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) 2-3/8" SC Tension Unloader (P/N 52520)—refer to technical manual *DL-525-2375-787*.

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)		
5-1/2	14.0 – 20.0	4.778 – 5.012	4.625	2.00	2-3/8 EUE	62155RM 62155RMH[1] 62155RMV[2]
	20.0 – 23.0	4.670 – 4.778	4.500	2.00	2-3/8 EUE	62157RM 62157RMH[1] 62157RMV[2]

[1]HSN Option [2]Viton Option

NOTE$_1$: Tools listed are right-hand auto set. Other configurations are available. Contact D&L Sales for more information.

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)
10,000 PSI	85,000 LBS

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

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.

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 (refer to Setting Force Guide). 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.

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-jaying and then rotating to the left until the jacking thread returns to its original position. The packer may then be re-set.

NOTE4: 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) SETTING FORCE GUIDE

SIZE (INCHES)	**MINIMUM FORCE REQUIRED AT PACKER**
5-1/2 X 2-3/8	11,000 LBS

G) 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.

H) 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

I) RECOMMENDED TOOLS

I-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

I-2) OPTIONAL SPECIAL TOOLS

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

J) DISASSEMBLY

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

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

J-1.1.1) Unscrew and separate rubber retainer (15) from bottom sub (19).

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

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

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

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

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

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

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

J-1.6) Moving to upper end of tool, unscrew and remove coupling (1) from upper mandrel (2).

J-1.7) Unscrew drag block body assembly from J-body (20), remove from upper mandrel (2) and disassemble:

J-1.7.1) Unscrew and remove jack nut (4) from drag block body (18).

J-1.7.2) Compress drag blocks (22) with drag block assembly tools (T1).

J-1.7.3) Remove drag block retainer (21).

J-1.7.4) Release drag blocks (22). Remove drag blocks (22) and drag block springs (3) from drag block body (18).

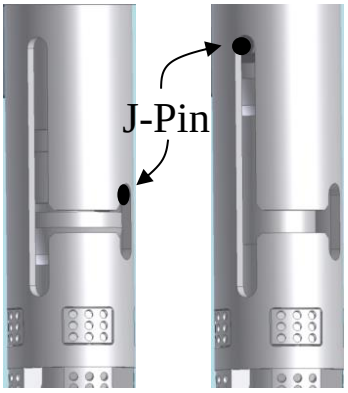


Fig. 2

J-1.8) Unscrew and remove upper mandrel (2) from center coupling (10) (**NOTE**$_5$: Left-hand threads).

J-1.9) Unscrew and remove center coupling (10) from lower mandrel (5). Move inner tool components as needed to access center coupling (10).

J-1.9.1) Remove o-rings (23) from center coupling (10).

J-1.10) Remove J-pin retainer (5) from J-body (20).

J-1.11) Slide lower mandrel (6), removable J-pins (7), and upper cone (8) down in J-slot.

J-1.12) Remove removable J-pins (7) from J-slots in J-body (20).

J) DISASSEMBLY (cont'd)

J-1.13) Wedge slips (17) outwards (if needed). Remove lower mandrel (6) from lower end of J-body (20).

J-1.13.1) Remove upper cone (8) from upper end of J-body (20).

J-1.14) Remove wedges (if needed). Remove carbide slips (17) and slip springs (9) from J-body (20).

J-2) Remove J-body (20) from vise.

K) ASSEMBLY

NOTE$_6$: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

CAUTION$_4$: To ensure tool operates properly, install o-rings in o-ring grooves **NOT** thread reliefs (Fig. 3).

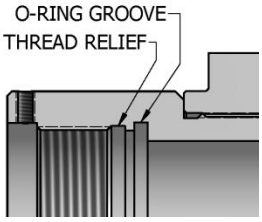


Fig. 3

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

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

NOTE$_7$: Install two (2ea) springs per slip (Fig. 4).


Fig. 4

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

K-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.

NOTE$_8$: Additional force may be required when installing part.

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

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

K-1.6) Slide J-pin retainer (5) into J-body (20) and align so removable J-pins (7) slip into notches.

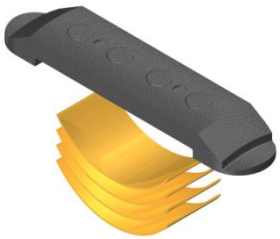


Fig. 5

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

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

CAUTION$_5$: Do NOT rip or tear o-ring during installation.

K-1.9) Screw upper mandrel (2) into center coupling (10) (**NOTE$_5$**: Left-hand thread).

CAUTION$_5$: Do NOT rip or tear o-ring during installation.

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

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

NOTE$_9$: Install four (4ea) springs per block (Fig. 5).

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

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

K-1.10.4) Screw jack nut (4) into drag block body (18).

K-1.10.5) Install drag block body assembly onto upper mandrel (2) and screw drag block body (18) onto J-body (20).

K-1.11) Screw coupling (1) onto upper mandrel (2).

K-1.12) Rotate and slide inner tool components into run/retrieve position (Fig. 2).

K) ASSEMBLY (cont'd)

K-1.13) Moving to lower end of tool, install o-rings (25) in o-ring grooves in lower cone (16).

K-1.14) 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.

K-1.15) Screw rubber mandrel (11) into lower cone (16).

K-1.16) Install elements (13, 14) and rubber spacers (12) onto rubber mandrel (11).

K-1.17) Assemble the bottom sub assembly and install:

K-1.17.1) Install o-ring (24) in o-ring groove in bottom sub (19).

K-1.17.2) Install o-ring (26) in o-ring groove in rubber retainer (15).

K-1.17.3) Screw rubber retainer (15) onto bottom sub (19).

K-1.17.4) Screw bottom sub assembly onto lower mandrel (6).

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

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

L) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 62155RM (14.0 – 20.0#)	P/N 62157RM (20.0 – 23.0#)
1	1	COUPLING	DLMS110	CP2375E2375EHT	
2	1	UPPER MANDREL	DLMS110	62055210	
3	24	DRAG BLOCK SPRING	DLMZNC625	9100900	
4	1	JACK NUT	DLMS110	62055950	
5	1	J-PIN RETAINER	DLMS125	62055920	
6	1	LOWER MANDREL	DLMS110	62055230	62057230
7	2	REMOVABLE J-PIN	DLMSFB4	62055120	
8	1	UPPER CONE	DLMS125	62055410	
9	8	SLIP SPRING	DLMELG/DLMZNC625	7145902	
10	1	CENTER COUPLING	DLMS110	62055620	
11	1	RUBBER MANDREL	DLMS110	62055220	
12	2	RUBBER SPACER	DLMS60	60255840	60257840
13	1	ELEMENT	70 DURO NITRILE	60255511	60257511
14	2	ELEMENT	90 DURO NITRILE	60255513	60257513
15	1	RUBBER RETAINER	DLMS110	62155851	62157850
16	1	LOWER CONE	DLMS110	62155420	62157420
17	4	SLIP W/ CARBIDE	DLMS110	62055112C	
18	1	DRAG BLOCK BODY	DLMS110	62055335	
19	1	BOTTOM SUB	DLMS110	62055630	
20	1	J-BODY	DLMS110	62055340	
21	1	DRAG BLOCK RETAINER	DLMS110	62055910	
22	6	DRAG BLOCK W/ CARBIDE	DLMSDB4	9055900C	9045900C
23	2	229 O-RING	90 DURO NITRILE	90229	
24	1	338 O-RING	90 DURO NITRILE	90338	
25	2	334 O-RING	90 DURO NITRILE	90334	
26	1	333 O-RING	90 DURO NITRILE	90333	

REDRESS KIT (RDK)		62155050	62157050
ASSEMBLED WEIGHT		137 LBS	135 LBS

L-1) ELASTOMER TRIM OPTIONS

NOTE9: For temperature range, refer to Elastomer Trim Temperature Guide.

L-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 62155RMH (14.0 – 20.0#)	P/N 62157RMH (20.0 – 23.0#)
13	1	ELEMENT	70 DURO HSN	60255511H	60257511H
14	2	ELEMENT	90 DURO HSN	60255513H	60257513H
23	2	229 O-RING	90 DURO HSN	90229H	
24	1	338 O-RING	90 DURO HSN	90338H	
25	2	334 O-RING	90 DURO HSN	90334H	
26	1	333 O-RING	90 DURO HSN	90333H	

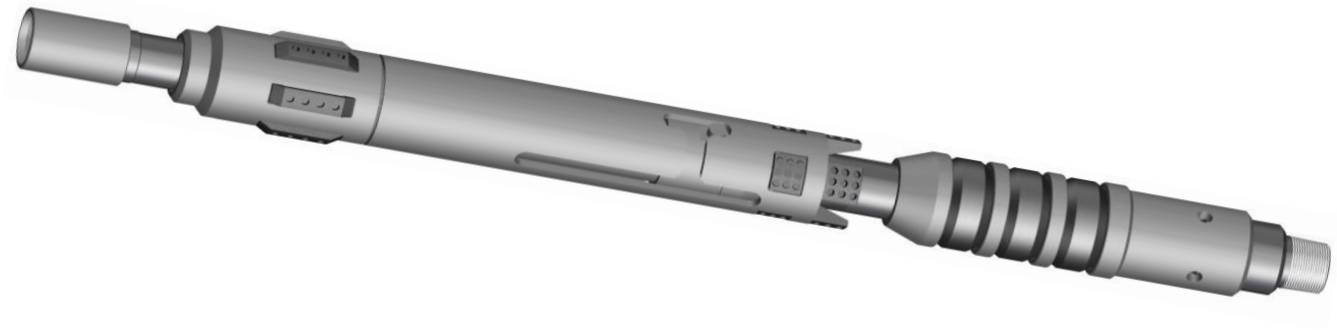
		REDRESS KIT (RDK)		62155050H	62157050H

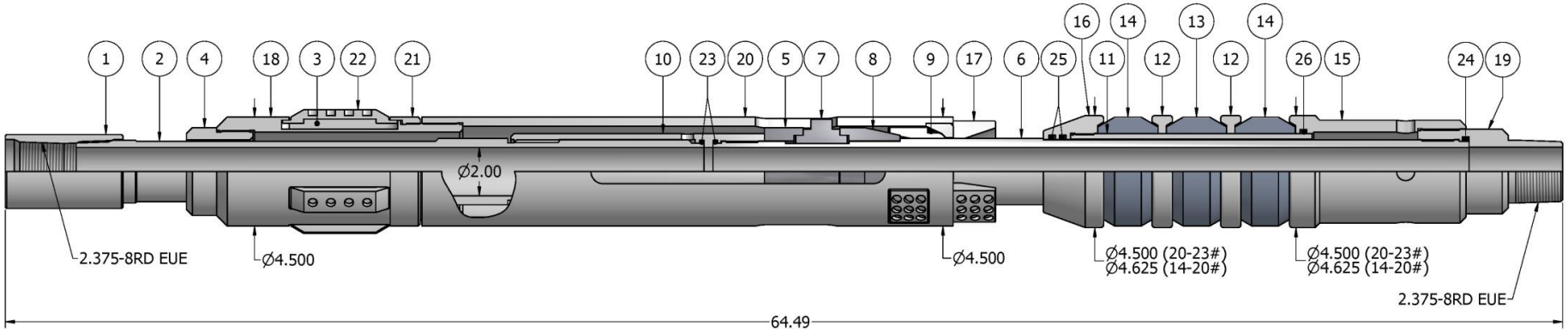
L-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 62155RMV (14.0 – 20.0#)	P/N 62157RMV (20.0 – 23.0#)
13	1	ELEMENT	70 DURO VITON	60255511V	60257511V
14	2	ELEMENT	90 DURO VITON	60255513V	60257513V
23	2	229 O-RING	90 DURO VITON	90229V	
24	1	338 O-RING	90 DURO VITON	90338V	
25	2	334 O-RING	90 DURO VITON	90334V	
26	1	333 O-RING	90 DURO VITON	90333V	

		REDRESS KIT (RDK)		62155050V	62157050V

M) TECHNICAL ILLUSTRATION





N) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
02/18/2020	D	Removed tool drift ID, Revised Elastomer Trim Temp. Guide, for P/N 62157RM, 9045900C was 9055900C, 7145902 was 7155902	J.Anderson	E.Visaez
03/18/15	C	Revised P/N 62157RM was 62157, P/N 90338 WAS 90337; Added HSN and Viton options, Related Tools, max. differential pressure and tensile load, Pre-Installation Inspection and Storage Procedures, Recommended Tools	J.Anderson	J.McArthur