

**544 & 656 Series
Hydrostatic Drive Tractors
H70 & H80**

Service Manual

GSS-1397

Reprinted

CASE III

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SPECIAL SERVICE TOOLS REQUIRED

FES 11-1A Heavy duty front tractor stand
FES 52 Basic engine stand
FES 52-1 Engine stand attaching plate
FES 117 Heavy duty rear tractor stand

OTC-515-A Crossbar
OTC-927 Puller
OTC-943 Puller
OTC-950 Puller plate

Gauges required, but not included in Kit FES 123, listed below:

FES 96-1 Marsh pressure gauge 0-600 psi in increments of 10 psi on 2-1/2" dial face with 1/4" NPT fitting.
FES 96-2 Marsh pressure gauge 0-10,000 psi in increments of 200 psi on 3-1/2" dial face with 1/4" NPT fitting.
2-FES 96-3 1/4" x 1/4" female NPT female connector.

FES 123 656 Hydrostatic tractor tool kit – does not include Gauges or FES 96-3 connector listed above which must be obtained. Includes the following:
FES 123-1 Charge pump seal installing tool
FES 123-2 Lapping stone
FES 123-3 Horseshoe - pump spring compressor
1/4" male tube x 1/4" NPT female connector
FES 123-5 1/4" x 1/4" female steel tube connector
FES 123-6 1/4" male tube connector x 7/16" - 20 O-ring boss
FES 123-7 1/4" service tee
FES 123-9 Center Section surface protectors

STANDARD TORQUE DATA FOR NUTS AND BOLTS

Recommended torque, in foot pounds, for all Standard Application Nuts and Bolts, provided:





- A. All thread surfaces are clean and lubricated with SAE-30 engine oil. (See NOTE.)
- B. Joints are rigid, that is, no gaskets or compressible materials are used.
- C. When reusing nuts or bolts use minimum torque values.

NOTE: Multiply the standard torque by:

- .65 when finished jam nuts are used.
- .70 when Molykote, white lead or similar mixtures are used as lubricants.
- .75 when parkerized bolts or nuts are used.
- .85 when cadmium plated bolts or nuts are used.
- .90 when hardened surfaces are used under the nut or bolt head.

Bolt or Stud Diameter	Type 1 Studs Only		Type 1 Bolts 6" length or less		Type 1 Bolts longer than 6"		Type 2 (all lengths)		Type 3 (all lengths)		Type 4 (all lengths)			
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Only when used in cast (gray) iron		All other applications	
											Min.	Max.	Min.	Max.
1/4	5	6	5	6	3	3	9	10	11	13	11	13	12	14
5/16	12	13	12	13	6	7	19	21	24	27	24	27	27	30
3/8	21	24	21	24	11	13	33	37	43	47	43	47	45	50
7/16	35	38	35	38	19	21	53	60	69	76	69	76	75	85
1/2	52	58	52	58	29	32	80	90	104	117	104	117	115	130
9/16	70	80	70	80	41	46	115	130	150	170	150	170	165	185
5/8	98	110	98	110	57	63	160	180	210	230	210	230	220	250
3/4	174	195	174	195	100	112	290	320	350	390	350	390	400	450
7/8	300	330	162	181	162	181	420	470	570	630	570	630	650	730
1	420	470	250	270	250	270	630	710	850	950	850	950	970	1090
1-1/8	600	660	350	380	350	380	850	950	1200	1350	1200	1350	1380	1550
1-1/4	840	940	490	540	490	540	1200	1350	1700	1900	1700	1900	1940	2180
1-3/8	1100	1230	640	710	640	710	1570	1760	2300	2500	2300	2500	2600	2800
1-1/2	1470	1640	850	940	850	940	2000	2300	3000	3300	3000	3300	3300	3700
1-3/4	2350	2450	1330	1490	1330	1490	3300	3700	4700	5200	4700	5200	5300	6000
2	3500	3900	2000	2200	2000	2200	5000	5500	7000	7800	7000	7800	8000	9000

BOLT TYPE IDENTIFICATION CHART

IH TYPE	S.A.E. GRADE	DESCRIPTION	BOLT HEAD MARKING *
1	1 Equivalent or 2	WILL HAVE IH STANDARD MONOGRAM IN THE CENTER OF THE HEAD Low or Medium Carbon Steel Not Heat Treated	
2	5	WILL HAVE AN IH AND 3 RADIAL LINES Quenched and Tempered Medium Carbon Steel	
3	6	WILL HAVE AN IH AND 4 RADIAL LINES No longer used in production. For replacement, use Type 4 if Type 3 is not available.	
4	8	WILL HAVE AN IH AND 6 RADIAL LINES Quenched and Tempered Special Carbon or Alloy Steel	

* The center marking identifies the bolt manufacturer. The IH monogram is currently used. Some bolts may still have a raised dot which previously identified IH bolts.

SPECIFICATIONS

Pressures

Drive Pressure 5400 to 5800 psi max.
 (will show 5200 to 5400 at Foot-N-Inch Valve)

Charge Pump (above 700 RPM)
 (Hydrostatic Pump in Neutral) 180 psi min. - 240 psi max.
 (Hydrostatic Pump in Forward or Reverse). 80 psi min.

NOTE: Due to a difference in flow path, forward shows higher pressure than reverse at high RPM.

Servo Pump (1200 RPM and above) 390 - 430 psi

Deceleration Valve (Hand Control Models) 1500 to 2100 psi
 (Foot Control Models, High range) 2500 to 3150 psi
 (Foot Control Models, Low range) 5400 to 5800 psi

Pump Capacities

Hydro-Pump 4.26 cu. inches per revolution at 18 degrees

Hydro-Motor 7.24 cu. inches per revolution at 18 degrees

Charge Pump - The approximate pump flow with oil at 135 degrees F in "Neutral", "Forward" or "Reverse" is:

<u>Engine RPM</u>	<u>Gallons per Min.</u>
2300	10.5
2000	9.0
1500	6.5
1200	5.0
900	3.5
675	1 to 2

Servo Pump (cannot be checked) 4.4 gpm (rated speed)

Auxiliary Valves and Power Steering Pump 12 gpm (rated speed)

Hitch Pump 6.5 gpm (rated speed)

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