

Disassembly:

- Loosen Bleed Screw to ensure all internal trapped pressure has been depleted.
- Remove Set Screw from Fishneck.
- Remove Shear Pin Housing from Firing Pin Housing.
- Remove the Firing Pin retainer Set Screw from Striker.
- Remove Firing Pin from Striker.
- Remove the Fishneck from Striker.
- Remove the Firing Pin Housing from the Shell Chamber.
- Remove the spent Shell casing from the Shell Chamber .
- Remove the Shell Chamber from the Piston Housing .

- Remove the Piston Housing from the Punch Housing.
- Extract the Displacement Piston from inside of the Punch Housing. (note that the Displacement Piston may be swelled due to impact)
- Remove the Punch Piston from the Punch Housing. (note that the Punch Piston may have to be extracted with the 10-24 cap screws provided in the kit)
- Remove the sheared brass Shear Screw from the Punch Housing.
- Remove the Pin Seal Screw from the Punch Piston and drive the sheared 0.062 pin from the centre of the Punch Piston.
- Remove the Bleed Screw and Ball completely.
- Remove the spent Brass Shear Screws from the Body.
- Remove all spent O-Rings.
- Clean and inspect all parts for damage.

Assembly:

- Install the 126 O-Ring onto the Fishneck.
- Install the Safety Sleeve onto the Fishneck.
- Insert Firing Pin into the bottom of the Striker and install 0.250-20 UNC x 0.375 LG Set Screw. Insert Striker through the Shear Pin Housing and install into Fishneck.
- Tighten Striker into the Fishneck and install 0.313-18 UNC x 0.313 LG Set Screw to lock in place.
- Align shear pin holes and install 0.25" x 1.50" Shear Pin
- Install the Shear Pin Cover on Shear Pin Housing.
- Install the Firing Pin Housing onto the Shear Pin Housing.
- Install the 212 O-Ring and Shell Assembly into the Shell Chamber. (DO NOT ATTACH TO THE FIRING PIN HOUSING AT THIS POINT)
- Install the 111 O Ring on the Displacement Piston.
- Install the Displacement Piston into the Piston Housing, the O-Ring should be towards the Box end of the Piston Housing.
- Install the Rubber Disc and the 214 O-Ring into the Piston Housing, ensure that the Rubber Disc is flush with the bored hole in the Piston Housing .
- Install the Shell Chamber onto the Piston Housing.
- Install the Pin Seal Screw and 020 O-Ring into the desired Punch Piston. (2 3/8" or 2 7/8" or 3 1/2" tubing.)
- Attach the desired size Punch to the Punch Piston using 0.062 shear pin.(Care should be taken to make sure the pin is the proper length so as not to kink or crush when installing into the Punch Piston)*
- Align divot in the Punch Piston with the threaded hole for the Shear Screw and install Shear Screw.
- Install ball and Bleed Screw into the Punch Housing and lightly tighten.
- Stand Punch Housing Vertically and fill to bottom of threads with Hydraulic Oil (ATF)
- Unthread safety sleeve at this **LOCK OUT** shear mechanism.
- Install brass Sealing Disc into the Shell Chamber, and attach to Firing Pin Housing.
- Install the Piston Housing into the Punch Housing, thread together until the hydraulic resistance of the oil can be felt.
- Flip the Tubing Punch Assembly 180 degrees so that the Bleed Screw port is above the Hydraulic Oil, slowly crack the Bleed Screw to relieve any built up pressure, once any pressure is relieved, slowly finish threading the Piston Housing into the Punch Housing until the connection is made up.
- Tighten all connections. (Take caution not to tighten against shear pin)

* - If punching a hole in 2 7/8" or 3 1/2" tubing, the proper sized sleeve should be attached at this time by sliding the sleeve over the Punch Housing, aligning holes and set screws provided.

** - Extreme care should be taken as the Tubing Punch is live and can be detonated if the firing pin comes in contact with the Shell Assembly. Ensure the Safety Sleeve remains in place until the tool is to be lowered into the wellbore.

Purpose:

- To provide a means of achieving well communication between annulus and tubing.

Description:

- The hydraulic perforator consists of six main components:
 - Firing Head Assembly
 - Firing Shell
 - Piston
 - Oil Chamber
 - Punch
 - Punch Housing
- Components of the hydraulic perforator when assembled are o-ring sealed.
- The punch is forced through the tubing wall when the firing shell is detonated. Gas pressure build up above the piston forces the piston down which displaces the oil in the oil chamber to the punch housing.
- The oil pressure transmitted to the punch housing shears the punch piston pin and forces the punch piston from the punch housing through the tubing wall.
- The outside end of tapered punch being larger in diameter than the inside end, allows the punch to fall outside tubing and clear of the perforator.
- The hydraulic perforator is designed for three common tubing sizes: 2 ³/₈, 2 ⁷/₈ and 3 ¹/₂ inch.
- With the use of larger OD sleeves and longer punch piston the 2 ³/₈ perforator is converted to 2 ⁷/₈ and 3 ¹/₂ inch.
- Two styles of firing pins and shell caps are available which are rim fire or center fire. The style of firing pin must be matched with the shell.

Applications:

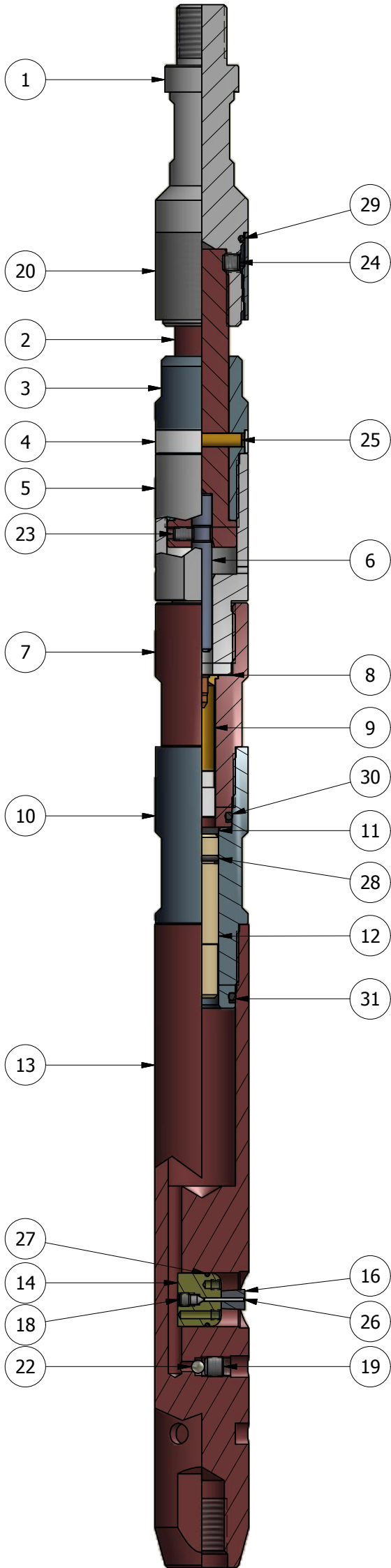
- Perforate circulating holes used for circulating fluids to remove gas from the wellbore killing the well, eliminating well pressure at surface for removal of the tubing during workovers.
- Perforate injection holes in the lower section of the tubing string to inject chemicals down the annulus into the tubing production flow.
- Perforate tubing to enhance poor production caused by partial or full blockage of the tail pipe (e.g. Stuck plugs or chokes that cannot be recovered).
- Perforate below pump seating nipples to aid in the prevention of gas locking of bottom hole rod pumps.

Operation:

- The perforator is assembled with a rope socket body and attached to the tool string with a jar up to shear pulling tool.
- The perforator is now lowered in the tubing string, feeling weight of the tool string by hand while passing through the wellhead components to just above desired perforating depth. Ensure the tubing pressure is equal or higher than on the annulus side. The perforator is lowered in the tubing to the top of the jarring base (preset collar stop or any other known base spacing the perforator to a point above or below a tubing coupling or connection).
- With the perforator set down on the shearing base, downward jarring shears the pin in the firing head discharging the perforator and punching a hole through the tubing wall.

Precautions:

- Treat a loaded perforator as a loaded gun when handling to install on the tool string.
- It is important to hand feel the line and tool string through the wellhead when starting down the wellbore.
- Run the perforator slowly so as not to prematurely fire the gun on the way to the perforating destination in the tubing string.
- It is recommended to set a collar stop, tubing stop or locate the depth of any other shearing base desired to be used, prior to the perforator run.



ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	FISHNECK	01-01-HP-175-01
2	1	STRIKER	01-01-HP-175-02
3	1	SHEAR PIN HOUSING	01-01-HP-175-03
4	1	SHEAR PIN COVER	01-01-HP-175-04
5	1	FIRE PIN HOUSING	01-01-HP-175-05
6	1	FIRING PIN	01-01-HP-175-06
7	1	SHELL CHAMBER	01-01-HP-175-07
8	1	SEAL DISC	01-01-HP-175-08
9	1	SHELL ASSEMBLY	01-01-HP-175-S0
10	1	PISTON HOUSING	01-01-HP-175-10
11	1	RUBBER DISC	01-01-HP-175-11
12	1	PISTON	01-01-HP-175-12
13	1	PUNCH HOUSING	01-01-HP-175-13
14	1	PUNCH PISTON	01-01-HP-200-14
15	A/R	PUNCH PISTON	01-01-HP-250-14
16	1	3/8 PUNCH	01-01-HP-175-15
17	A/R	1/2 PUNCH	01-01-HP-175-16
18	1	PIN SEAL SCREW	01-01-HP-118-17
19	1	BLEED SCREW	01-01-HP-175-18
20	1	SAFETY SLEEVE	01-01-HP-175-19
21	N/S	SHEAR SCREW	05-01-SLC-200-20
22	1	BALL	Ø.250
23	1	HEX SOCKET SET SCREW	.250-20 UNC x .375 LG
24	1	HEX SOCKET SET SCREW	.313-18 UNC x .313 LG
25	1	SHEAR PIN	Ø.250 x 1.50 LG
26	1	DRILL ROD	Ø.063 x .75 LG
27	1	O-RING	2-020
28	1	O-RING	2-111
29	1	O-RING	2-126
30	1	O-RING	2-212
31	1	O-RING	2-214

APPLICABLE CRITICAL DATA	
DESCRIPTION	DATA
O.D (max)	1.750"
OAL	29.16"
FISHNECK SIZE (O.D)	1 7/8"
UPPER CONNECTION	.938"-10 UN
SAFETY SLEEVE CONNECTION	1.562"-10 STUB ACME
STRIKER CONNECTION	1.000"-14 UN
SHEAR PIN HOUSING CONNECTION	1.375"-14 UNS
FIRING PIN HOUSING CONNECTION	1.250"-10 UNS
SHELL CHAMBER CONNECTION	1.250"-14 UNS
PISTON HOUSING CONNECTION	1.375"-14 UN
LOWER CONNECTION	.938"-10 UN
WEIGHT (lb)	15.50
PIN SHEAR FORCE (lb)	3927