



TYPE T SQUEEZE PACKER

RIGHT-HAND MANUAL

7" X 2-7/8"

Manual No:
DL-621-7000-039

Revision: **E**

Revision Date:
01/29/2020

Authored by: B.Mathis

Approved by: Heath Bringham

A) DESCRIPTION

The Type T Squeeze Packer is a versatile, easy to use tension set tool which holds differential pressure from above or below. This packer is designed to run, set, reset and retrieve easily, even under adverse conditions. This packer can be set at any depth and is used when insufficient weight is available to set a compression packer. This packer is ideal for squeeze cementing, casing testing, stimulation treatments and straddle operations using a retrievable bridge plug.

An SC Tension Unloader is generally run above this packer allowing pressure equalization before release. The SC Tension Unloader also provides a by-pass when running and retrieving to minimize swabbing of the elements.

This packer features a full bore that minimizes the potential for screening out during fracturing, does not restrict the flow rates and allows the use of through-tubing tools without pulling the packer.

This packer also features an emergency release system that uses a high-ratio left-hand thread. Applying right-hand rotation of the tubing relaxes the packing elements and moves the lower cone well away from the slips allowing the slips to fully retract.

B) RELATED TOOLS (sold separately)

B-1) 2-7/8" SC Tension Unloader (P/N 52525)—refer to technical manual DL-525-2875-680.

C) SPECIFICATION GUIDE

CASING			TOOL		THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)	GAGE OD (INCHES)	NOMINAL ID (INCHES)		
7	17.0 – 26.0	6.276 – 6.538	6.000	2.50	2-7/8 EUE	62171RM 62171RMH ¹ 62171RMV ²
	26.0 – 32.0	6.094 – 6.276	5.875	2.50	2-7/8 EUE	62170RM 62170RMH ¹ 62170RMV ²

Elastomer Trim Options: ¹HSN, ²Viton

NOTE₁: Tools listed are right-hand manual set. Other configurations are available. Contact D&L Sales for more information.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	TORQUE THRU TOOL (MAX)
10,000 PSI	175,000 LBS	2,000 FT-LBS

D & L OIL TOOLS
P.O. BOX 52220 TULSA, OK 74152
PHONE: (800) 441-3504 www.dloiltools.com

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D) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION₁: D&L ships tool connections made-up **HAND TIGHT**—labeled with hand-tight tape on the tool (Fig. 1)—unless stated otherwise. Tighten/torque all connections properly before operating tool.



Fig. 1

GENERAL THREAD CONNECTION TORQUE RECOMMENDATIONS			
STUB ACME / ACME THREADS	INTERNAL TAPERED TUBING THREADS		PREMIUM THREADS
	UP TO 2-3/8"	GREATER THAN 2-3/8"	
600 – 800 FT-LBS	600 – 800 FT-LBS	800 – 1,200 FT-LBS	Consult thread manufacturer's recommendations.

GENERAL SCREW TORQUE RECOMMENDATIONS									
SCREW SIZE (INCHES)	#6	#8	#10	1/4	5/16	3/8	7/16	1/2	5/8 and larger
TORQUE RANGE (INCH-POUNDS)	5 – 8	10 – 15	18 – 25	25 – 40	50 – 80	90 – 135	160 – 210	250 – 330	450 – 650

Before first use, D&L recommends disassembly and inspection of the tool unless stated otherwise. Ensure parts have not been damaged during shipping. Replace damaged parts with D&L replacement parts. Contact D&L sales for replacement part information.

Re-assemble the tool after inspection. Install parts in the correct order and orientation. Properly tighten connections.

Before re-using the tool, D&L recommends disassembly and inspection of the tool. Clean parts and ensure parts are in good working condition. Replace worn or damaged parts with D&L replacement parts.

When redressing the tool, D&L recommends replacement of all seals, elements, o-rings, shear screws, etc. Contact D&L sales for redress kit and/or other replacement part information.

E) OPERATION

NOTE₂: Always run a D&L SC Unloader above the T-Squeeze Packer if pressure equalization is required.

NOTE₃: When using a tubing tester, it must be run **above** the SC Unloader.

CAUTION₂: Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

E-1) SETTING PROCEDURES

The SC Unloader is usually run above the Type T Squeeze Packer. When the packer is run in, the unloader is open allowing the circulation of well fluids through and around the tool. To set the packer, pick up and rotate 1/3 turn to the right (or left if left-hand set) at the packer. Hold torque and slack off work string. The packing elements are not yet compressed, so circulation around the tool can be maintained. Tension is then pulled to compress the elements and close the unloader (14,000 lbs). Factors such as pressure and temperature (which can shorten or elongate the tubing) should be carefully considered when determining the amount of tension to be applied.

CAUTION₃: When running the T-Squeeze Packer with a Retrievable Bridge Plug, make sure the retrieving tool J-slots are compatible with the packer.

E-2) RELEASING PROCEDURES

Slack off work string weight to open the unloader and equalize pressure. Rotate the tubing 1/3 turn to the left (or right if left-hand set) at the packer and pick up while holding torque. The packer is free to be moved and re-set or pulled from the hole.



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E) OPERATION (cont'd)

E-3) SAFETY RELEASE PROCEDURE

In the event the packer cannot be released in the normal manner, rotation of the tubing to the right will force the slips to release and the packing elements to relax. This is accomplished through the left-hand jacking thread connection between the upper mandrel and central coupling. Right-hand rotation at the tool jacks the mandrel up, equalizing the pressure across the tubing, until it hits the jack nut. Continued rotation will jack the lower mandrel down forcing the lower cone away from the slips and the rubber retainer away from the packed off elements. At this point the packer may be pulled out of the well or by re-jacking and then rotating to the left until the jacking thread returns to its original position. The packer may then be re-set.

NOTE: The quantity of turns it takes to release the packer is variable, depending on the casing weight and the tension originally pulled to set the packer. Contact D&L Sales for the correct quantity of turns.

F) STORAGE RECOMMENDATIONS

When preparing the tool for storage, follow the Pre-Installation Inspection Procedures. Re-assemble the tool with connections hand-tight only and in running position if applicable. Elements should be in a relaxed state—free from tension, compression, and other stresses that could cause deformation.

Store the tool, if possible, in an enclosed, temperature and humidity controlled environment. Avoid excessively high temperatures over long periods of time. Shield elastomeric parts from ultraviolet light sources. Keep tool dry and protected from condensation. Do not store in contact with or near volatile or corrosive chemicals. Do not store near ozone generating equipment or operations such as welding.

G) ELASTOMER TRIM TEMPERATURE GUIDE

NITRILE (STD)			
TEMPERATURE RANGE (F°)	DUROMETER		
	END	MIDDLE	END
40° - 125°	80	70	80
125° - 250°	90	70	90
150° - 250°	90	80	90
250° +	Contact D&L Sales		

RUBBER TYPE	TEMPERATURE RANGE (F°)
NITRILE	40° - 250°F
HSN (HNBR)	70° - 300°F
VITON	100° - 350°F

H) RECOMMENDED TOOLS

H-1) HAND TOOLS

- VISE
- GLOVES
- ALLEN WRENCHES
- TAPE MEASURE
- O-RING PICK
- BAR
 - 1/2-INCH
 - 3/4-INCH
- PAINT BRUSH, 2-INCH
- PIPE WRENCH, 3-FT (2 EA)
- "CHEATER" PIPE, 4-FT LONG
- ADJUSTABLE WRENCH, 12-INCH
- CORDLESS DRILL, 18V
- SNAP RING SPREADER PLIERS
- ALIGNING PUNCH
- SCREWDRIVER SET, FLAT-TIPPED
- SOCKET SETS
 - 3/8-INCH DRIVE
 - 1/2-INCH DRIVE
- HAMMERS
 - SLEDGE
 - BALL PEEN
 - DEAD BLOW

H-2) OPTIONAL SPECIAL TOOLS

ITEM	QTY	DESCRIPTION	PART NUMBER
T1	1	DRAW BLOCK ASSEMBLY TOOL	AT070110



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I) DISASSEMBLY

I-1) Clamp J-body (20) in vise.

I-1.1) Unscrew and remove bottom sub assembly from lower mandrel (6) and disassemble:

I-1.1.1) Unscrew and separate rubber retainer (15) from bottom sub (1S9).

I-1.1.2) Remove o-ring (24) from bottom sub (19).

I-1.1.3) Remove o-ring (26) from rubber retainer (15).

I-1.2) Remove elements (13, 14) and rubber spacers (12) from rubber mandrel (11).

I-1.3) Unscrew and remove rubber mandrel (11) from lower cone (16).

I-1.4) Remove lower cone (16) from lower mandrel (5).

I-1.4.1) Remove o-rings (25) from lower cone (16).

I-1.5) Rotate and slide inner tool components into set position (Fig. 2).

I-1.6) Moving to upper end of tool, unscrew and remove top sub (1) from upper mandrel (2).

I-1.7) Unscrew and remove jack nut (4) from drag block body (18) and remove from upper mandrel (2).

I-1.8) Unscrew drag block body assembly from J-body (20). Remove from upper mandrel (2) and disassemble:

I-1.8.1) Compress drag blocks (22) with drag block assembly tool (T1).

I-1.8.2) Unscrew and remove drag block retainer (21) from drag block body (18).

I-1.8.3) Release drag blocks (22). Remove drag blocks (22) and drag block springs (3) from drag block body (18).

I-1.9) Unscrew and remove upper mandrel (2) from center coupling (10) (**NOTE**s: Left-hand threads).

I-1.10) Unscrew and remove center coupling (10) from lower mandrel (6). Move inner tool components as needed to access center coupling (10).

I-1.10.1) Remove o-rings (23) from center coupling (10).

I-1.11) Remove J-pin retainer (5) from J-body (20).

I-1.12) Slide lower mandrel (6), removable J-pins (7), and upper cone (8) down in J-slot.

I-1.13) Remove removable J-pins (7) from J-slots in J-body (20).

I-1.14) Wedge slips (17) outwards (if needed). Remove lower mandrel (6) from lower end of J-body (20).

I-1.14.1) Remove upper cone (8) from upper end of J-body (20).

I-1.15) Remove wedges (if needed). Remove slips (17) and slip springs (9) from J-body (20).

I-2) Unclamp J-body (20) and remove from vise.



Fig. 2



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J) ASSEMBLY

NOTE₆: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

CAUTION₄: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig. 3).

J-1) Clamp J-body (20) in vise.

J-1.1) Install slips (17) and slip springs (9) into J-body (20). Wedge slips outwards.

NOTE₇: Install two (2 ea) springs per slip (Fig. 4).

J-1.2) Install upper cone (8) into upper end of J-body (20).

J-1.3) Install lower mandrel (6) into lower end of J-body (20) and through the upper cone (8). Align recessed areas in lower mandrel (6) with slots in J-body (20). Remove wedges.

NOTE₈: Additional force may be required when installing part.

J-1.4) Install removable J-pins (7) through J-slots and seat in recess.

J-1.5) Slide the lower mandrel (6) with removable J-pins (7) toward upper end of J-body (20).

J-1.6) Slide J-pin retainer (5) into J-body (20) and align removable J-pins (7) to fit J-pins into notches.

J-1.7) Install o-rings (23) in o-ring grooves in center coupling (10).

J-1.8) Screw center coupling (10) onto lower mandrel (6).

CAUTION₅: Do NOT rip or tear o-ring during installation.

J-1.9) Screw upper mandrel (2) into center coupling (10) (**NOTE₅:** Left-hand thread).

CAUTION₅: Do NOT rip or tear o-ring during installation.

J-1.10) Assemble drag block body assembly and install:

J-1.10.1) Install drag blocks (22) and drag block springs (3) into drag block body (18).

NOTE₉: Install six (6ea) springs per block (Fig. 5).

J-1.10.2) Compress drag blocks (22) with drag block assembly tool (T1).

J-1.10.3) Screw drag block retainer (21) onto drag block body (18) capturing ends of drag blocks (22). Release drag blocks.

J-1.10.4) Install drag block body assembly onto upper mandrel (2) and screw drag block body (18) into J-body (20).

J-1.11) Screw jack nut (4) into drag block body (18).

J-1.12) Screw top sub (1) onto upper mandrel (2).

J-1.13) Rotate and slide inner tool components into run/retrieve position (Fig. 2).

J-1.14) Moving to lower end of tool, install o-rings (25) in o-ring grooves in lower cone (16).

J-1.15) Install lower cone (16) onto lower mandrel (5).

CAUTION₅: Do NOT rip or tear o-rings during installation.

NOTE₈: Additional force may be required when installing part.

J-1.16) Screw rubber mandrel (11) into lower cone (16).

J-1.17) Install elements (13, 14) and rubber spacers (12) onto rubber mandrel (11).

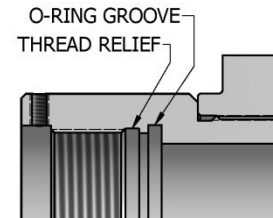


Fig. 3



Fig. 4

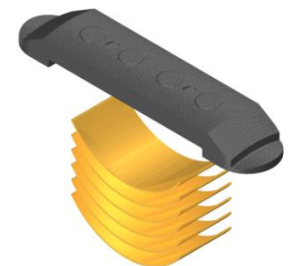


Fig. 5



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J) ASSEMBLY (cont'd)

J-1.18) Assemble the bottom sub assembly and install:

J-1.18.1) Install o-ring (24) in o-ring groove in bottom sub (19).

J-1.18.2) Install o-ring (26) in o-ring groove in rubber retainer (15).

J-1.18.3) Screw rubber retainer (15) onto bottom sub (19).

J-1.18.4) Screw bottom sub assembly onto lower mandrel (6).

CAUTION: Do NOT rip or tear o-rings during installation.

J-2) Unclamp J-body (20) from vise and remove assembled tool.

K) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	17.0 – 26.0# P/N 62171RM	26.0 – 32.0# P/N 62170RM
1	1	COUPLING	DLMS110	CP-BAC-C	
2	1	UPPER MANDREL	DLMS110	62070210	
3	36	DRAG BLOCK SPRING	-	9101900	
4	1	JACK NUT	DLMS110	62070950	
5	1	J-PIN RETAINER	DLMS125	62070920	
6	1	LOWER MANDREL	DLMS110	62070230	
7	2	REMOVABLE J-PIN	DLMSFB4	62070120	
8	1	UPPER CONE	DLMS125	62070410	
9	8	SLIP SPRING	-	7155902	
10	1	CENTER COUPLING	DLMS110	62070620	
11	1	RUBBER MANDREL	DLMS110	62070220	
12	2	RUBBER SPACER	DLMS35	60272840	60270840
13	1	ELEMENT	70 DURO NITRILE	60272511	60270511
14	2	ELEMENT	90 DURO NITRILE	60272513	60270513
15	1	RUBBER RETAINER	DLMS110	62171851	62170851
16	1	LOWER CONE	DLMS110	62171420	62170420
17	4	SLIP W/ CARBIDE	DLMS110	62070111C	
18	1	DRAG BLOCK BODY	DLMS110	62070330	
19	1	BOTTOM SUB	DLMS110	62070630	
20	1	J-BODY ASSEMBLY	DLMS110	62070340	
21	1	DRAG BLOCK RETAINER	DLMS110	62070910	
22	6	DRAG BLOCK W/ CARBIDE	DLMSDB4	9080900C	9070900C
23	2	336 O-RING	90 DURO NITRILE	90336	



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K) PARTS LIST (cont'd)

ITEM	QTY	DESCRIPTION	MATERIAL	17.0 – 26.0# P/N 62171RM	26.0 – 32.0# P/N 62170RM
24	1	337 O-RING	90 DURO NITRILE	90337	
25	2	338 O-RING	90 DURO NITRILE	90338	
26	1	346 O-RING	90 DURO NITRILE	90346	

REDRESS KIT (RDK)		62171050	62170050
ASSEMBLED WEIGHT		234 LBS	234 LBS

K-1) ELASTOMER TRIM OPTIONS

NOTE₁₀: For temperature range, refer to Elastomer Trim Temperature Guide.

K-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	17.0 – 26.0# P/N 62171RMH	26.0 – 32.0# P/N 62170RMH
13	1	ELEMENT	70 DURO HSN	60272511H	60270511H
14	2	ELEMENT	90 DURO HSN	60272513H	60270513H
23	2	336 O-RING	90 DURO HSN	90336H	
24	1	337 O-RING	90 DURO HSN	90337H	
25	2	338 O-RING	90 DURO HSN	90338H	
26	1	346 O-RING	90 DURO HSN	90346H	

REDRESS KIT (RDK)		62171050H	62170050H
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K-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	17.0 – 26.0# P/N 62171RMV	26.0 – 32.0# P/N 62170RMV
13	1	ELEMENT	70 DURO VITON	60272511V	60270511V
14	2	ELEMENT	90 DURO VITON	60272513V	60270513V
23	2	336 O-RING	90 DURO VITON	90336V	
24	1	337 O-RING	90 DURO VITON	90337V	
25	2	338 O-RING	90 DURO VITON	90338V	
26	1	346 O-RING	90 DURO VITON	90346V	

REDRESS KIT (RDK)		62171050V	62170050V
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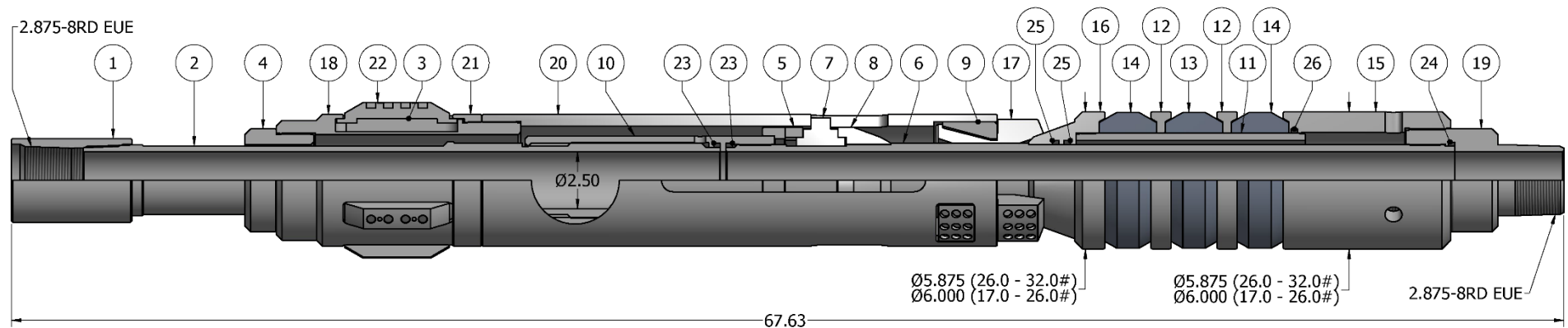
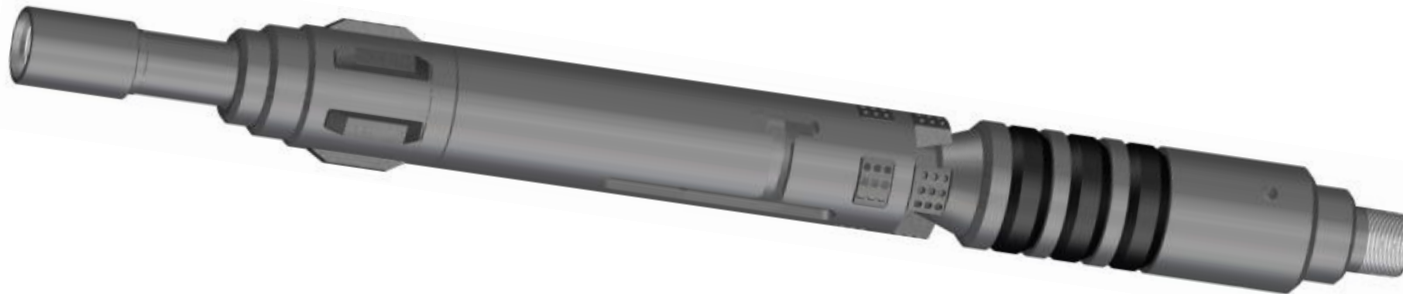
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L) TECHNICAL ILLUSTRATION



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M) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
01/29/2020	E	Added General Screw Torque Recommendations; Revised Elastomer Trim Temp. Guide temp. ratings, P/N CP-BAC-C was CP2875E2875EHT	J.Anderson	N.Banker
10/28/2015	D	Added Related Tools, HSN and Viton options, max. differential pressure, max. tensile load, Pre-Installation Inspection Procedures, Storage Recommendations, Recommended Tools; Revised P/N 62170RM was 62170, 62171RM was 62171, P/N 9080900C was 9070900C, P/N 60270840 was 60271840; Removed Operation and Available J-slots	J.Anderson	J.McArthur