

# Upper Completions

## 4.500 Slim Hole Crest III Packer

### Technical Unit: TU1040

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## 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

| DIMENSIONAL SPECIFICATION |             |        |       |        |       |                        |
|---------------------------|-------------|--------|-------|--------|-------|------------------------|
| CASING                    |             | TOOL   |       |        |       |                        |
| SIZE                      | WEIGHT      | MAX OD |       | MIN ID |       | CONNECTIONS            |
| [in]                      | [#]         | [in]   | [mm]  | [in]   | [mm]  |                        |
| 4-1/2                     | 13.5 – 16.6 | 3.562  | 90.47 | 1.500  | 38.10 | 2-3/8" EU8RD BOX X PIN |
|                           | 9.5 – 13.5  | 3.771  | 95.78 | 1.500  | 38.10 |                        |



## C. OPERATIONAL PROCEDURES

### C-1 – Setting Procedures

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-slots) 1/2 turn at the packer. Slack off weight to close the bypass, set the slips, and pack off the elements. For this size 7,000 lb. should be sufficient.
3. At this time, pressure work can be performed above or below the packer. 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.

### C-2 – Releasing Procedures

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. To move further down, the J-track will have to be re-engaged by rotating 1/2 turn at the packer, in the opposite direction from that used to set the tool.

### C-3 - Assembly Procedures

The following instructions do not list steps that are obvious to a trained tool hand, such as application of grease or being careful with seal surfaces.

**CAUTION: THE TOP END OF THE MANDREL (4) MUST BE FILED SMOOTH ABOVE THE SPLIT RING GROOVE BEFORE BEGINNING.**

**THE SHORT LENGTH BELOW THE GROOVE IS A SEAL SURFACE.**

1. Assemble balance piston (11) with O-ring (10) installed, into balance piston housing (12) and slide onto upper end of mandrel (4).
2. Install bypass seal (9) and O-ring (7) into seal retainer (8), 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) installed, onto mandrel and clamp in vise.
3. Install hold down slips (17), with O-rings (16) installed, into holes in the side of hold down receptacle (14). Install hold down springs (16) into counterbores in hold down slips and retain with hold down straps (19), hold down screws (18), upper strap retainer (15) and lower strap retainer (22). Screw upper element gage (23) (left hand thread) onto receptacle, and install O-rings (13 & 21) inside.
4. Slide the following items on the top end of packing sleeve (26): element retainer (27), packing elements (24) and element spacers (25).
5. Screw element assembly 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.**

**WHEN WRENCHING OR VICING ON BALANCE PISTON HOUSING, USE DESIGNATED WRENCH AREA AT THE TOP OF PART. THIS IS DEFINED AS THE 1.500" TOWARDS THE TOP OF THE PART ON THE OD.**

1. Assemble drag blocks (36) and drag block springs (37) into control body (38) and retain with drag block retainer (35). Screw slip housing (30) onto control body (left hand thread).
2. Slide recovery sleeve (39) through bottom of control body part way and install lower slips (31), with slip springs (32) installed, into slip housing windows. Then push recovery sleeve in to stop.
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 one pin inserted through holes in cone and notches in cap, and another through holes in control body and in recovery sleeve.
4. Slide assembly from step above over lower end of mandrel. Screw cone into element retainer, then bottom sub (42), with O-ring (41) installed, onto bottom end of mandrel.
5. Install all 8 thread lock set screws (3, 34, 40) in top sub, slip housing and bottom sub, then tighten all threads. To tighten packing mandrel to hold down receptacle, insert pin through holes in element retainer and slots in packing mandrel.

## C-4 - Disassembly Procedures

**NOTE: The following steps will break packer into sub-assemblies. Refer to assembly instructions to disassemble sub-assemblies, noting the left hand threads indicated on drawing.**

1. With top sub (1) in vise, un-jay packer and slide control body (38) up as far as possible. Remove all 8 thread lock set screws (3, 34, 40). While backing up on top end of mandrel (4), remove bottom sub (42).
2. Unscrew cone (28) from element retainer (27) and slide the slip/drag block sub-assembly off bottom of mandrel and set aside.
3. With pin through holes in element retainer and slots in packing sleeve (26), unscrew packing mandrel from hold down receptacle (14). Slide this sub-assembly off bottom end of mandrel and set aside.
4. Break mandrel out of top sub, then unscrew seal retainer cap (5) from seal retainer (8) and remove these parts and split ring (6).
5. With balance piston housing (12) in vise, break off hold down receptacle and slide off bottom end of mandrel. Slide balance piston housing off top end of mandrel and remove balance piston (11) from inside.

## D. STORAGE & HANDLING GUIDELINES

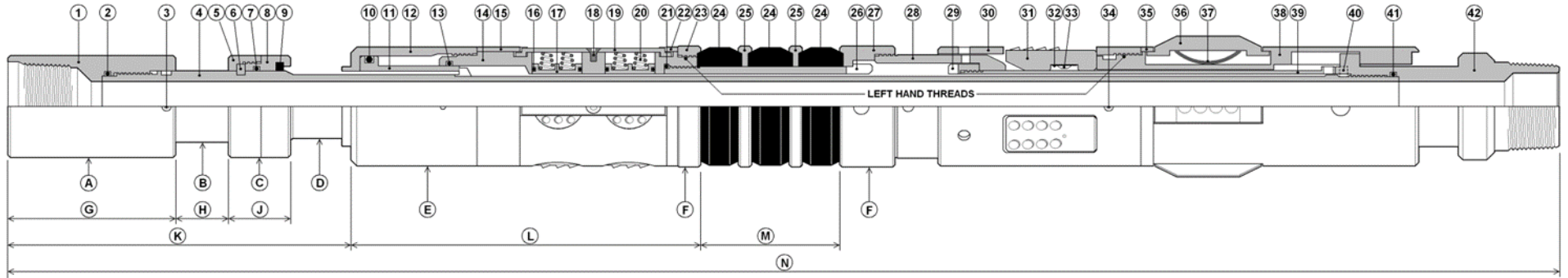
All Upper Completions products from Innovex should at all times be stored in a manner which prevents exposure to natural elements: wind, water, excessive temperatures (hot or cold), and stored in a clean environment to prevent contamination by elements which might adversely affect proper function (i.e.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

## E. DIMENSIONAL DATA & BILL OF MATERIALS



| PART NUMBERS |     |            |                        |      |     |            |                      |      |     |            |                       |
|--------------|-----|------------|------------------------|------|-----|------------|----------------------|------|-----|------------|-----------------------|
| KEY #        | QTY | PART #     | NAME                   | KEY# | QTY | PART #     | NAME                 | KEY# | QTY | PART#      | NAME                  |
| 1            | 1   | 44250      | TOP SUB                | 15   | 1   | SEE CHARTS | UPPER STRAP RETAINER | 29   | 1   | 74440      | RECOVERY SLEEVE CAP   |
| 2            | 1   | 19225      | O-RING                 | 16   | 8   | 19125      | O-RING               | 30   | 1   | 74450      | SLIP HOUSING          |
| 3            | 3   | 11158C     | THREAD LOCK SET SCREW  | 17   | 8   | SEE CHARTS | HOLD DOWN SLIP       | 31   | 3   | SEE CHARTS | LOWER SLIP            |
| 4            | 1   | 44235      | MANDREL                | 18   | 4   | 11436F     | HOLD DOWN SCREW      | 32   | 3   | 50725      | LOWER SLIP SPRING     |
| 5            | 1   | 44220      | SEAL RETAINER CAP      | 19   | 4   | 63951      | HOLD DOWN STRAP      | 33   | 3   | 11336C     | LOWER SLIP SCREW      |
| 6            | 1   | 44200      | SPLIT RING             | 20   | 16  | 50319      | HOLD DOWN SPRING     | 34   | 3   | 11155C     | THREAD LOCK SET SCREW |
| 7            | 1   | 19227      | O-RING                 | 21   | 1   | 19228      | O-RING               | 35   | 1   | 74270      | DRAG BLOCK RETAINER   |
| 8            | 1   | 44210      | SEAL RETAINER          | 22   | 1   | 74380      | LOWER STRAP RETAINER | 36   | 4   | SEE CHARTS | DRAG BLOCK            |
| 9            | 1   | 609-40-523 | BYPASS SEAL            | 23   | 1   | SEE CHARTS | UPPER ELEMENT GAGE   | 37   | 16  | 50100      | DRAG BLOCK SPRING     |
| 10           | 1   | 19334      | O-RING                 | 24   | 3   | SEE CHARTS | PACKING ELEMENT      | 38   | 1   | SEE CHARTS | CONTROL BODY          |
| 11           | 1   | 74360      | BALANCE PISTON         | 25   | 2   | SEE CHARTS | ELEMENT SPACER       | 39   | 1   | 74470      | RECOVERY SLEEVE       |
| 12           | 1   | 74350      | BALANCE PISTON HOUSING | 26   | 1   | 74410      | PACKING SLEEVE       | 40   | 2   | 11155C     | THREAD LOCK SET SCREW |
| 13           | 1   | 19229      | O-RING                 | 27   | 1   | SEE CHARTS | ELEMENT RETAINER     | 41   | 1   | 19224      | O-RING                |
| 14           | 1   | 74390      | HOLD DOWN RECEPTACLE   | 28   | 1   | 74430      | CONE                 | 42   | 1   | 43831      | BOTTOM SUB            |

| CONTROL BODY SELECTION CHART |             |
|------------------------------|-------------|
| J-TRACK CONFIGURATION        | PART NUMBER |
| RIGHT HAND MANUAL            | 74462       |
| LEFT HAND MANUAL             | 74464       |
| RIGHT HAND AUTOMATIC         | 74461       |
| LEFT HAND AUTOMATIC          | 74463       |

| DRESSING CHART       |            |            |                  |            |           |
|----------------------|------------|------------|------------------|------------|-----------|
| ITEM                 | 13.5-16.6# | 9.5-13.5#  | ITEM             | 13.5-16.6# | 9.5-13.5# |
| UPPER STRAP RETAINER | 74370      | 74371      | ELEMENT SPACER   | 74210      | 61450     |
| HOLD DOWN SLIP       | 50314      | 50313      | ELEMENT RETAINER | 74420      | 74421     |
| UPPER ELEMENT GAGE   | 74200      | 74201      | LOWER SLIP       | 045CJ      | 050PK     |
| PACKING ELEMENT *    | 720-44-51X | 720-45-51X | DRAG BLOCK       | 50560      | 50570     |

\* REPLACE THE X IN PART NUMBER WITH DUROMETER: 0 FOR 60, 1 FOR 70, 2 FOR 80, OR 3 FOR 90.

FLUID BYPASS AREA: .341 SQ. IN.  
AFFECTED AREA OF BALANCE PISTON: 1.478 SQ. IN.

| DIMENSIONS (IN.) |      |   |      |     |                    |      |      |      |       |       |      |       |
|------------------|------|---|------|-----|--------------------|------|------|------|-------|-------|------|-------|
| A                | B    | C | D    | E   | F                  | G    | H    | J    | K *   | L     | M    | N     |
| 3.00             | 2.09 | 3 | 1.78 | 3.5 | SEE SPECIFICATIONS | 6.44 | 2.06 | 2.38 | 13.25 | 12.56 | 5.38 | 58.88 |

\*WITH PACKER IN POSITION SHOWN

## F. REVISION HISTORY

| DATE       | REVISION | DESCRIPTION OF CHANGES | REVISED BY   | CHECKED BY |
|------------|----------|------------------------|--------------|------------|
|            |          | NEW RELEASE            |              |            |
| 08/09/2022 | 2022 Aug | Updated Format         | N. Alexander |            |