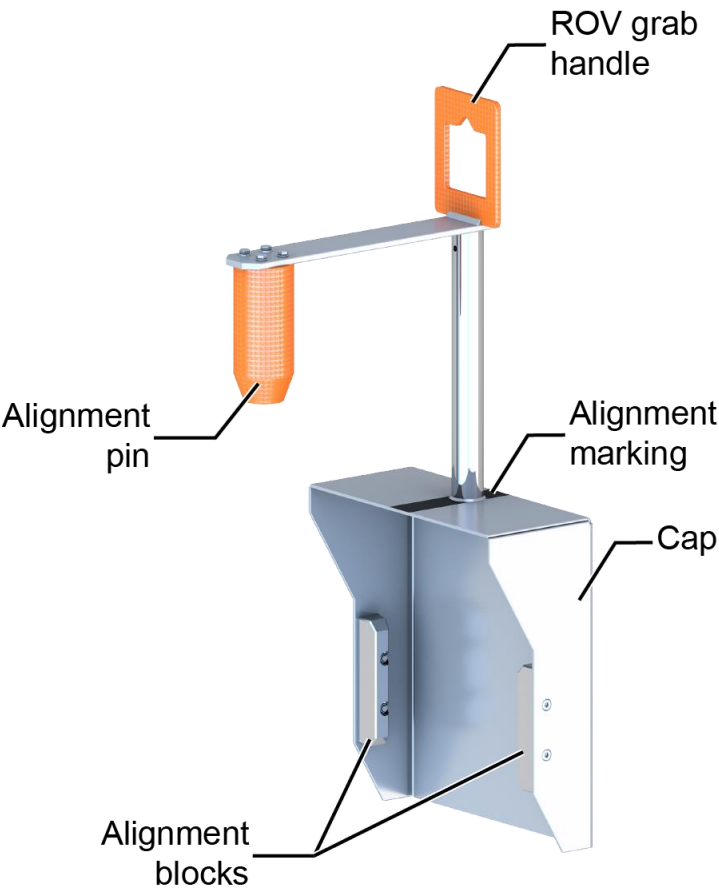
OCS 500-H Rigid Landing Porch Retrievable Guide Post
PN: 2404053-01
WT: 906 lbs



OCS 500-H Inboard ROV Panel
PN: 2182852-59
WT: 110 lbs



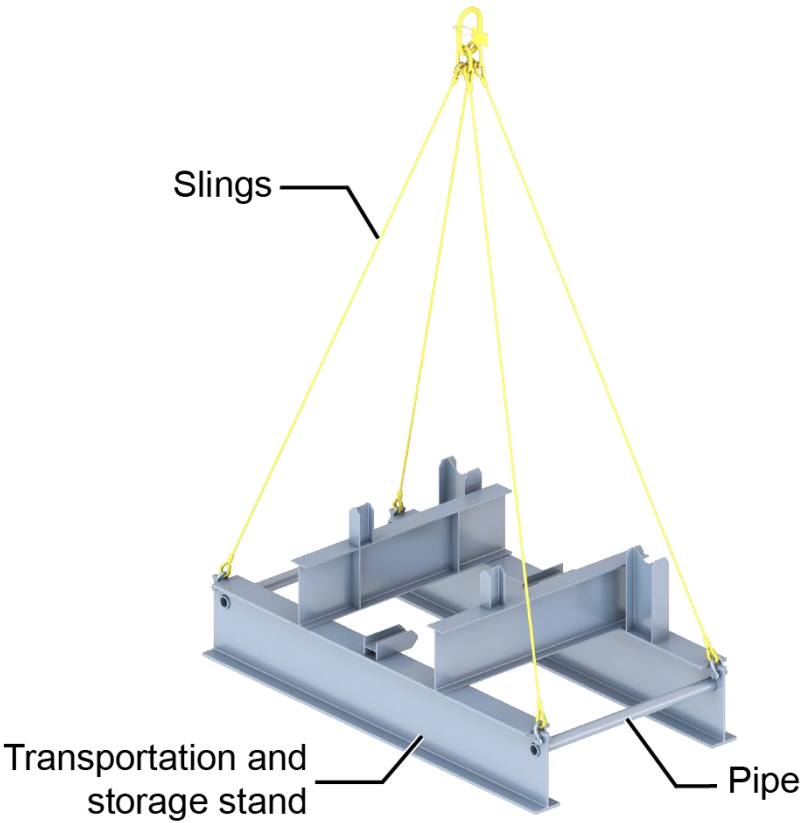
OCS 500-H Inboard Debris Cap
PN: 2603170-01
WT: 120 lbs



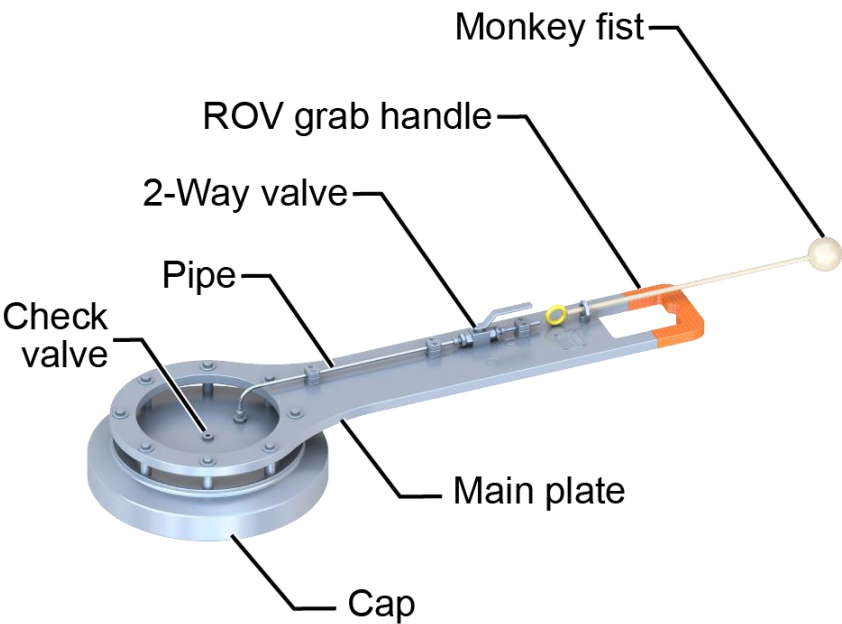
OCS 500-HP Cap & Outboard Connector Transportation & Storage
Stand

PN: 2409081-01

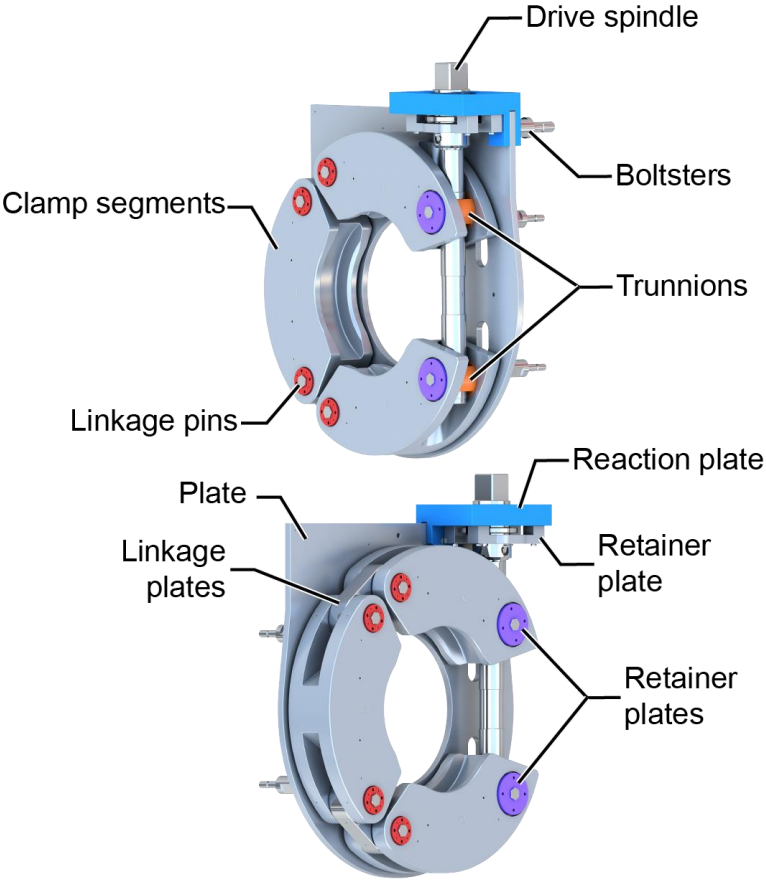
WT: 2,809 lbs



OCS 500-H Cap & Outboard Fluid Retention Cap
PN: ITM-0215199
WT: 62 lbs

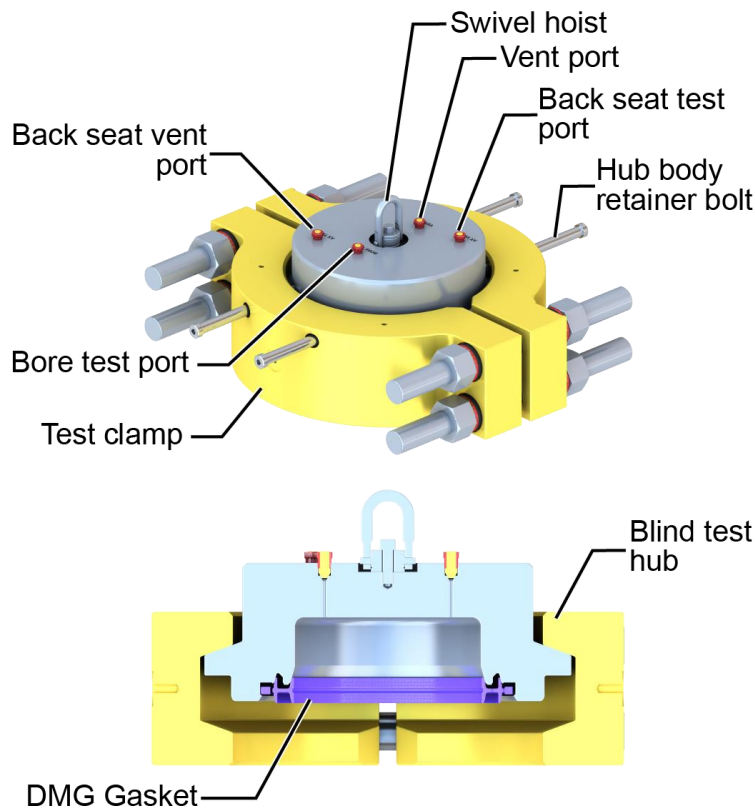


OCS 500-H Outboard Clamp Assembly
PN: 2404294-03
WT: 2,557 lbs

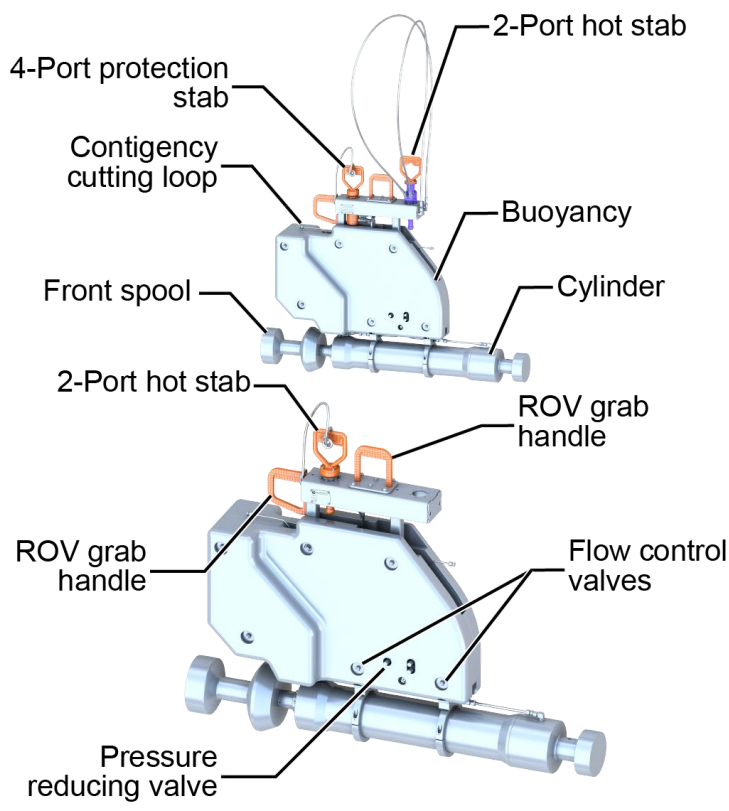


4.2.3 12"-10K OCS 500-H Systems Rental Tooling

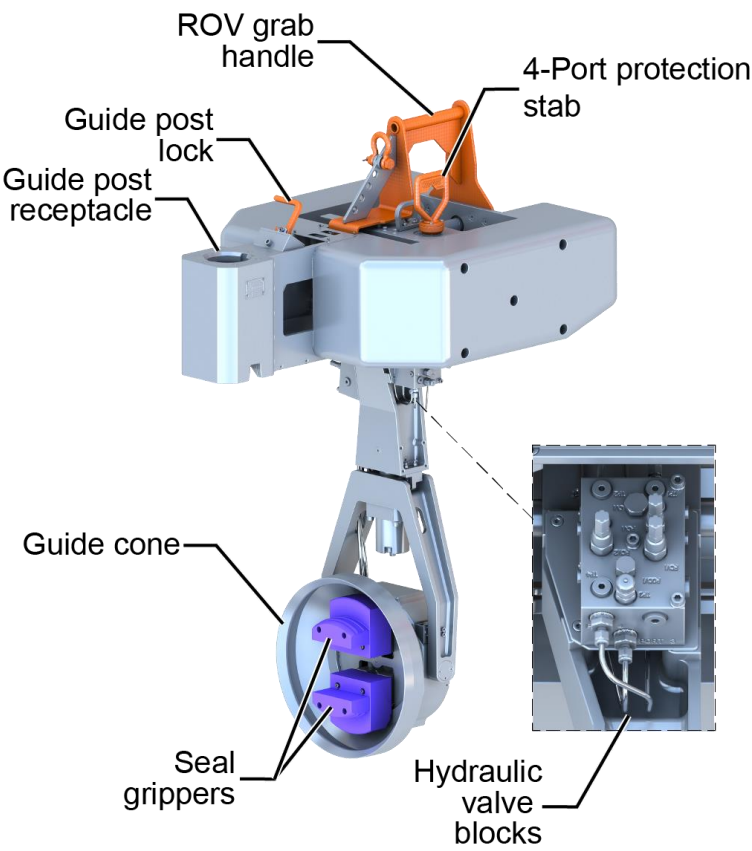
OCS 500-H Surface Test Cap
PN: 2406114-01
WT: 1,508 lbs



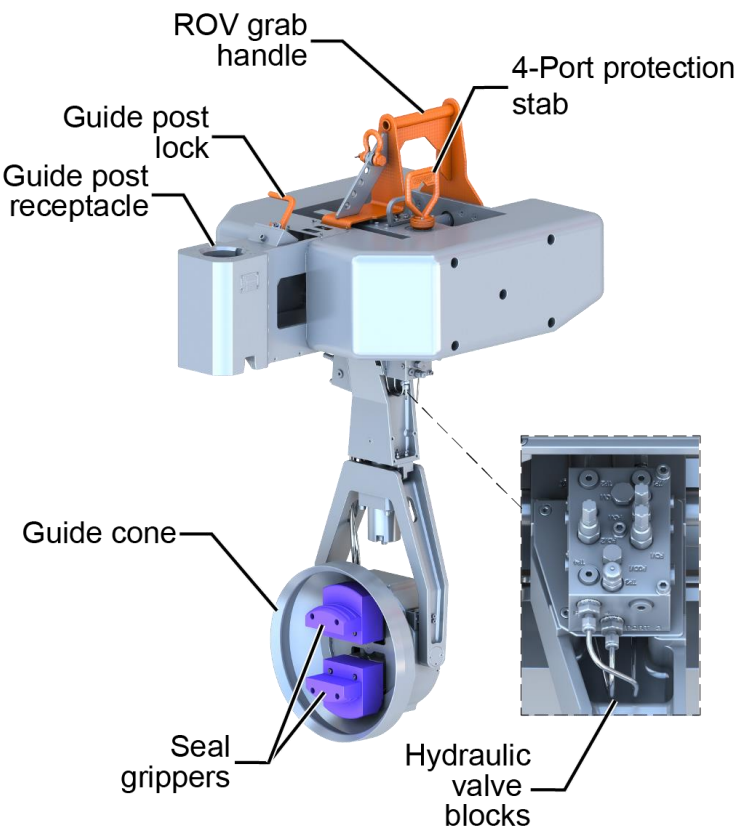
OCS 500-H Stroking Tools
PN: ITM-0195549
WT: 392 lbs



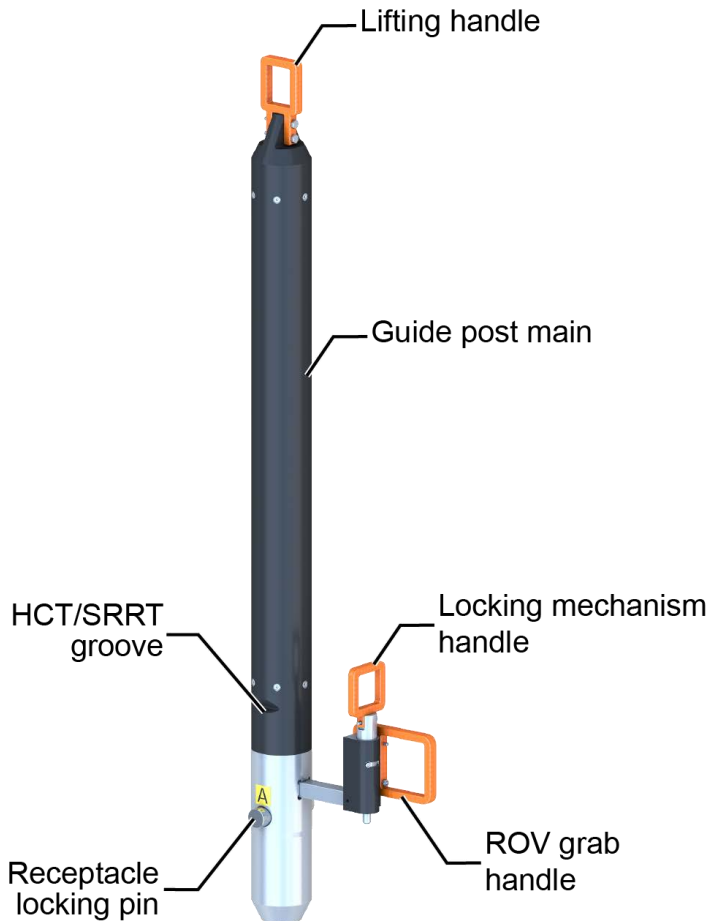
OCS 500-H Inboard/Outboard Hub Cleaning Tool
PN: ITM-0171454
WT: 231 lbs



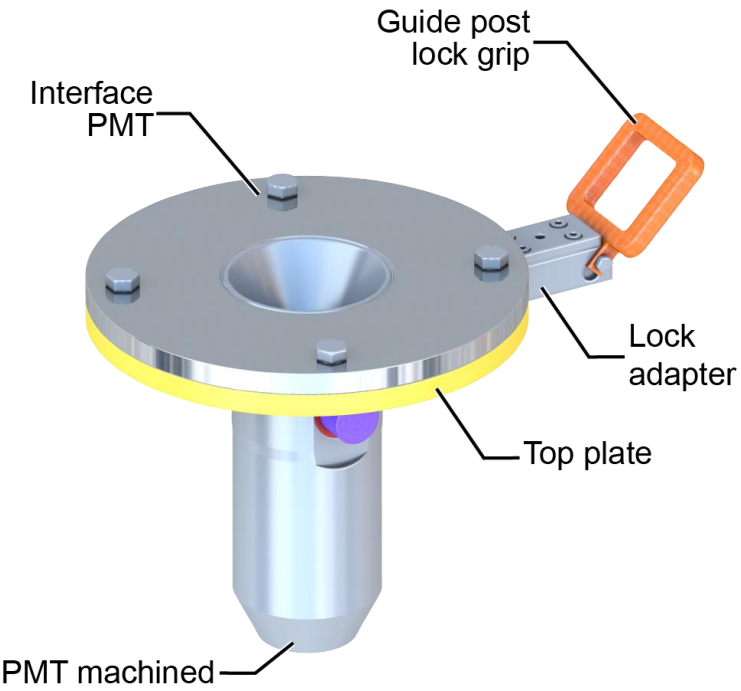
OCS 500-H Seal Replacement/Retrieval tool
PN: ITM-0171274
WT: 220 lbs



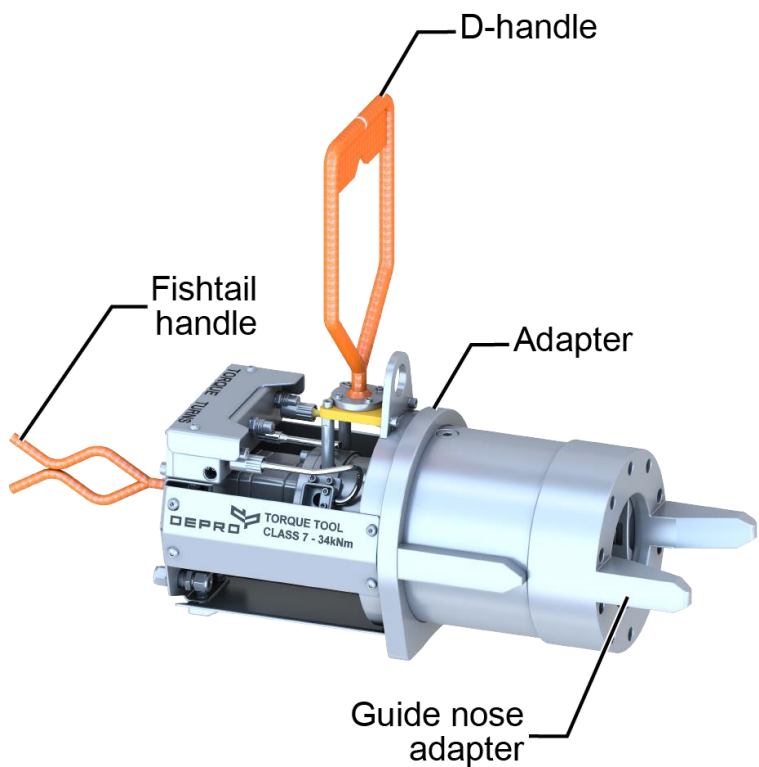
OCS 500-H Tooling Removable Guide Post
PN: ITM-0133685
WT: 35 lbs



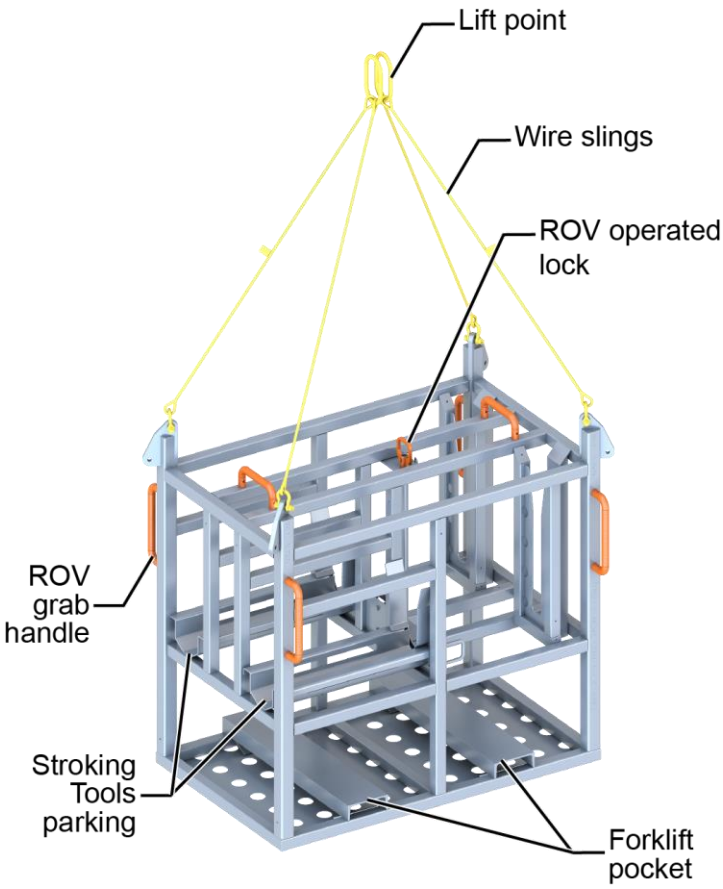
PMT Receptacle Adapter
PN: ITM-0195547
WT: 17 lbs



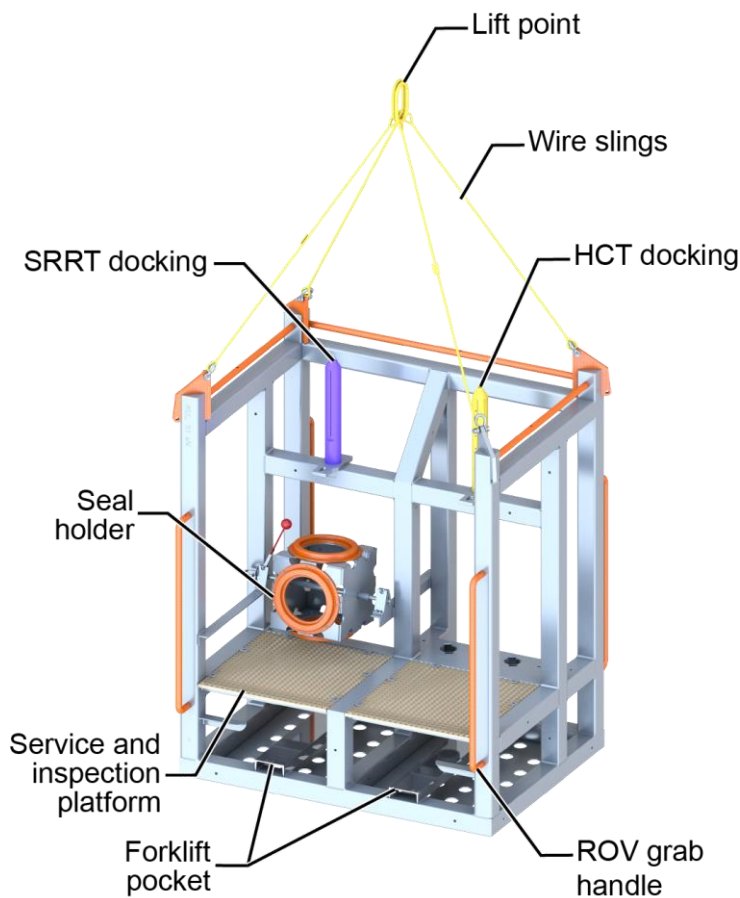
OCS Modified Class 7 Torque Tool
PN: 77001480
WT: 80 lbs



OCS 500-H Stroking Tools Tooling Basket
PN: ITM-0174593
WT: 2,565 lbs



OCS 500-H Seal Replacement and Hub Cleaning Tool Tooling Basket
PN: ITM-0195548
WT: 1.481 lbs



5. Subsea Production Control System

5.1 Topside Controls Equipment

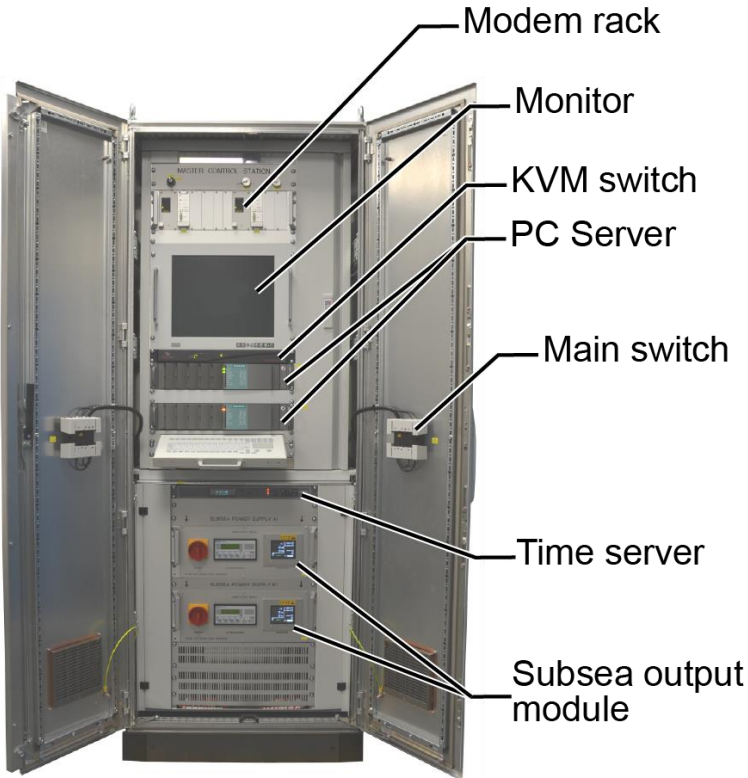
5.1.1 Subsea Power and Communication Unit (SPCU)

Subsea Power and Communication Unit (SPCU)

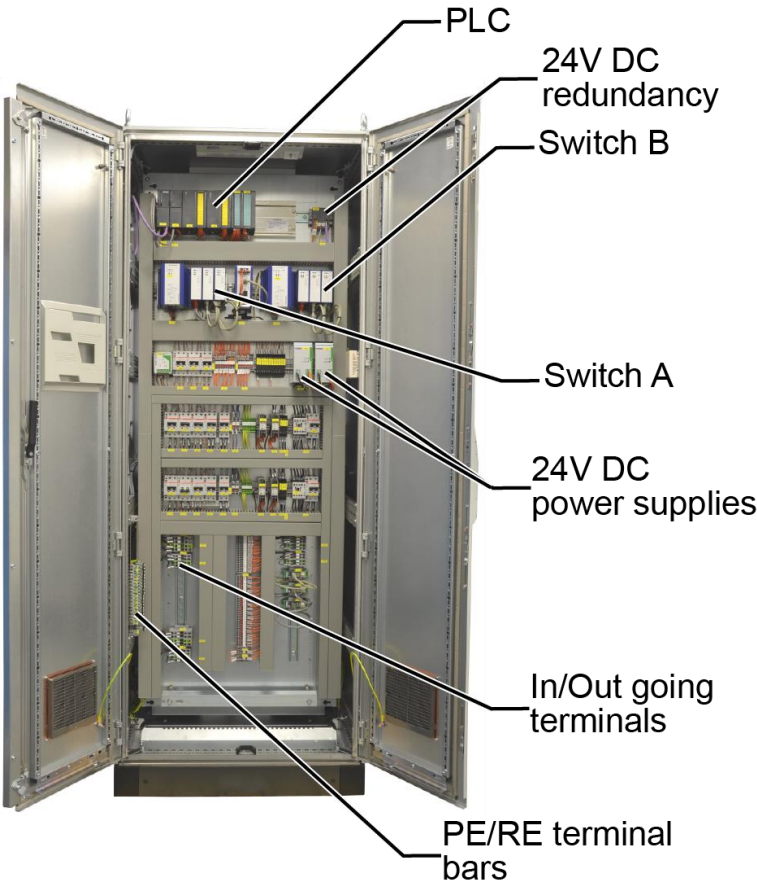
PN: 223026-52

WT: 450 kgs

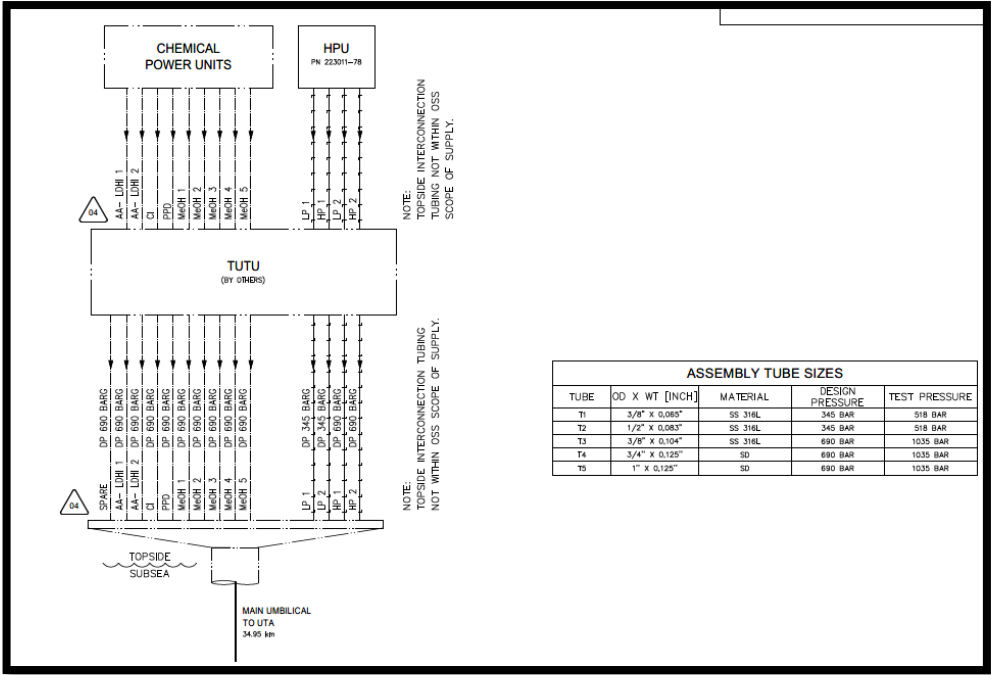
Front view



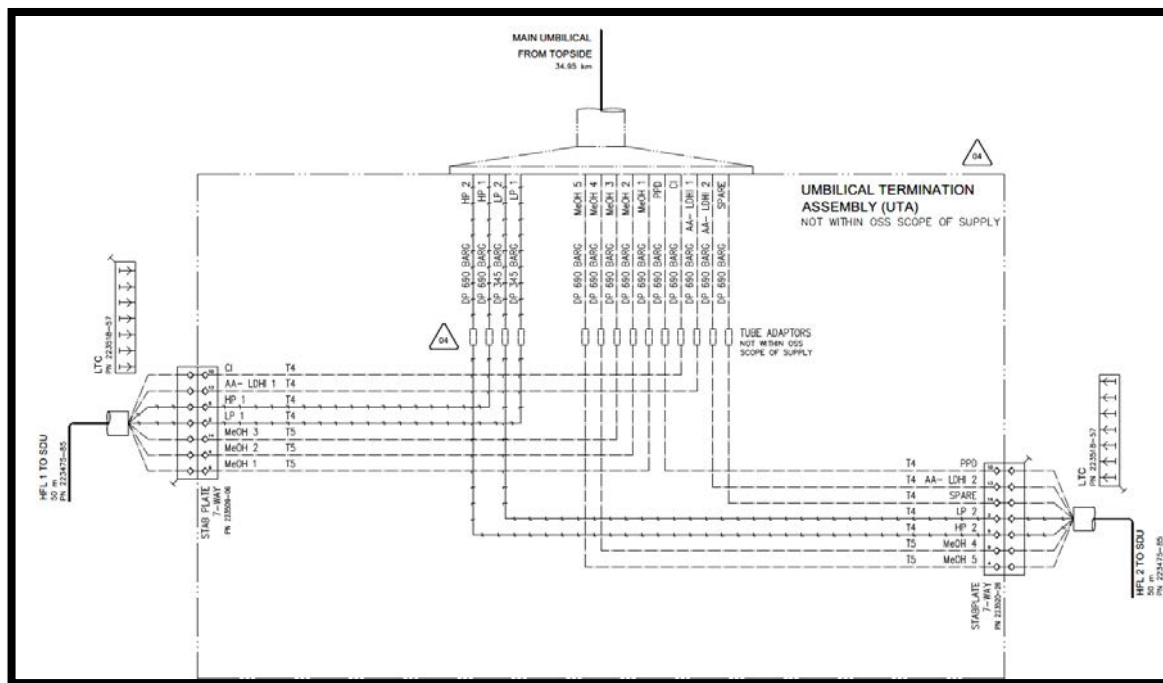
Rear view



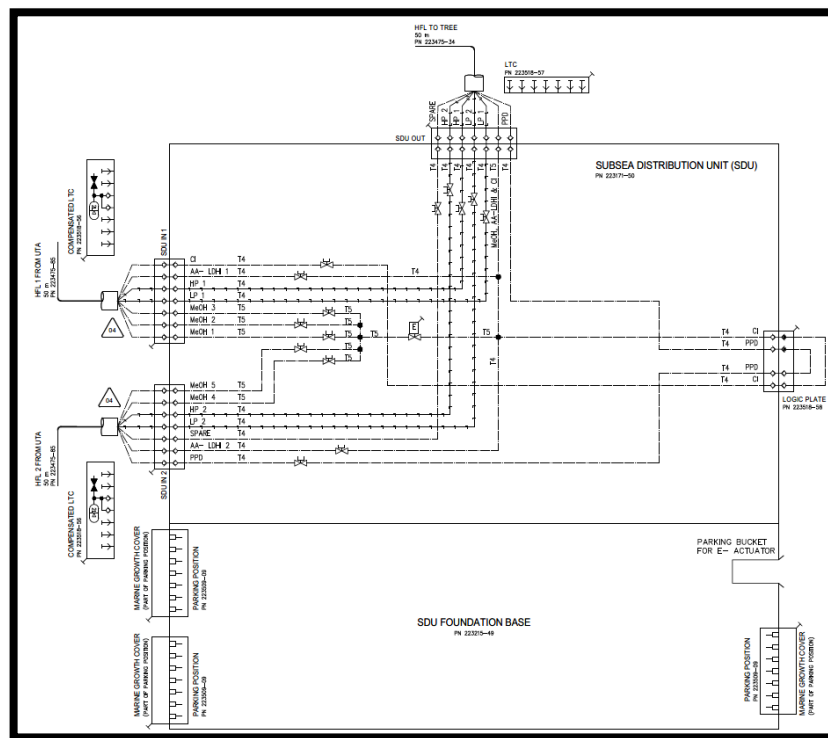
5.1.2 Systems Block Diagrams
SK-066003-19-0 3, Sheet-1 (Only detailed portion shown)



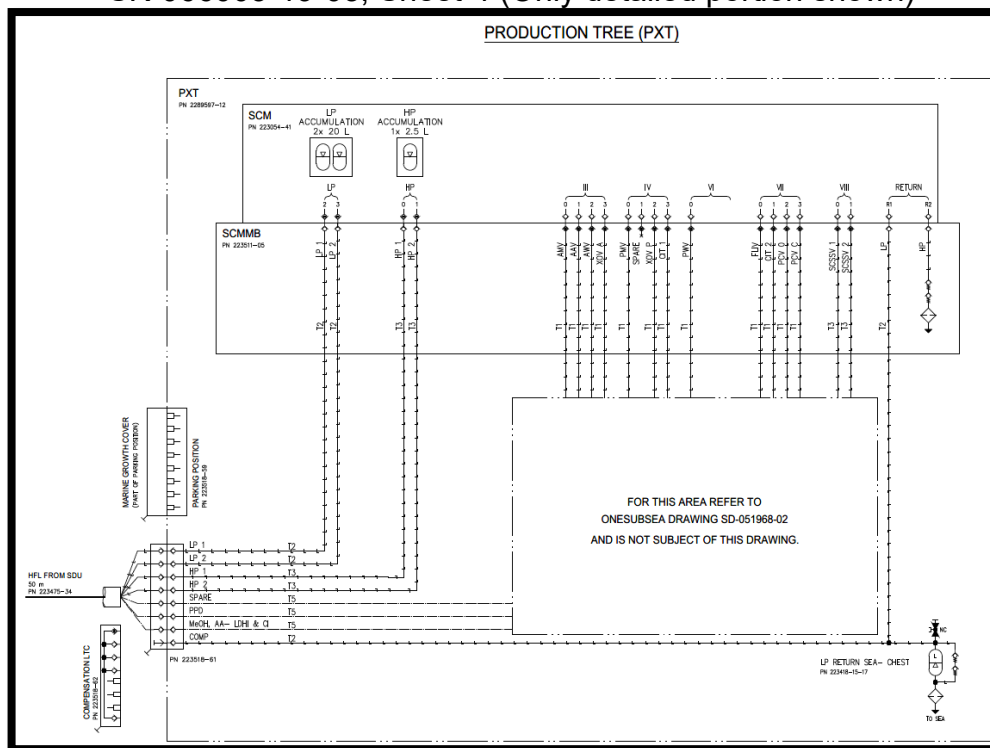
SK-066003-19-03, Sheet-2 (Only detailed portion shown)



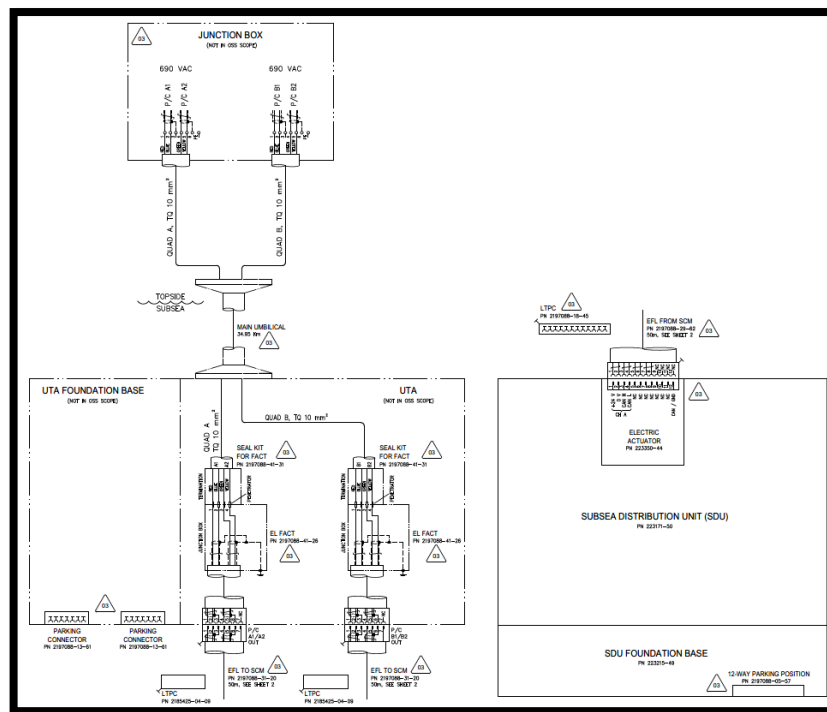
SK-066003-19-03, Sheet-3 (Only detailed portion shown)



SK-066003-19-03, Sheet-4 (Only detailed portion shown)



SK-066003-19-04, Sheet-1 (Only detailed portion shown)

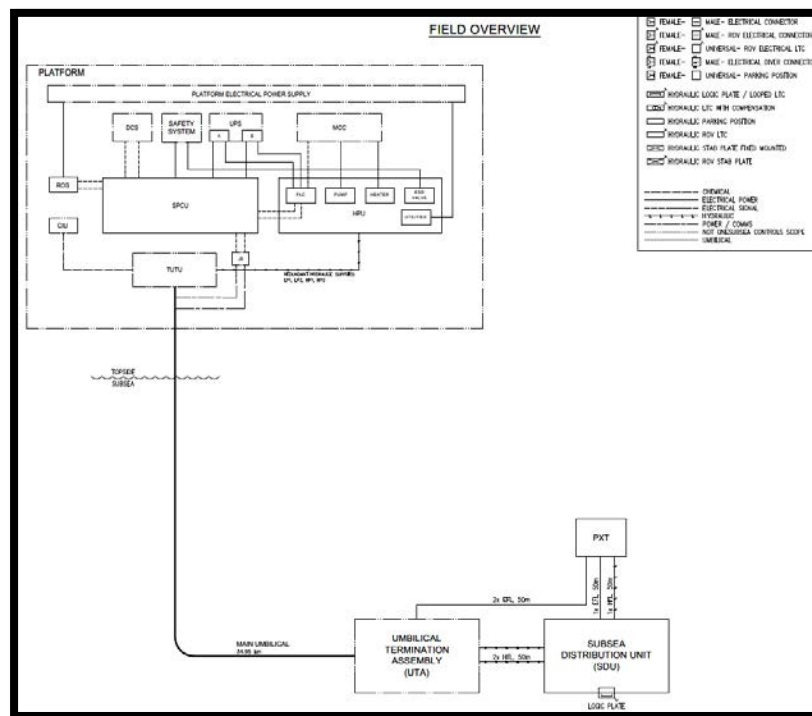


Schlumberger—Private

108



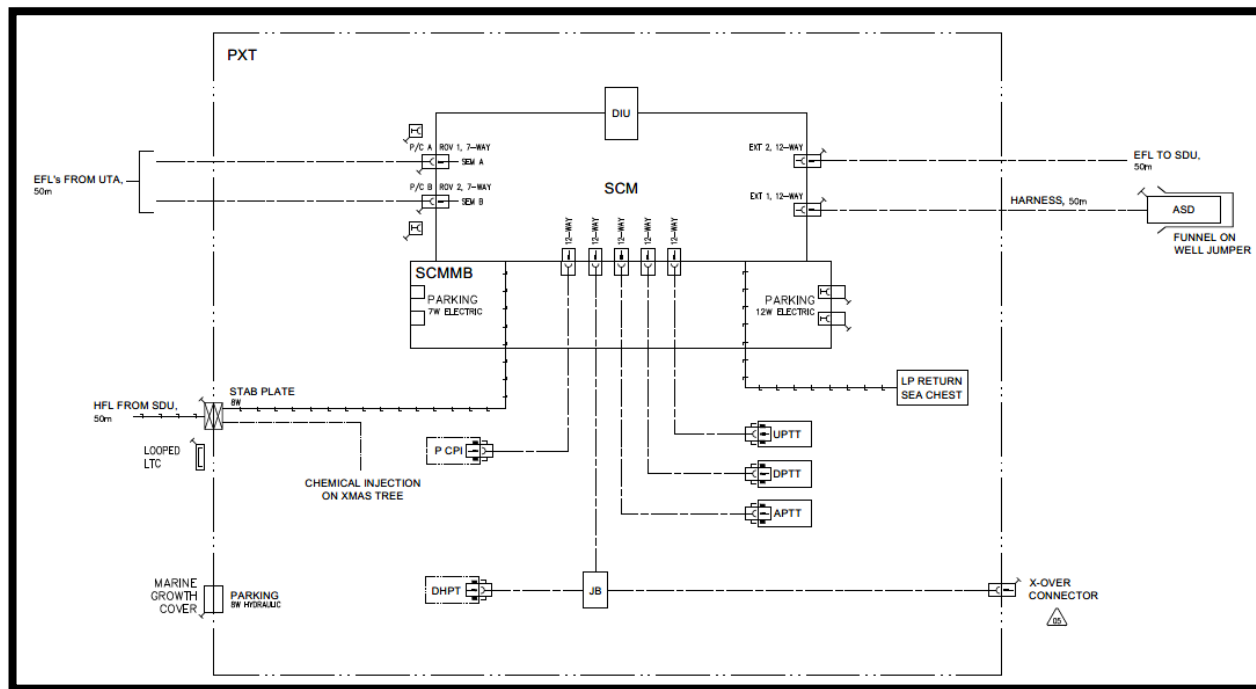
SK-066003-19-06, Sheet-1 (Only detailed portion shown)



110



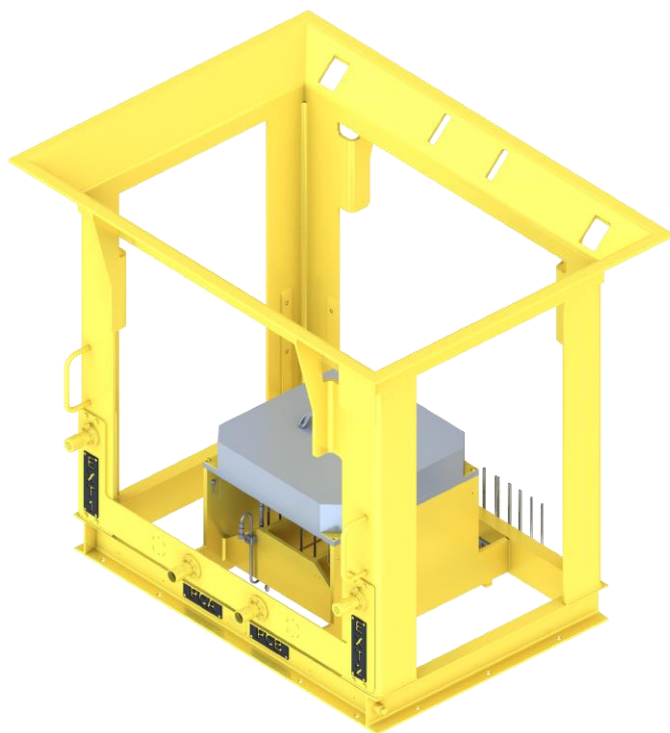
SK-066003-19-06, Sheet-3 (Only detailed portion shown)



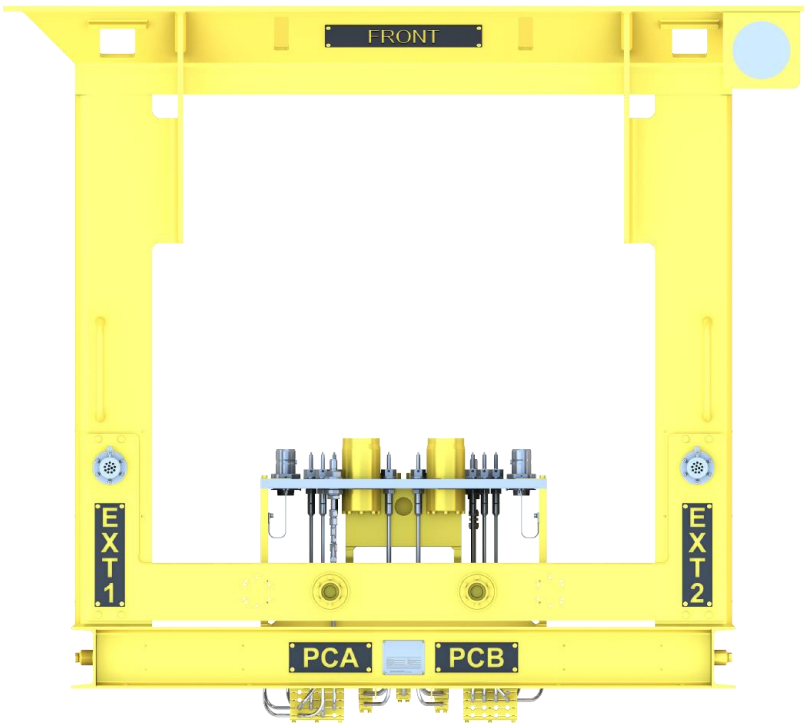
5.2 Subsea Controls Equipment

5.2.1 Tree-Mounted Controls Equipment

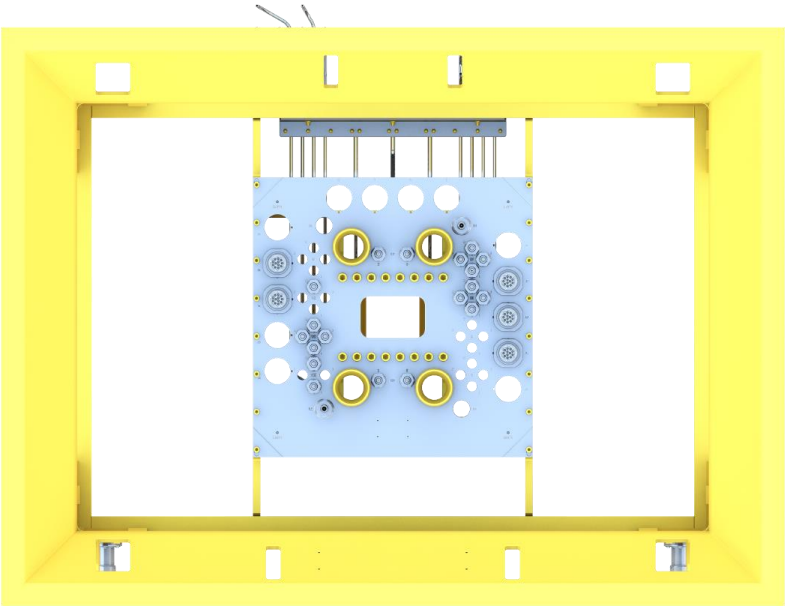
Subsea Control Module Mounting Base (SCMMB)
PN: 223511-05



SCMMB front view



SCMMB top view

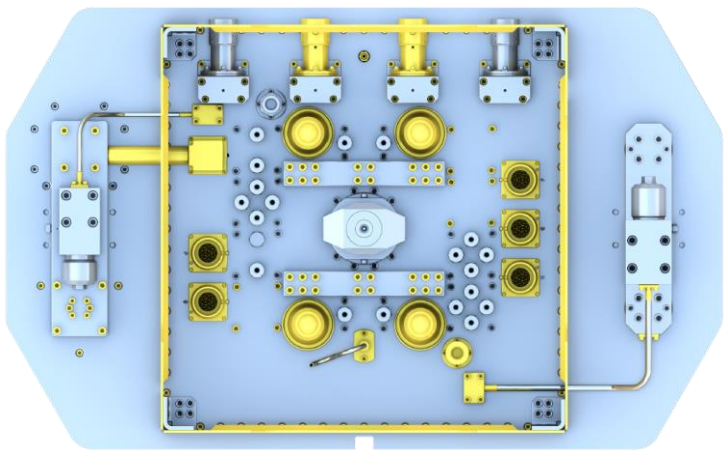


5.2.2 Subsea Control Module (SCM) incl Downhole Instrument Unit (DIU)

Subsea Control Module (SCM)
PN: 223054-41
WT: 2,000 KG



SCM bottom view



SCM front view



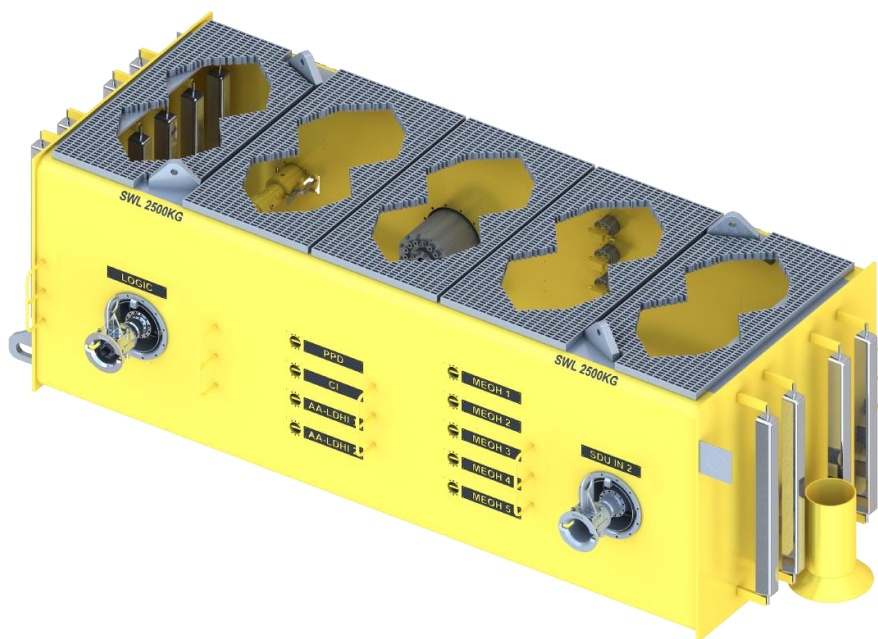
5.2.3 Subsea Distribution Equipment

Subsea Distribution Unit (SDU)

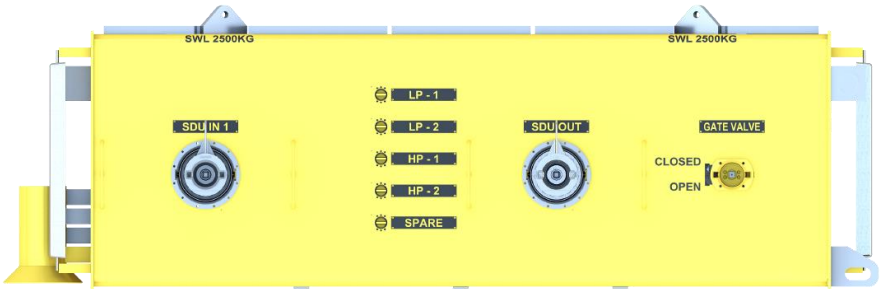
PN: 223171-50

WT: 7,000 kg

SDU ISO view



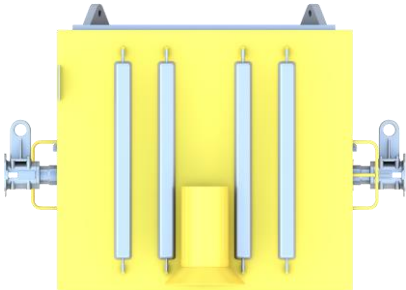
SDU front view



SDU back view



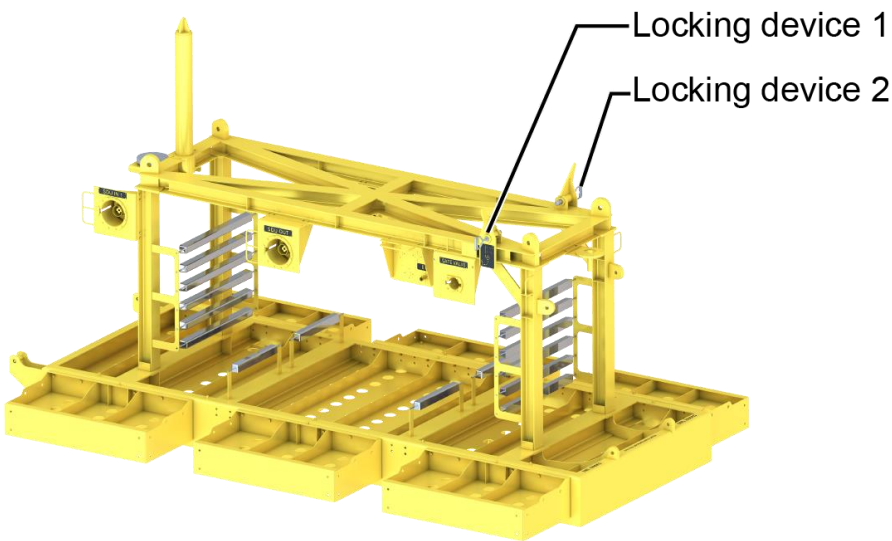
SDU side view



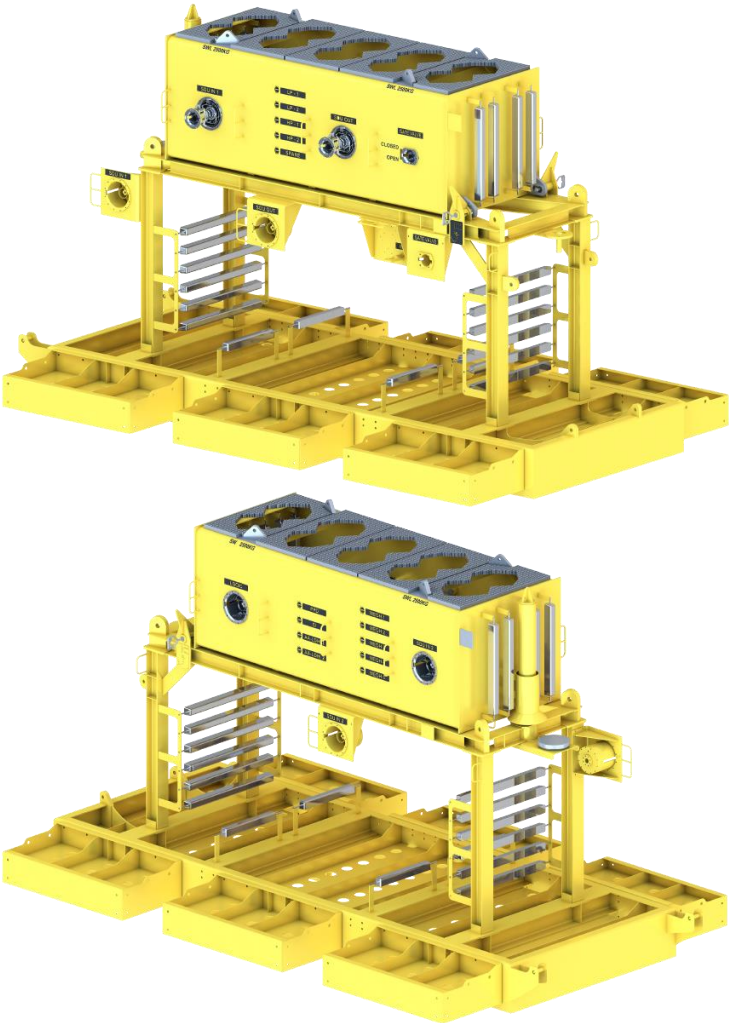
Subsea Distribution Unit Foundation Base (SDUFB)

PN: 223215-49

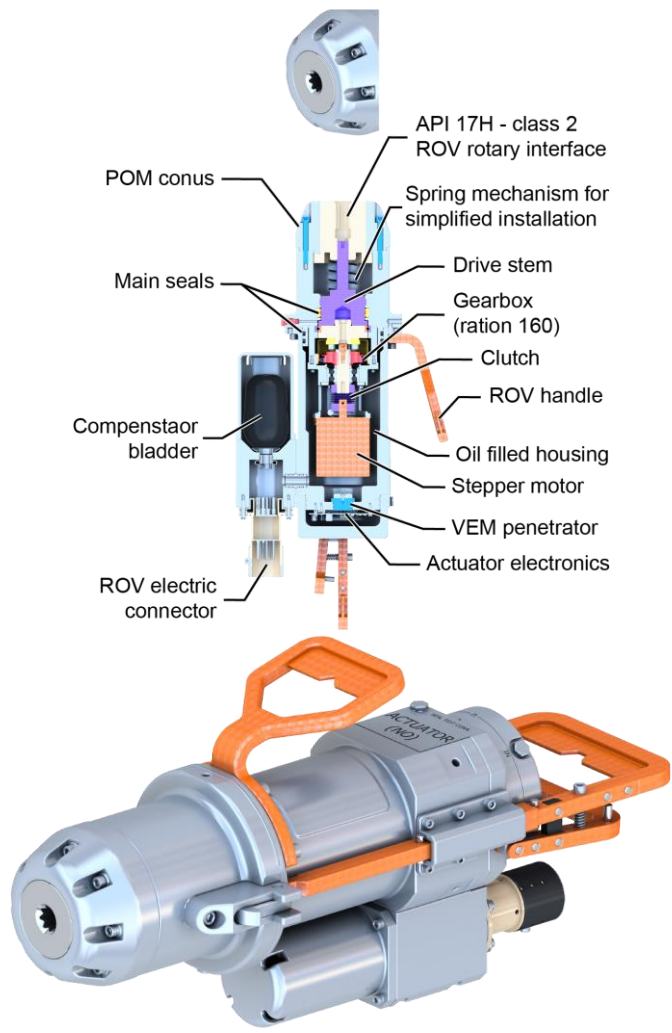
WT: 13,000 kg

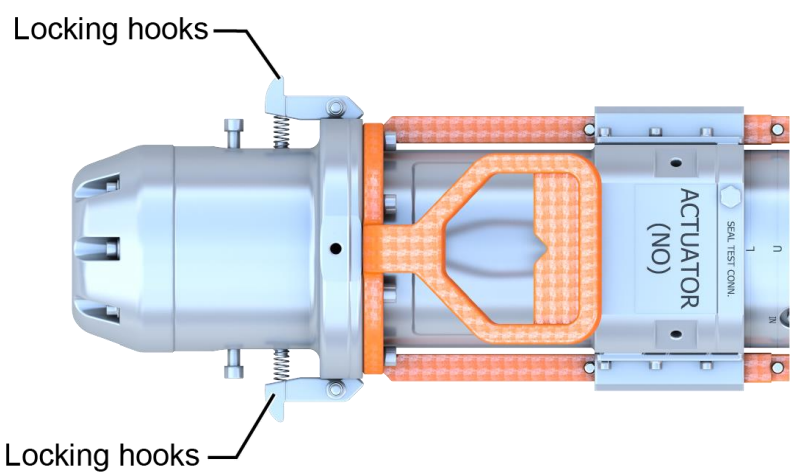
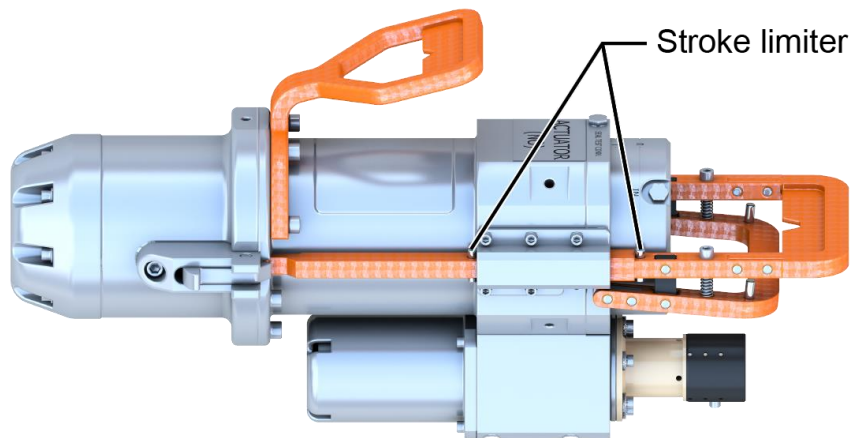


SDUFB with SDU installed



E-Actuator, 12-way, 3/4", SIIS Level 2, ROV Class 2 (4)
PN: 223350-44





Connection of Electrical actuator to Bucket

