

Upper Completions

8.625 x 3.500 Crest III Packer

Technical Unit: TU1013

REVISION: 3.0
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Table of Contents

A. INTRODUCTION.....	3
B. SPECIFICATIONS.....	3
C. PRE-JOB INSPECTION PROCEDURE.....	4
C-1 – General/Visual Inspection.....	4
C-2 – Thread Connection Inspection.....	4
C-3 - Redress Inspection.....	5
D. OPERATIONAL PROCEDURES.....	5
D-1 Setting Procedure.....	5
D-2 Releasing Procedure.....	5
E. MAINTENANCE INSTRUCTIONS.....	6
E-1 Recommended Maintenance Tools.....	6
E-2 Disassembly Instructions.....	6
E-3 Assembly Instructions.....	8
E-4 Storage & Handling Guidelines.....	9
F. DIMENSIONAL DATA.....	10
G. BILL OF MATERIALS.....	10
H. REVISION HISTORY.....	11

A. INTRODUCTION

The Crest III Packer is a weight set service packer for high pressure remedial work such as acidizing, fracturing, and squeeze cementing. It sets with minimal tubing manipulation and will withstand differential pressure from above or below.

A large integral fluid bypass allows the packer to be run quickly with minimal chance of swabbing off packing elements or dulling hold down slips. No rotation is required to retrieve the tool, and it equalizes via the fluid bypass with the first upward movement.

When set, a balance piston is actuated as pressure increases, exerting downward force on the inner mandrel, thus ensuring the integral fluid bypass is not pumped open.

Standard equipment includes carbide tipped hold down slips, lower slips and drag blocks.

FEATURES

- High pressure service grade packer
- Large integral fluid bypass
- Straight pull to release

J-SLOT CONFIGURATIONS

- Right Hand Auto
- Left Hand Auto
- Right Hand Manual
- Left Hand Manual

B. SPECIFICATIONS

CASING		DIMENSIONAL SPECIFICATION				
SIZE	WEIGHT	MAX OD		NOMINAL ID		THREAD CONNECTION
[in]	[lbs./ft]	[in]	[mm]	[in]	[mm]	[Box x Pin]
8-5/8	24 – 32	7.735	196.74	3.000	76.20	3-1/2 EUE
	32 – 40	7.562	192.07	3.000	76.20	
	40 – 49	7.344	186.54	3.000	76.20	



OPERATIONAL SPECIFICATION	
MAXIMUM TENSILE THROUGH TOOL [lbs.]	263,000
MAXIMUM HANGING WEIGHT ON TOOL [lbs.]	144,000
MAXIMUM TORQUE THROUGH TOOL [ft-lbs.]	2,900
FLUID BYPASS AREA [in ²]	2.28
BALANCED PISTON AFFECTED AREA [in ²]	11.50
PACK-OFF SET-DOWN WEIGHT [lbs.]	16,000

ELASTOMER GUIDE*	
DUROMETER	TEMPERATURE* [°F]
80-60-80	40-200
80-70-80	40-225
90-70-90	40-250
90-80-90	125-250

*With standard Nitrile elastomers. For high-temp elastomers available upon request.

C. PRE-JOB INSPECTION PROCEDURE

Below is a Pre-Job Inspection procedure recommended by Innovex, to be performed prior to the field deployment of Crest III Service Packers.

C-1 – General/Visual Inspection

1. Prior to the first deployment after receiving the packer, it is recommended to perform a full disassembly and assembly in order to assess the condition of every component. Refer to the instructions in the following sections in order to properly disassemble and assemble the packer.
2. Inspect general condition of the packer: Ensure that there are no significant external dents, bends, or buckling of components. Pay special attention to internal sealing surfaces, no damage to seal surfaces is acceptable.
3. Inspect hardware: Ensure that there are no missing set screws, shear screws, or other relevant hardware, as per the Bill of Materials.
4. If any damaged or missing components are observed during the above steps, replace components accordingly by contacting your Innovex sales representative.
5. Fully assemble the packer.

C-2 – Thread Connection Inspection

1. Inspect thread connections: Ensure that thread protectors are installed. Remove thread protectors and visually inspect thread connections ensuring that there is no damage. Replace thread protectors.

NOTE: Innovex provides Upper Completions packers with internal tool connections made-up hand tight, with labelling on the tool accordingly.

2. Apply the required torque to make-up the internal tool connections, accordingly, refer to the INTERNAL TOOL THREAD CONNECTION TORQUE GUIDE below.

C-3 - Redress Inspection

1. Completely disassemble the packer. Refer to the instructions in the following section in order to properly disassemble and assemble the packer.
2. Clean components, discard and replace all redress components. Redress components include internal seals/O-rings, packer elements, shear screws, etc.
3. Inspect components to ensure that they are in proper working condition. Replace worn or damaged components as necessary.
4. Dimensionally inspect gauge components and ensure that their OD is not below 0.020" of the Maximum OD of the packer.

When making-up internal tool thread connections, refer to the below guide for the recommended make-up torque values:

INTERNAL TOOL THREAD CONNECTION TORQUE GUIDE	
STUB ACME THREADS [ft-lbs.]	
	700

D. OPERATIONAL PROCEDURES

D-1 Setting Procedure

1. Run packer to setting depth. The fluid bypass will remain open while running, to minimize swabbing of packing elements or dulling of hold down slips.
2. Pick up tubing and rotate (right or left hand, depending on J-slot configuration) 1/2 turn at the packer. Slack-off weight to close the bypass, set the slips, and pack-off the elements.

NOTE: Refer to the Operational Specification table for recommended pack-off set-down weights.

3. At this time, pressure operations can be performed above or below the packer.
4. Tubing pressure will activate the hold down slips to prevent upward movement, and the balance piston will hold the mandrel down and the bypass closed.

D-2 Releasing Procedure

1. To release the Crest Packer, simply pick up the tubing string slowly. The bypass will open immediately, causing the tubing and annulus pressures to begin to equalize, and releasing the hold down slips.
2. The packer can now be pulled from the well or re-set in another location.
3. With automatic J-slots, the packer can now be moved downhole.
4. With manual J-slots, the packer will have to be re-engaged by rotating 1/2 turn in the opposite direction from that used to set the tool.

E. MAINTENANCE INSTRUCTIONS

CAUTION:

- Wear all required Personal Protective Equipment during maintenance procedures.
- Ensure that all maintenance tools are in good working condition.
- Ensure that workplace is clean and free of hazards.
- Use proper lifting techniques and do not use unnecessary force during tool maintenance procedure.

NOTE:

- Internal seal surfaces and seals should be greased prior to assembly and carefully installed onto mating components.
- Thread lubricant should be applied on all STUB ACME internal tool thread connections.
- Prior to installing packing elements, apply grease to the entire external surface of the Packing Sleeve.
- Do not use wrenches on seal surfaces or critical dynamic sections of the tool. Remove any wrench marks using a file after assembly.

E-1 Recommended Maintenance Tools

Impact Resistant Gloves
Safety Glasses
Floor-Mounted Vise
Pipe Wrenches X 2
Chain Wrenches X 2
Adjustable Wrench

Screwdrivers
O-Ring Pick
Assembly Dowel (Steel) 1/2" X 12" Long (X2)
Drag Block Assembly Tool (PN TF-70HALO)
Hold-Down Slip Removal Tool

E-2 Disassembly Instructions

NOTE: The following steps will break packer into sub-assemblies, with sub-sections on how to fully disassemble the sub-assemblies.

NOTE: Left-hand threads are indicated on the assembly drawing.

1. With top sub in vise, un-jay packer and slide control body up as far as possible. Remove all thread lock set screws (3). While backing-up on top end of mandrel (4), remove bottom sub (38).

2. With Top Sub (1) in vise, unscrew control body nut (38) from control body (33), slide off control lug retainer (35), and remove two set screws (36) from control body.
3. Remove control lugs (37)
4. Remove two set screws (36) from bottom sub (39), then unscrew bottom sub from mandrel (2) and set aside.
5. Unscrew control body cap (26) from control body and slide control body off bottom end of tool. Lower slips (28) will fall inside control body at this time.
6. Unscrew cone (27) from element retainer (25) and remove. Using dowels/bars placed through holes in element retainer and slots in packing sleeve (24), unscrew packing sleeve from hold down receptacle and slide off packing elements (22), element spacers (23) and element retainer.
7. Break mandrel out of top sub then, **with balance piston housing (9) in vise**, break off hold down receptacle and slide off bottom end of mandrel.
8. Unscrew seal retainer cap (3) from seal retainer (6) and remove. Then remove split ring (4), seal retainer and balance piston housing. Remove balance piston from housing.
9. Unscrew top gage (13) and upper element gage (21) (**left hand thread**) from hold down receptacle, then slide off both strap retainers (14).
10. Remove hold down screws (17), then hold down straps (16), hold down springs (19) and hold down slips (15) from hold down receptacle.
11. Slide drag block retainer (34) from control body, freeing drag blocks (31) and drag block springs (32).
12. Unscrew cone (28) from element retainer (26) and slide the **Slip/Drag Block Subassembly** off bottom end of mandrel and set aside.

13. Disassembling the Slip/Drag Block Subassembly:

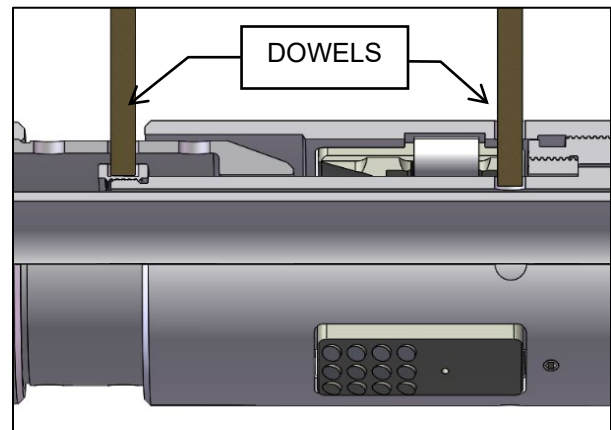
13.1. Align holes in cone with holes in recovery sleeve cap (29) and insert Dowel. Align holes in slip housing (3) between slips, with holes in recovery sleeve (39) and insert another Dowel. Using Dowels, unscrew recovery sleeve cap from recovery sleeve.

13.2. Slide cone out of top end of slip housing.

13.3. Slide recovery sleeve out of bottom end of control body. Remove lower slips (35) and slip springs (33) (and slip spring screws if applicable).

13.4. Unscrew slip housing from control body (LEFT HAND THREAD).

13.5. Use Drag Block Assembly Tool to compress drag block springs (36), then remove drag block retainer (34). Slowly loosen Drag Block Assembly Tool and remove drag blocks (35) and drag block springs.



14. Align holes in element retainer with holes in packing mandrel (27) and insert Dowel. While backing-up on hold down receptacle (15), use Dowel to unscrew packing mandrel from hold down receptacle. Slide the **Packing Subassembly** off bottom end of mandrel and set aside.

15. Disassembling the Packing Subassembly:

15.1. Slide element retainer, packing elements (23), and element spacers (24) off the top end of packing mandrel.

15.2. Unscrew lower element gage (25) from element retainer.

16. Break mandrel out of top sub, then unscrew seal retainer cap (5) from seal retainer (9). Slide seal retainer cap, split ring (6), and seal retainer off top end of mandrel.
17. With balance piston housing (10) in vise, unscrew hold down receptacle from balance piston housing. Slide the **Hold Down Subassembly** off bottom end of mandrel and set aside.
- 18. Disassembling the Hold Down Subassembly:**
 - 18.1. Unscrew hold down screws (18) and remove hold down straps (20).
 - 18.2. Remove hold down springs (19).
 - 18.3. Use Hold Down Slip Removal Tool to remove hold down slips (16).
 - 18.4. Unscrew piston gage (14) and upper element gage (22) (LEFT HAND THREAD) from hold down receptacle.
19. Slide balance piston housing off top end of mandrel and remove balance piston (12) from inside

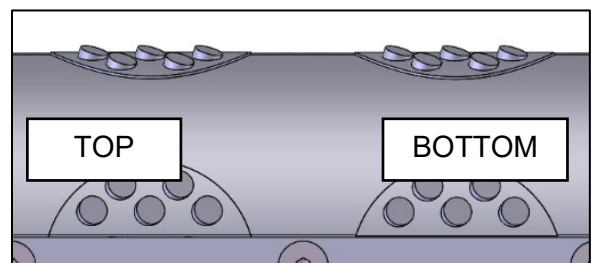
E-3 Assembly Instructions

CAUTION: The top end of the mandrel (4) must be filed smooth above the split ring groove before beginning. Failure to do so can result in damage to the Bypass Seal (8). The short length below the groove is a seal surface.

1. Assemble balance piston (12) with O-ring (11) installed, into balance piston housing (10) and slide onto upper end of mandrel (4).
2. Install bypass seal (8) and O-ring (7) into seal retainer (9), slide onto mandrel just beyond groove at top end, then install split ring (6) into groove and screw seal retainer cap (5) onto seal retainer. Screw top (1), with O-ring (2) onto mandrel and clamp in vise.
- 3. Assembling the Hold Down Subassembly:**
 - 3.1. Install hold down slips (16), with O-rings (17) installed, into hold down receptacle (15).
 - 3.2. Install hold down springs (19) into counterbores in hold down slips and retain with hold down straps (20) and hold down screws (18).

CAUTION: Ensure that carbide buttons in hold down slips are facing the correct direction.

- 3.3. Screw piston gage (14) and upper element gage (22) (left hand thread) onto receptacle and install O-rings (13 & 21) inside.



4. Assembling the Packing Subassembly:

- 4.1. Slide the following items on the top end of packing mandrel (27): element retainer (26), packing elements (23) and element spacers (24).
- 4.2. Screw **Packing Subassembly** from step above into bottom end of hold down receptacle, then slide this assembly onto lower end of mandrel and screw into balance piston housing.

CAUTION: Be careful to tighten this thread with the balance piston housing in vise, not the mandrel.

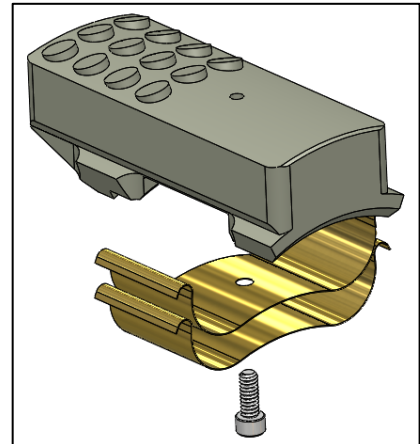
5. Assembling the Slip/Drag Block Subassembly:

- 5.1. Assemble drag blocks (35) and drag block springs (36) into control body (37) and retain with drag block retainer (34). Screw slip housing (30) onto control body (left hand thread).

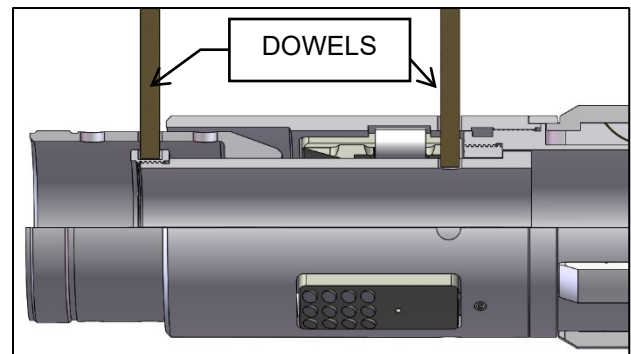
- 5.2. Slide recovery sleeve (39) through bottom of control body part way and install lower slips (31), with slip springs (33) installed, into slip housing windows. Then push recovery sleeve in to stop.

CAUTION: Ensure that Slip Springs are in the correct orientation.

- 5.3. Slide cone (28) into top end of control body and over recovery sleeve, then screw recovery sleeve cap (29) onto recovery sleeve. Tighten this thread now, with Dowel inserted through holes in cone aligned with holes in recovery sleeve cap, and another Dowel through holes in control body (between slips) aligned with holes in recovery sleeve.



6. Slide **Slip/Drag Block Subassembly** over lower end of mandrel. Screw cone into element retainer, then bottom sub (38), with O-ring (2) installed, onto bottom end of mandrel.
7. Install thread lock set screws (3) in top sub, slip housing and bottom sub, then tighten all threads. To tighten packing mandrel to hold down receptacle, insert Dowel through holes in element retainer aligned with holes in packing mandrel.



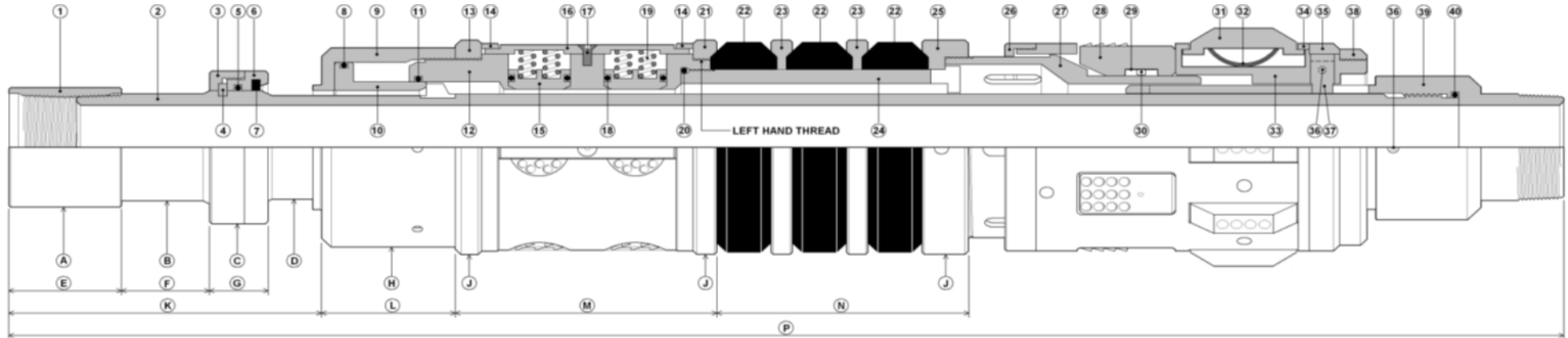
E-4 Storage & Handling Guidelines

All Upper Completions products from Innovex should at all times be stored in a manner which prevents exposure to natural elements: wind, water, excessive temperatures (hot or cold), and stored in a clean environment to prevent contamination by elements which might adversely affect proper function (i.e. sand, loose soil, dust).

- Storage temperature should remain below 80°F for any packers with elastomeric components (O-rings, packing elements, etc.) installed.
- Storage location for any packers with elastomeric components installed should have no direct exposure to sunlight. Packing elements should be shielded from ultraviolet light by covering in a protective material.
- Store in a dry area, no rain, seawater, or condensation.

Prior to storage, the packer should be assembled with internal thread connections made-up hand tight. Handle and store the tool in the running position with the lugs in the appropriate j-slot section which prevents undesired compression and deformation of packing elements. Store the tool in a manner which prevents undesired stresses on dynamic components such as Slips, Drag Block, and Sleeves.

F. DIMENSIONAL DATA



G. BILL OF MATERIALS

GENERAL PARTS LIST

#	QTY	PART #	NAME	#	QTY	PART #	NAME	#	QTY	PART #	NAME
1	1	00027	Top Sub	14	1	See Charts	Piston Gage	27	1	64620	Packing Sleeve
2	2	19232	O-Ring	15	1	64530	Hold Down Receptacle	28	1	54100	Cone
3	7	11168C	Thread Lock Set Screw	16	8	See Charts	Hold Down Slip	29	1	64580	Recovery Sleeve Cap
4	1	64522	Mandrel	17	8	19230	O-Ring	30	1	54080	Slip Housing
5	1	64630	Seal Retainer Cap	18	12	11450c	Hold Down Screw	31	4	070cj	Lower Slip
6	1	64550	Split Ring	19	16	50409	Hold Down Spring	32	4	11238c	Slip Spring Screw
7	1	19339	O-Ring	20	4	64600	Hold Down Strap	33	8	51778	Slip Spring
8	1	31720	Bypass Seal	21	1	19240	O-Ring	34	1	53050	Drag Block Retainer
9	1	64640	Seal Retainer	22	1	See Charts	Upper Element Gage	35	6	See Charts	Drag Block
10	1	64610	Balance Piston Housing	23	3	See Charts	Packing Element	36	36	50110	Drag Block Spring
11	1	19349	O-Ring	24	2	See Charts	Element Spacer	37	1	See Charts	Control Body
12	1	64570	Balance Piston	25	1	See Charts	Lower Element Gage	38	1	64560	Bottom Sub
13	1	19343	O-Ring	26	1	54120	Element Retainer	39	1	64590	Recovery Sleeve

DRESSING CHART				
ITEM	17-26#	23-29#	26-35#	32-38#
Piston Gage	64501	64500	64502	64504
Hold Down Slip	50403	50402		50401
Upper Element Gage	64511	64510	64517	64514
Packing Element*	602-72-51X	602-70-51X		602-68-51X
Element Spacer	80590		80595	
Lower Element Gage	80571	80570	80572	80573
Drag Block	50800		50700	50600

*Replace the x in part number with durometer: 0 for 60, 1 for 70, 2 for 80, or 3 for 90.

CONTROL BODY SELECTION CHART	
J-SLOT CONFIGURATION	PART NUMBER
Right Hand Manual	62662
Left Hand Manual	62661
Right Hand Automatic	62667
Left Hand Automatic	62666

H. REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	CHECKED BY
	2.0	Updated Tech Unit format	P. Henderson	B. Bullock
08/09/2022	3.0	Updated format	N. Alexander	