

TYPE C PERFORATION WASH TOOL 3-1/2"

Manual No: **DL-460-3500-1713**

Revision: A

Revision Date:

11/01/2023

Authored by: J.Anderson

Approved by: K.Plunkett

A) DESCRIPTION

The Type C Perforation Wash Tool is for washing or acidizing perforations in casing and sand screens. It is also used for checking non-perforations, to verify injection rates and penetration, or for opening voids behind the casing for more effective gravel pack operations. The straddle interval is easily field converted from one (1) foot to any distance by simply adding tubing between the cup sets.

B) SPECIFICATION GUIDE

	CASIN	G	Т	OOL		
SIZE (INCHES)	WEIGHT (LBS/FT)	RECOMMENDED HOLE SIZE (INCHES)	GAGE OD (INCHES)	ID (INCHES)	THREAD CONNECTION BOX UP / PIN DOWN	PART NUMBER
3-1/2	9.2 - 10.2	2.922 - 2.992	2.81	6X 0.50 (0.62 vent tube ID)	1.900 NUE	$\begin{array}{r} 46035 \\ 46035 H^1 \\ 46035 V^2 \end{array}$

Elastomer Trim Options: 1HSN, 2Viton

DIFFERENTIAL PRESSURE (MAX)	TENSILE LOAD THRU TOOL (MAX)	RUNNING DEPTH (MAX)	RUNNING SPEED (MAX)
4,000 PSI	26,250 LBS	7,000 FT	60 FT/MIN

C) 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	

ND TIGHT	GENERAL THREAD CONNECTION TORQUE RECOMMENDATIONS						
	STUB ACME /	INTERNAL TAPI	ERED TUBING THREADS	PREMIUM THREADS			
	ACME 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.

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



TYPE C PERFORATION WASH TOOL

3-1/2"

Manual No: **DL-460-3500-1713**

Revision: A

Revision Date:

Authored by: J.Anderson

11/01/2023 Approved by: K.Plunkett

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

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.

D) RUNNING PROCEDURES

It is recommended that a drain sub or unloader valve be run above the Type C Perforation Wash Tool. This drain sub is opened on the trip out to keep from pulling a wet string. The Type C Perforation Wash Tool is run to a depth just above or below the wash area. A pressure test should be run to ensure the cups are holding. Bleed off pressure and move the wash tool to the wash area. Pressure to begin washing. Once the whole interval has been washed, move into blank pipe and pressure test the cups once more to ensure they have worked properly. The drain sub or unloader is opened to drain the tubing on the trip out.

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. 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.

F) ELASTOMER TRIM TEMPERATURE GUIDE

RUBBER TYPE	TEMPERATURE RANGE
NITRILE	40° - 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
- 3/4-INCE

- 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
- H) DISASSEMBLY
 - H-1) Clamp lower coupling (1) in vise.
 - H-1.1) From lower end of tool, unscrew lower mandrel (3) from injection body (9). Remove lower cup mandrel assembly and disassemble:
 - H-1.1.1) Remove short spacer (5), long spacers (7), cups (10) and thimbles (3) from mandrel (3).
 - H-1.1.1.1) Remove o-rings (13) from thimbles (4).

- SCREWDRIVER SET, FLAT-TIPPED
- SOCKET SETS
 - 3/8-INCH DRIVE
 - 1/2-INCH DRIVE
- HAMMERS
 - SLEDGE
 - BALL PEENDEAD BLOW



TYPE C PERFORATION WASH TOOL 3-1/2"

Manual No: **DL-460-3500-1713**

Revision: A

Revision Date:

Authored by: J.Anderson

11/01/2023 Approved by: K.Plunkett

H) DISASSEMBLY (cont'd)

H-1.2) Remove circulation plug (8) from injection body (9).

H-1.2.1) Remove o-rings (11, 12) from circulation plug (8).

- H-1.3) Unscrew and remove injection body (9) from upper mandrel (3).
- H-1.4) Unscrew and remove vent tube (6) from circulating nipple (2).
- H-1.5) Unscrew mandrel (3) from injection body (9). Remove upper cup mandrel assembly and disassemble:
 - H-1.5.1) Remove short spacer (5), long spacers (7), cups (10) and thimbles (3) from mandrel (3).
 - H-1.5.1.1) Remove o-rings (13) from thimbles (4).
- H-1.6) Unscrew and remove upper coupling (1) from circulating nipple (2).
- H-1.7) Unscrew and remove circulating nipple (2) from coupling (1).
- H-2) Unclamp and remove coupling (1) from vise.

I) ASSEMBLY

NOTE₁: Clean and inspect all parts. Replace all worn and damaged parts. Install parts in proper order and orientation. I-1) Clamp lower coupling (1) in vise.

- I-1.1) Screw circulating nipple (2) into coupling (1).
- I-1.2) Screw upper coupling (3) onto circulating nipple (2).
- I-1.3) Screw vent tube (6) into circulating nipple (2).
- I-1.4) Assemble upper cup mandrel assembly and install:
 - I-1.4.1) Install o-rings (13) into grooves in thimbles (4).
 - I-1.4.2) Install spacers (7), cups (10), thimbles (4), and short spacer (5) onto upper mandrel (3). **CAUTION3:** Do not rip or tear o-rings during installation.
 - CAUTION3. Do not tip of tear o-tings during inst
- I-1.4.3) Screw mandrel (3) into lower coupling (1). I-1.5) Screw injection body (9) onto upper mandrel (3).
- I-1.6) Install o-rings (11, 12) into grooves in circulating plug (8).
- I-1.7) Install circulating plug (8) onto vent tube (6) and into injection body (9). Upper end of circulating plug (8) should contact shoulder of injection body (9).

CAUTION₃: Do not rip or tear o-rings during installation.

- I-1.8) Screw middle coupling (3) onto injection body (9).
- I-1.9) Assemble lower cup mandrel assembly and install:
 - I-1.9.1) Install o-rings (13) into grooves in thimbles (4).
 - I-1.9.2) Install spacers (7), cups (10), thimbles (4), and short spacer (5) onto lower mandrel (3).

CAUTION₃: Do not rip or tear o-rings during installation.

- I-1.9.3) Screw mandrel (3) into injection body (9).
- I-2) Unclamp and remove assembled tool from vise.



TYPE C PERFORATION WASH TOOL 3-1/2"

Manual No:

DL-460-3500-1713

Revision: A

Revision Date:

Authored by: J.Anderson

11/01/2023 Approved by: K.Plunkett

J) PARTS LIST

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 46035
1	2	COUPLING	DLMS80	CP1900N2375N
2	1	CIRCULATION NIPPLE	DLMS35	46035800
3	2	MANDREL	DLMS60	46035210
4	4	THIMBLE	1026	46035840
5	2	SHORT SPACER	1026	46035524
6	1	VENT TUBE	SCH 40 BLK PIPE	46035810
7	4	LONG SPACER	DLMS60	46035522
8	1	CIRCULATION PLUG	DLMS35	46035820
9	1	INJECTION BODY	1026	46035310
10	4	PACKER CUP	80 DURO NITRILE	P-304-S
11	1	212 O-RING	90 DURO NITRILE	90212
12	1	220 O-RING	90 DURO NITRILE	90220
13	4	226 O-RING	90 DURO NITRILE	90226

REDRESS KIT (RDK)	46035050
ASSEMBLED WEIGHT	33 LBS

J-1) ELASTOMER TRIM OPTIONS

NOTE₂: For temperature range, refer to Elastomer Trim Temperature Guide.

J-1.1) HSN

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 46035H
10	4	PACKER CUP	80 DURO HSN	P-304-SH
11	1	212 O-RING	90 DURO HSN	90212H
12	1	220 O-RING	90 DURO HSN	90220H
13	4	226 O-RING	90 DURO HSN	90226Н

46035050H

112	VITON
J-1.2)	VIION

ITEM	QTY	DESCRIPTION	MATERIAL	P/N 46035V
10	4	PACKER CUP	80 DURO VITON	P-304-SV
11	1	212 O-RING	90 DURO VITON	90212V
12	1	220 O-RING	90 DURO VITON	90220V
13	4	226 O-RING	90 DURO VITON	90226V

REDRESS KIT (RDK)	46035050V

OIL TOOLS	TYPE C PERFORATION	Manual No: DL-460-3500-1713	
	WASH TOOL 3-1/2"	Revision: A	
		Revision Date: 11/01/2023	
Authored by: J.Anderson		Approved by: K.Plunkett	

K) TECHNICAL ILLUSTRATION



L) REVISION HISTORY

DATE	REVISION	DESCRIPTION OF CHANGES	REVISED BY	APPROVED BY
11/01/2023	А	Created manual.	-	-