A) DESCRIPTION

The Bit Release Joint is used in operations for drilling out cement, cast iron bridge plugs, and other drillable tools and thereby leaving the drill string intact as the production string. The spring-loaded check valve prevents tubing back-flow during drill-out. After drill-out, a ball is dropped through the drill string and seats in the piston. Pressure applied to the drill string forces the drill bit to release and fall to the bottom of the hole.

B) SPECIFICATION GUIDE

TOOL SIZE (INCHES)	**TOOL OD** (INCHES)	**TOOL ID** (INCHES)		**THREAD CONNECTIONS** BOX UP / BOX DOWN	**PART NUMBER**
		CHECK VALVE ID	**ID AFTER LUGS SHEARED OUT**		
2-3/8	3.50	1.25	2.062	2-3/8 EUE / 2-3/8 API REGULAR TOOL JOINT	80120 80120H[1] 80120V[2]

Elastomer Trim Options: [1]HSN, [2]Viton

TENSILE LOAD THRU TOOL (MAX)	**TORQUE THRU TOOL** (MAX)
37,000 LBS	2,900 FT-LBS

C) PRE-INSTALLATION INSPECTION PROCEDURES

CAUTION$_1$: 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.

C) PRE-INSTALLATION INSPECTION PROCEDURES (cont’d)

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

D) OPERATION

CAUTION$_2$: Do not run the tool without properly tightening connections. Running the tool with loose connections may damage the tool and cause malfunction.

The Bit Release Joint is designed for ease of operation. The tool is assembled with the drill bit at the bottom of the bottom coupling. When ready, drop the brass ball and pressure up the tubing. Approximately 720 PSI will shear the shear screws and shift the shear sleeve. Then the lugs release, and everything but the top sub is free to drop down the hole.

This tool has a maximum pull of approximately 74,536 lbs to shear the lugs (37,268 lbs per lug).

NOTE$_1$: This weight is based on a simple shear calculation. However, because force would be transmitted through the 45° angle on the lugs and into the shear sleeve, actually more force will be required.

E) 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.

Store the tool, if possible, in an enclosed, temperature and humidity controlled environment. Avoid excessively high temperatures over long periods of time. 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.

F) ELASTOMER TRIM TEMPERATURE GUIDE

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

G) RECOMMENDED 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) DISASSEMBLY

H-1) Remove brass ball (8) from top sub (1).

H-2) Clamp top sub (1) in vise.

H-2.1) Unscrew and remove crossover (6) from check valve body (2).

H-2.2) Unscrew and remove spring retainer (7) from check valve body (2).

CAUTION$_3$: Compression spring (9) has spring tension against spring retainer (7).

H) DISASSEMBLY (cont’d)

H-2.3) Remove compression spring (9) and steel ball (10) from check valve body (2).

H-2.4) Unscrew and remove shear screws (12) from check valve body (2).

H-2.5) Remove shear sleeve (4) from check valve body (2).

H-2.5.1) Remove o-rings (13) from shear sleeve (4).

H-2.6) Remove lugs (3) from check valve body (2).

H-2.7) Remove check valve body (2) from top sub (1).

H-2.7.1) Remove o-ring (14) from check valve body (2).

H-2.8) Unscrew and remove flat head cap screw (11) from check valve body (2).

H-2.9) Remove key (5) from check valve body (2).

H-3) Remove top sub (1) from vise.

I) ASSEMBLY

NOTE$_2$: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order, and orientation and tighten/torque all connections properly.

I-1) Clamp top sub (1) in vise.

I-1.1) Insert key (5) into groove in check valve body (2).

I-1.2) Align hole in (5) with threaded hole in check valve body (2). Screw flat head cap screw (11) into check valve body (2) securing key (5) in place.

I-1.3) Install o-ring (14) in o-ring groove in check valve body (2).

I-1.4) Install check valve body (2) into top sub (1).

CAUTION$_4$: Do not rip or tear o-ring during installation.

I-1.5) Insert lugs (3) into slots in check valve body (2).

I-1.6) Install o-rings (13) in o-ring grooves in shear sleeve (4).

I-1.7) With lugs pushed in place, install shear sleeve (4) into check valve body (2).

CAUTION$_4$: Do not rip or tear o-rings during installation.

I-1.8) Align hole in top sub (1) with threaded hole in check valve body (2) and groove in shear sleeve (4). Screw shear screws (12) into check valve body (2). Tighten until shear screws make contact with shear sleeve (4). Back shear screws out 1/4 turn.

I-1.9) Install steel ball (10) and compression spring (9) into check valve body (2).

I-1.10) Screw spring retainer (7) into check valve body (2).

CAUTION$_3$: Compression spring (9) has spring tension against spring retainer (7).

I-1.11) Without optional Double Check Bottom Sub-Assembly:

I-1.11.1) Screw crossover (6) onto check valve body (2).

I-1.12) With optional Double Check Bottom Sub-Assembly (P/N 80120630):

I-1.12.1) Screw bottom sub (15) onto check valve body (2).

I-1.12.2) Install additional steel ball (10) and additional compression spring (9) into bottom sub (15).

I-1.12.3) Screw spring retainer (16) into bottom sub (15).

I-2) Unclamp top sub (1) from vise.

I-3) Insert brass ball (8) into top sub (1).

J) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 80120
1	1	TOP SUB	P-110	80120610
2	1	CHECK VALVE BODY	P-110	80120500
3	2	LUG	DLMS110	80120910
4	1	SHEAR SLEEVE	1026	80120300
5	1	KEY	1026	80120911
6	1	CROSSOVER	1026	CP2375E2375DP
7	1	SPRING RETAINER	1026	80020820
8	1	BRASS BALL, 1-3/8"	BRASS	BB1375
9	1	COMPRESSION SPRING	302 STAINLESS STEEL	80020920
10	1	STEEL BALL, 1-3/8"	STEEL	SB1375
11	1	FLAT HEAD CAP SCREW #10-24 UNC X 5/8	STEEL	FHSC1024C062
12	2	SHEAR SCREW (1200# EA) 1/4-20 UNC X 7/16	DLM360BRS	BSSSLT025C043
13	2	224 O-RING	90 DURO NITRILE	90224
14	1	229 O-RING	90 DURO NITRILE	90229

REDRESS KIT (RDK)		80120050
ASSEMBLED WEIGHT		35 LBS

J-1) ELASTOMER TRIM OPTIONS

NOTE$_2$: For temperature range, refer to Elastomer Trim Temperature Guide.

J-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 80120H
13	2	224 O-RING	90 DURO HSN	90224H
14	1	229 O-RING	90 DURO HSN	90229H

REDRESS KIT (RDK)		80120050H

J-1.2) VITON

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 80120V
13	2	224 O-RING	90 DURO VITON	90224V
14	1	229 O-RING	90 DURO VITON	90229V

REDRESS KIT (RDK)		80120050V

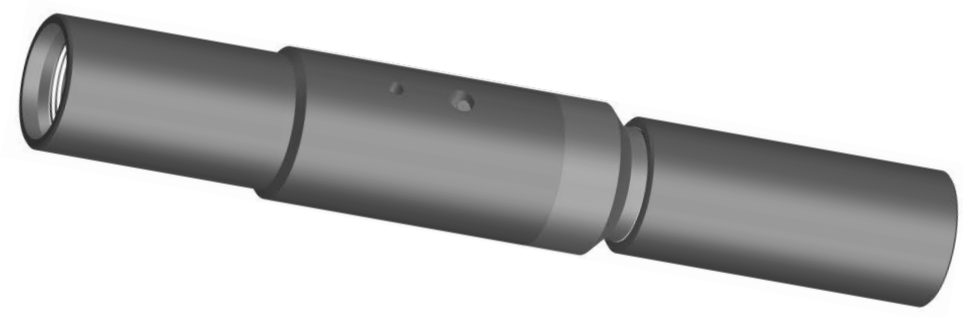
J) PARTS LIST (cont’d)

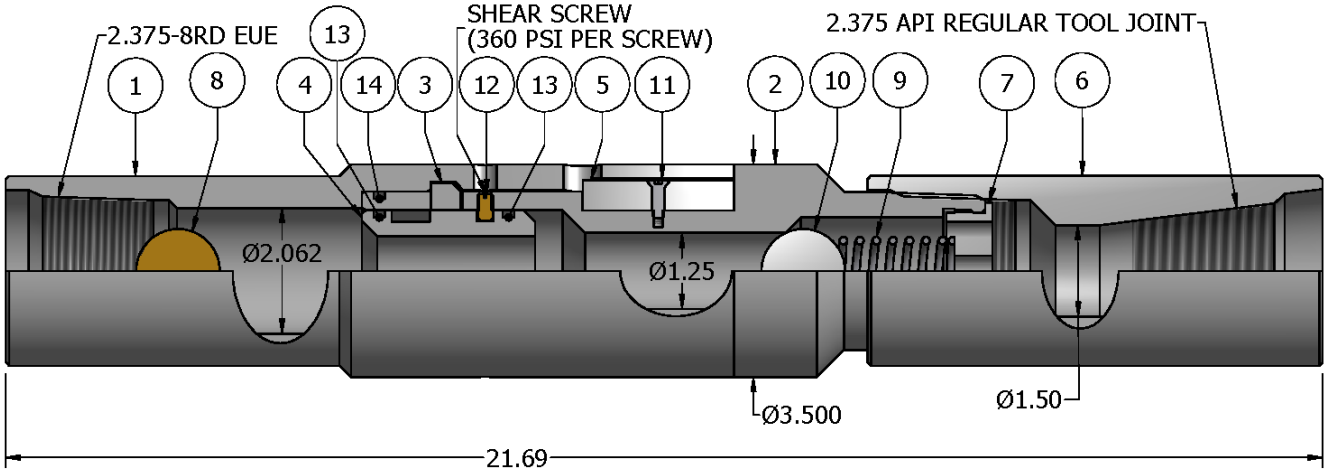
J-2) OPTIONAL DOUBLE CHECK VALVE BOTTOM SUB-ASSEMBLY

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 80120630
9	1	COMPRESSION SPRING	302 STAINLESS STEEL	80020920
10	1	1-3/8" STEEL BALL	STEEL	SB1375
15	1	BOTTOM SUB	L-80	80120631
16	1	SECONDARY SPRING RETAINER	1026	80120831

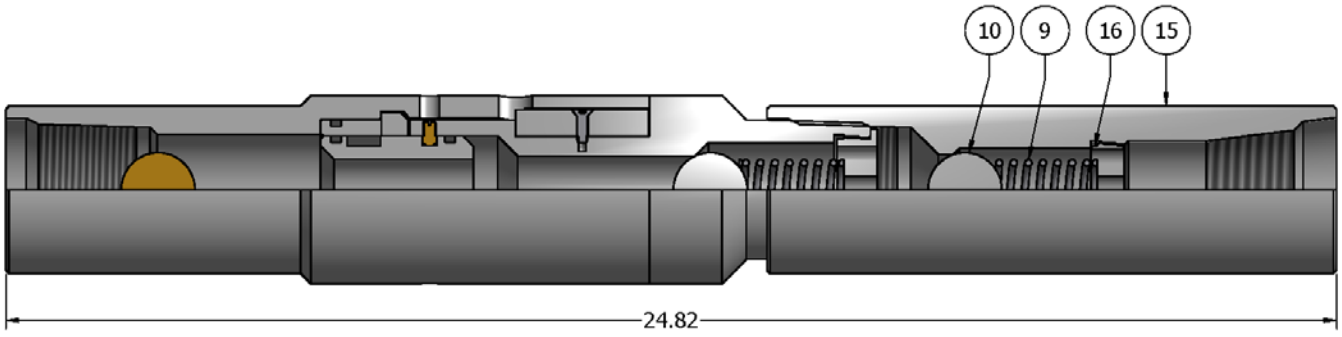
ASSEMBLED WEIGHT (P/N 80120 WITH 80120630)		41 LBS

K) TECHNICAL ILLUSTRATION





K-1) WITH OPTIONAL DOUBLE CHECK VALVE BOTTOM SUB-ASSEMBLY



L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
04/07/2016	C	Revised torque thru tool; Added Screw Torque Recommendations	J.Anderson	K.Plunkett
12/14/2015	B	Rewrote entire manual	B.Mathis	N.Banker
12/14/2008	A	Created new tech manual;	-	-