

RICE HYDRO, INC.
MANUFACTURER'S OPERATING INSTRUCTIONS
FIRE HOSE TESTER MODEL FH-10(B), (H)

FOR WARRANTY REGISTRATION CALL 800-245-4777

<u>COMPONENTS</u>	<u>DESCRIPTION</u>
Engine	5.5 HP 4 cycle gasoline engine with oil guard
Pump	10 GPM Twin Piston Pump Pressures up to 450 PSI
Gauge	Stainless Steel Liquid-Filled
Inlet	Inlet 2 ½" NST Swivel Coupling
Outlet	4 independent Ballvalves with NST couplings
Back Bleed	½" ballvalve to bleed air and attach Pressure wand accessory
Pressure Regulator	Manual-Operated Pressure Relief valve, adjustable settings with bypass

HOOKING UP THE PUMP:

1. Connect inlet to fire hydrant outlet with 1 ½" or larger hose
2. Connect fire hose to be tested to suitable adapters on manifold outlets. Hose should have nozzles on the end to bleed the air from the lines at full flow. Hoses should be lying up hill from the pump if possible.
3. Connect garden hose to back bleed and direct to a drain area keeping test area dry.
4. ASSURE ENGINE IS "OFF".

OPERATING THE PUMP:

1. Close all ballvalves, slightly crack open the ½" bleeder ballvalve.
2. Open inlet ballvalve. Open outlet ballvalves one at a time and allow each hose to be filled through manifold. Do not turn pump on at this time.
3. To insure air is safely bled from hoses, bleed each hose, one line at a time with hydrant volume and pressure, utilizing a nozzle or shut off at the end of the hose.
4. When each line is filled, free of air, with nozzle closed, close the ballvalve at the manifold outlet to seal that line. Even if you are not using all four outlets, bleed them with full hydrant flow. All air must be removed.
5. With back bleed open, turn on the pump. This will bleed the air out of the pressure side of the pump - out to the drain area.
6. **Close 1 ½" ballvalve at inlet of manifold/unit, directing water flow from hydrant to pressure side of pump. No pressure will build until this ballvalve is closed.**
7. Slowly close the ½" back bleed ballvalve at end of 1 ½" manifold. Check the gauge to verify pressure setting of relief valve. The pressure regulator has been preset at factory. ***To change this setting you must make this adjustment while the water is flowing freely, under no pressure.*** To adjust pressure, first loosen the locknut. Turn the T-handle/knob clockwise to increase and counter-clockwise to decrease the pressure. Place a ballvalve or similar open and close valve at the end of the outlet hose(s), open and close ballvalve to check pressure setting and re-adjust as necessary. It is also recommended that you open and close the ½" back bleed valve to release excess air from piping and ensure accurate pressure readings. Once desired setting is reached, **IT IS VERY IMPORTANT THAT YOU RE-TIGHTEN THE LOCK/JAM NUT**, do not leave adjustment handle free to move or vibrate out of setting. If unloader valve handle is removed or otherwise becomes disengaged, see attached diagram to rebuild assembly correctly. **CAUTION: IT IS VERY COMMON TO REPLACE POPPET/BUTTON BACKWARDS, THE LONGER LEG WITH STEEL BALL FACES AWAY FROM THE SPRING.**

8. Open the 1 1/2" ballvalves at the outlets and begin building pressure in all the lines. In the event there is an acceptable leak in the system that must be overcome by leaving the pump running. Crack the 1/2" back bleed valve allowing a small amount of cool fresh water to run in bypass. **Once pressure has been reached close all ballvalves and shut off pump.**
9. If the air has been bled as outlined, the pump will build pressure quickly and safely with only hose stretch to overcome. If a hose ruptures, the only volume of water available is through GPM of pump. NO SURGE OF VOLUME, NO WILD LINE.
10. Remember it is very important to bleed the air out of each line, the manifold and the high pressure side of the pump with as much volume at hydrant pressure as possible. This will provide the most safety during testing.
11. It is impossible to insure that air is not caught behind couplings. If air is caught behind a coupling that fails- it could cause an explosion and fragmentary effect. Do not bend over the top of the pump. Treat hoses and couplings under pressure as dangerous.

NOTE: When dealing with existing pressured hoses or to re-pressurize hose, unit's existing manifold/piping pressure must be bled back down to 70 PSI. **DO NOT LOWER PRESSURE ON HOSES OR TEST ENVIROMENT**, just in manifold/piping section of pump. High existing "head pressure" will cause motor to stall, not start at all, or pump to fail. Examples: hoses are pre-filled and have existing pressure of 120 PSI, and you need to build to 150 PSI, the positive displacement pump will struggle with overcoming this existing head pressure. **TO OVERCOME:** with 1 1/2" outlet ballvalves closed holding existing pressure open backbleed 1/2" ballvalve to release pressure in piping/manifold down to 70 PSI or below. Turn motor/unit on and close 1/2" backbleed ballvalve building pressure within piping/manifold to at least 30 PSI above existing test pressure (this will allow the pump to overcome the existing head pressure, and begin to open individually the 1&1/2" ballvalves.

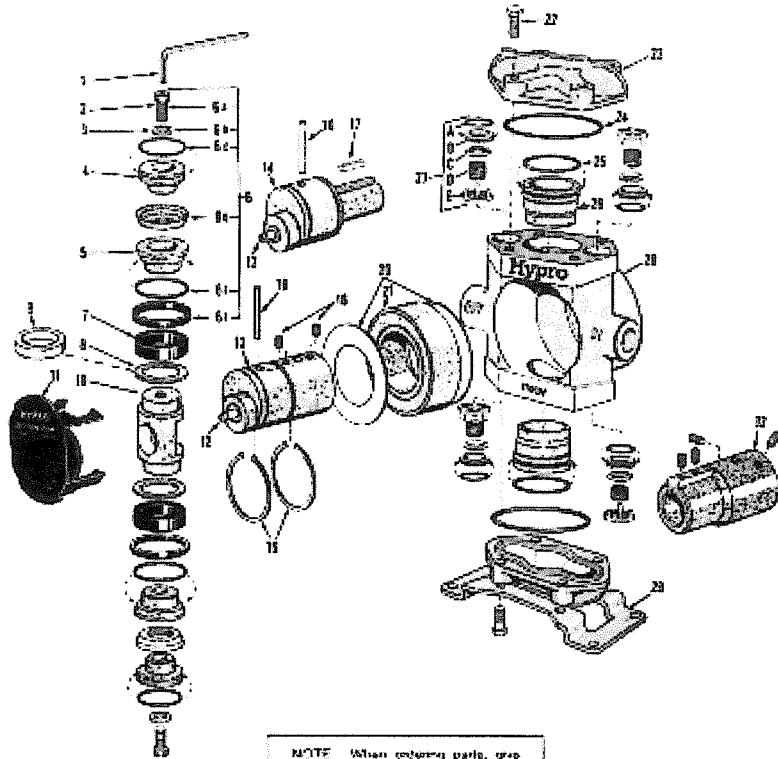
MAINTENANCE, TROUBLESHOOTING, AND CAUTIONS:

1. DO NOT RUN PUMP DRY. (EXCEPT FOR 3-5 SECONDS WHEN DRAINING)
2. DRAIN ENTIRE SYSTEM AFTER EACH USE.
3. FLUSH WITH ANTI-FREEZE TO PROTECT FROM FREEZING IN COLD CLIMATES.
4. Periodically check oil level in pump thru sight glass, 30wt non-detergent.

POSSIBLE CAUSE

SOLUTION

Leaks	Look for leaks in water supply or connections.
Kinked/Collapsed	Supply hose may be kinked or collapsed.
Pump Sucking Air	Small holes in supply hose are hard to find as air is sucked inward. Replace supply hose.
Relief Valve Setting	1000 PSI maximum setting.
AIR, AIR, AND MORE AIR	Ensure air is bled from hoses, manifold, piping. The length of time to build pressure and test hoses is directly related to overcoming air buildup.
Not building pressure	Inlet ballvalve has not been closed.
Faulty Gauge	Replace gauge.
Piston Pump - Old Style	Worn seals or cups rebuild pump.
Motor will not Run	Verify plugged directly into wall outlet, or using a minimum 12 gauge 3 wire, maximum 25' extension cord. Push thermal overload button to reset.



NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

PISTON STACK PARTS KITS

LEATHER CUP KIT NO. 3430-0037 (STD)
 Consists of two each of the following parts:
 No. 2220-0013 Piston Cap Screw (Ref. 6A),
 No. 2270-0012 Washer (Ref. 6B), No. 1720-0030 O-Ring (Ref. 6C), No. 2150-0001
 Leather Cup (Ref. 6D), No. 1720-0065 O-Ring
 (Ref. 6E) and No. 1440-0012 Seal Ring (Ref.
 6F).

FABRIC CUP KIT NO. 3430-0039
 Same as Leather Cup Kit except with two No.
 2150-0012 Fabric Cups.

RUBBER CUP KIT NO. 3430-0189
 Same as Leather Cup Kit except with two No.
 2150-0042 Rubber Cups.

CRANKSHAFT ASSEMBLIES

SUB-ASSEMBLIES—
 Include Grease Fitting (Ref. 12), Crankshaft
 with cam bearing (Ref. 13 or 14) and Crankpin
 Retainer (Ref. 16).

COMPLETE ASSEMBLIES—
 Include Sub-Assembly components plus
 Retaining Rings (Ref. 15), slinger rings (Ref.
 20) and Bearing (Ref. 21).

Sub- Assembly PART NO.	Complete Assembly PART NO.	Pump Model Number
With 1-3/8" Hollow PTO Shaft (Ref. 13)		
5503-5206	5501-5206	5206C-H
5503-5210	5501-5210	5210C-H
with 1" Solid Shaft (Ref. 14)		
5003-5206	5001-5206	5206C
5003-5210	5001-5210	5210C

Ref. No.	Qty. Req'd.	Part No.	Description
1	1	3020-0008	Allen Wrench (Optional)
2	2	2220-0013	Piston Cap Screw
3	2	2270-0012	Washer
4	2	1830-0039	Piston Cup Spreader
5	2	1410-0054	Cup Backing Plate
6	1	3430-0037	Piston Stack Parts Kit with Leather Cups (Standard)
6	1	3430-0039	Piston Stack Parts Kit with Fabric Cups (Models 5200-F)
6	1	3430-0189	Piston Stack Parts Kit with Buna-N Cups (Models 5200-R)
7	2	1440-0005	Piston Guide
8	2	1410-0018	Support Ring For 5210 Models Only
9	2	1410-0020	Support Ring For 5206 Models Only
10	1	0503-5200	Connecting Rod
11	1	0502-5200	Safety Cover
12	1	2405-0006	Grease Fitting Assembly
13	1	See Listing	Crankshaft (Solid Shaft Models)
14	1	See Listing	Crankshaft (Hollow Shaft Models)
15	2	1610-0001	Retainer Ring
16	1	1600-0013	Crankpin Retainer

Ref. No.	Qty. Req'd.	Part No.	Description
17	1	1610-0005	Key (Solid Shaft Models)
18	2	2230-0003	Set Screw
20	2	1410-0006	Slinger Ring
21	1	2005-0002	Main Bearing
22	8	2210-0062	Cylinder Head Bolt
23	2	0203-5200CB	Cylinder Head
24	2	1720-0028	O-Ring - for cylinder head
25	2	1720-0019	O-Ring - for cylinder sleeve
26	2	3550-0007	Cylinder Sleeve
27	4	3400-0035	Valve Assembly—Consists of: O-ring (Ref. A), Valve Seat (Ref. B), Valve Poppet (Ref. C), Valve Spring (Ref. D) and Valve Spring Retainer (Ref. E)
28	1	0100-5200C	Body
29	1	1510-0024	Base
32	1	1320-0081	Adapter-Adapts 1" solid shaft to 1-3/8" 6-spline PTO hollow shaft. (Includes set screws.)

PARTS BREAKDOWN FOR MODEL FH10-B / FH-10H
RICE HYDRO INC.

REF#	PART NUMBER..	DESCRIPTION..	QTY REQ'D
2	HYPRO-2220-0013	PISTON CAP SCREW	2
3	HYPRO-2270-0012	WASHER	2
4	HYPRO-1830-0039	PISTON CUP SPREADER	2
5	HYPRO-1410-0054	CUP BACKING PLATE	2
7	HYPRO-1440-0005	PISTON GUIDE	2
8	HYPRO-1410-0018	SUPPORT RING 5210	2
10	HYPRO-0503-5200	CONNECTING ROD	1
11	HYPRO-0602-5200	SAFETY COVER	1
12	HYPRO-2405-0006A	GREASE FITTING ASSEMBLY	1
14	HYPRO-5003-5206	SUB ASSEMBLY SHAFT	1
14	HYPRO-5001-5206	COMPLETE SHAFT ASSEMBLY	1
15	HYPRO-1810-0001	RETAINER RING	2
16	HYPRO-1600-0013	CRANKPIN RETAINER	1
17	HYPRO-1610-0005	KEY FOR SOLID SHAFT	1
20	HYPRO-1410-0006	SLINGER RING	2
21	HYPRO-2005-0006	MAIN BEARING	1
22	HYPRO-2210-0062	CYLINDER HEAD BOLT	8
23	HYPRO-0203-5200CB	CYLINDER HEAD	2
24	HYPRO-1720-0028	O-RING FOR CYLINDER HEAD	2
25	HYPRO-1720-0019	O-RING FOR CYLINDER SLEEVE	2
26	HYPRO-3550-0007	CYLINDER SLEEVE	2
27	HYPRO-3400-0038	VALVE ASSEMBLY	4
28	HYPRO-0100-5200C	PUMP BODY 5206C	1
29	HYPRO-1510-0024	PUMP BASE	1

NA	BRIGG-126352-0049-E2	5.5 HP W/GEAR REDUCTION	1
NA	HONDA-GX160UT2-HX2	5.5 HP W/GEAR REDUCTION	1
NA	CHECKVALVE-1/2F	1/2 FKF CONBRACO CHECKVALVE	1
NA	BALLVALVE-1/2	1/2" APPOLO BALLVALVE	1
NA	BALLVALVE-S-1&1/2	STAINLESS STEEL BALLVALVE	5
NA	SPRAY-6815-700-3/4	70-700 PSI REGULATOR	1
NA	ADAPTER-NST-1&1/2	1 1/2"NPTXNST OUTLET ADAPTER	4
NA	SWIVEL-INLET-FH3	1&1/2MPTX2&1/2 FST ADAPTER	1
NA	COUPLING-LVJ-3/4	3/4" COUPLING LOVEJOY(ENG SIDE)	1
NA	COUPLING-LVJ-ENG-1"	1" COUPLING LOVEJOY(PUMP SIDE)	1
NA	CENTERDISK-5210	URETHANE SPIDER 5210	1
NA	CASTER-RIGID-4	RIGID CASTER FOR BASE	2
NA	CASTER-SWIVEL-4	SWIVEL CASTER FOR BASE	2
NA	GAUGE-600	0-600 PSI LIQUID FILLED GAUGE	1
NA	GAUGE-SNUBBER-1/4	1/4" VIBRATION SNUBBER	1
NA	HYPRO-5210C-FL	TWIN PISTON 10GPM, 450 PSI	1
NA	CARTON-TR6	SHIPPING BOX FOR FH10	1

KIT	HYPRO-3430-0037	PISTON REPAIR KIT--LEATHER: PISTON STACK PARTS KIT W/ LEATHER CUPS REF. #6	
KIT	HYPRO-3430-0039	PISTON REPAIR KIT--FABRIC: PISTON STACK PARTS KIT W/ FABRIC CUPS REF. #6	
KIT	SPRAY-AB6815-700	UNLOADER/BYPASS REPAIR KIT	

PRICES SUBJECT TO CHANGE WITHOUT NOTICE