

Make Your Own Hydraulic Pressure Test Gauge for Your Ford N Tractor

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A recent post by TheOldHokie (Dan Allen of Windy Ridge Farm & Machine) described the fittings that one needed to connect a pressure gauge to the N tractor's hydraulic test port. I decided to make one for my use, but decided to add a 3-foot length of high pressure hose so that I could test hydraulic pressure while standing and operating the N's 3-point lift lever as I tested pressure.

My local NAPA dealer got me all the parts for around \$60. I'm lucky in that I live in a farming community so my local NAPA guys are lifetime farmers and tractor users and maintainers. They also like to restore older International tractors, but are knowledgeable about Fords, too. The \$60 included having them crimp the two hose connectors onto either end of the hose for me, and the rest of the assembly was a piece of cake.


Wrapped the threads on the male hose connector with Teflon tape and screwed the brass coupler on to it.




Wrapped the threads of the pressure gauge with Teflon tape and screwed that into the other end of the brass coupler.

The 90-degree coupler screws into the female hose connector. It works better if you first screw it into the hydraulic test port on your N and then connect it to the hose coupler.

See the instructions after the parts list on how to use the gauge to test your hydraulic pressure.



Below is the list of parts from NAPA and www.surpluscenter.com to make one of these. The [surpluscenter.com](http://www.surpluscenter.com) hose comes pre-made with the JIC connectors already installed. The NAPA hose requires the purchase of connectors that must be crimped on.

Part#	Description	Photo
NAPA# 7012045	Part Number: BK 7012045 Product Line: Balkamp Bezel Color: White Dimensions: 2 1/2" Diameter 270 Degree (Full Sweep) Gauge Face Color: White Non-Illuminated Manufacturer: Hypro LLC Mfg. Part Number: GG3000 Type: Mechanical Mounting Hole Diameter: 1/4" NPT Bottom Stem Outer Finish: Stainless Steel Restrictions: Up To 3,000 psi Style Name: Liquid Filled Gauge \$26.99	

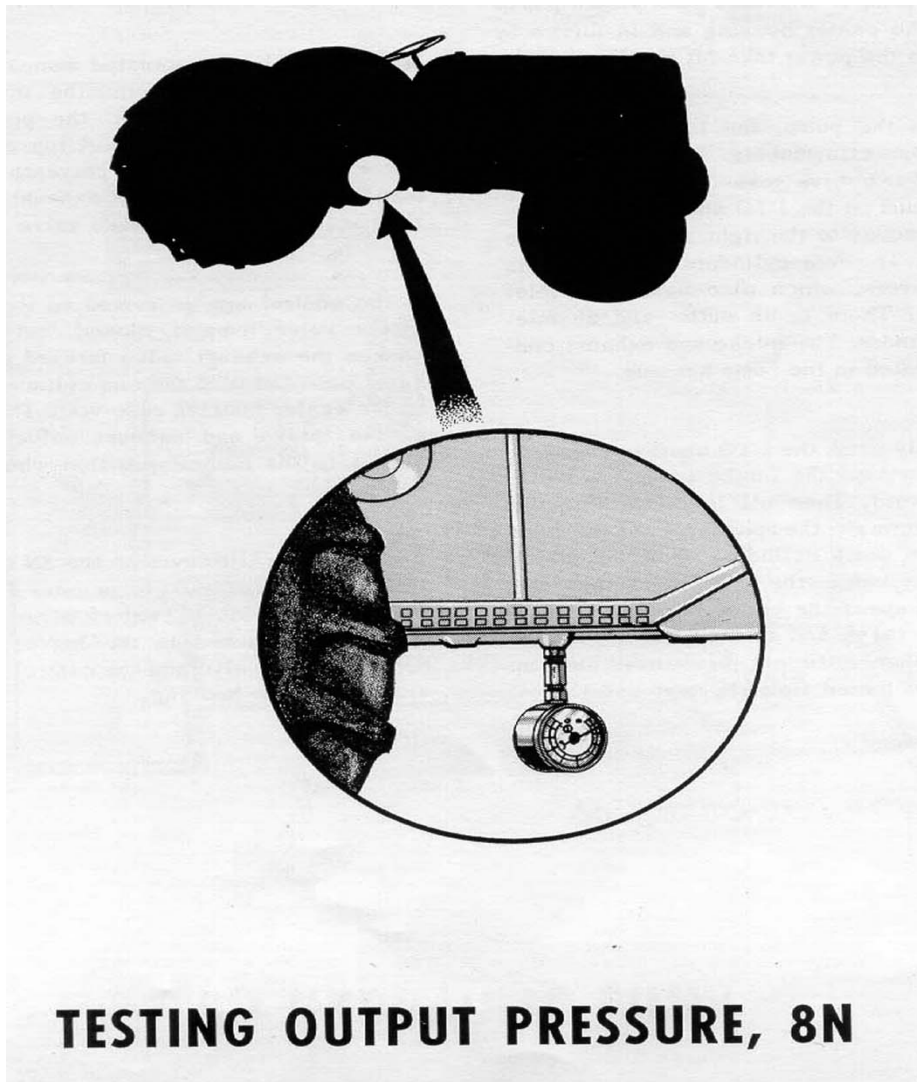
<p>Surpluscenter.com# 21-1045</p>	<p>5,000 PSI GLYCERIN FILLED PRESSURE GAUGE Brand new. Glycerin damps vibrations, protects against surge pressure. SPECIFICATIONS: 0-5,000 PSI 2-1/2" Diameter face Chrome case 1/4" NPT lower connection Glycerin filled \$16.95</p>	
<p>Surpluscenter.com# 920-2224</p>	<p>1/4" X 24" JIC 4F X JIC 4F 5,000 PSI HYDRAULIC HOSE SAE 100R2 2-wire hydraulic hose assembly with JIC female swivel ends. Inside Dia.: 1/4" Length: 24" Fittings: JIC 4F Working / Burst Pressure: 5,000 / 20,000 PSI \$9.00</p>	
<p>NAPA# H24504-250R</p>	<p>Part Number: WH H24504250R Brand Name: Eaton / Weatherhead Hose Cover Material: Neoprene Hose I.D.: #4 (1/4") Hose O.D.: 17/32" Hose Inner Tube Material: Nitrile Blend Hose Minimum Bend Radius: 2" Hose Minimum Burst Pressure: 20,000 P.S.I. Working Pressure: 5,000 P.S.I. Hose Operating Temperature Range: -40 Deg to +212 Deg F (Hydraulic) Hose Reinforcement Type: 2 Layers Of Hi-Tensile Steel Braid Hose SAE Rating: SAE 100R16, ABS Hose Type: High Pressure Series of Hose Ends Used: Coll-O-Crimp Z, S, U & 430U Series Type: High Pressure Hydraulic Hose (2 Wire) Use: High Pressure Hydraulic Systems, Water / Glycol Systems, Fuel Systems NAPA Price (3-feet): \$10.50</p>	
	<p>Part Number: WH 04U104 Brand Name: Eaton Weatherhead Degree of Bend: None (Straight) Fits Hose I.D.: #4 (1/4") Fitting End Hex Size: None</p>	

<p>NAPA# 04U-104</p>	<p>Fitting Style: Male Connector Fitting Type: Hydraulic / Oil / Air Fitting Type: Male Fixed or Swivel Type: Fixed Hose End / Adapter Overall Length: 2.49" Hose End Hex Nut Size: 9/16" Hose End Hole Diameter: .16" Hose End Series: U Series Hose End Thread Size: 1/4"-18 Product Application: General Purpose Low, Medium & High Pressure Hydraulic. Type: Pipe Thread(s) Use w/ Hose Part #: H017, H039, H104, H105, H114, H115, H145, H146, H245, H324, H325, H350, H425, H545 Assemble w/ Crimper Model(s): T400-1, T410-1, T420-1, T440, T460, T462, T465, T480, ET1000, ET4000 Hose End Hose Cut-Off Factor: .94" Hose End Material: Low Carbon Steel Label Set Available: FS1100 NAPA Price: \$4.75</p>	 <p>For gauge end of hose – connects to coupler to then connect to pressure gauge</p>
<p>NAPA# 04U-604</p>	<p>Part Number: WH 04U604 Brand Name: Eaton Weatherhead Degree of Bend: None (Straight) Fitting End Hex Size: 9/16" Fitting Style: Female Connector Fitting Type: Hydraulic / Oil / Air Fitting Type (Male, Female): Female Fixed or Swivel Type: Swivel Hose End / Adapter Overall Length: 2.61" Fits Hose I.D.: #4 (1/4") Hose End Hex Nut Size: 9/16" Hose End Hole Diameter: .16" Hose End Series: U Series Hose End Thread Size: 7/16"-20 Hose End Tube Size: 1/4" Product Application: General Purpose Low, Medium & High Pressure Hydraulic. Type: JIC Flare(d) - 37 Degree(s) Use w/ Hose Part #: H017, H039, H104, H105, H114, H115, H145, H146, H245, H324, H325, H350, H425, H545 Additional Notes: Swivel Nuts are Universal - Both SAE 37 and 45 Degree Connections.</p>	 <p>For tractor hydraulic test port connection end of hose – connects to 90-degree fitting that is screwed into the hydraulic pump test port.</p>

	<p>Assemble w/ Crimper Model(s): T400-1, T410-1, T420-1, T440, T460, T462, T465, T480, ET1000, ET4000 Hose End Hose Cut-Off Factor: 1.13" Hose End Material: Low Carbon Steel Label Set Available: FS1100 NAPA Price: \$6.00</p>	
<p>NAPA# 3300 X4</p>	<p>Part Number: WH 3300X4 Product Line: Weatherhead Description: Coupling Material: Brass Dimension C: 0.750 in (19.1 mm) Dimension D: 0.438 in (11.1 mm) Dimension L: 1.120 in (28.4 mm) Female Pipe Thread I.D.: 0.250 in (6.4 mm) NAPA Price: \$2.00</p>	 <p><i>Use to connect pressure gauge with NAPA# 04U-104 hose connector above.</i></p>
<p>Surpluscenter.com# 9-2405-4-4</p>	<p>JIC 4M TO 1/4" NPTF CONNECTOR JIC Male To NPT Female Connector \$1.30</p>	 <p><i>Use to connect pressure gauge with pre- made surpluscenter.com hose above.</i></p>

<p>N/A at NAPA but my NAPA dealer got it from another supplier for me.</p>	<p>ORB (SAE-5) O-ring x JIC 37° flare type hydraulic fitting and ½"-20 fine-thread male fitting for the hydraulic test port.</p> <p>Available from TheOldHokie for \$2.75 + postage. http://mysite.verizon.net/oldhokie/windyridge/id8.html</p> <p>Dan also sells a cap for the flare nut end (keeps dirt out) if you want to leave it on your tractor.</p>	
<p>Available at any home supply or hardware store.</p>	<p>If you have not used Teflon tape to seal threads on fittings before, check out this website: http://plumbing.about.com/od/basics/qt/Teflon-Tape-How-To-Use-Teflon-Tape.htm</p> <p>Use it on the pressure gauge threads and the threads on the hose coupling that screw into the brass coupling (p/n 3300 X4). <i>You do not use this on the 90-degree coupling above.</i></p>	





8N HYDRAULIC PRESSURE CHECK

The hydraulic pressure in the 8N tractor can be checked by installing a pressure gauge in a port provided for this purpose. The pump is removed or installed through an opening in the bottom of the center housing. A port in the right front corner of the pump mounting flange connects to the ram cylinder passage. This is the port in which the pressure gauge is installed.

The relief valve and/or the pump output pressure are checked by securing the lift arms in their lowest position, operating the engine at about two-thirds throttle and raising the touch control lever to the top of the quadrant long enough to obtain a pressure reading. This assumes that the oil has been previously warmed up.

If a pressure of 1600 psi is not obtained, check the relief valve. Remove the inspection cover from either side of the center housing. Repeat the above test and observe the oil near the relief valve (at rear of pump assembly). If turbulence is noted, replace the relief valve and repeat the test.

If the pressure is below specifications with a good relief valve installed, the difficulty lies in the pump, the cylinder and piston, and/or the connecting tubing.

The transmission and center housings serve as an oil reservoir for the 8N hydraulic system, and the same oil is used by the three assemblies.

SPECIFICATIONS

Relief valve setting and pump output 1600 psi
Reservoir capacity 5 gal.

