

Hitch and Hydraulic System for 500 Crawler Tractor

Service Manual

GSS-1380

Reprinted

CASE III

CONTENTS

	Page
Special Service Tools Required	4
Specifications	
Gresen Control Valve	4
Husco Control Valve	4
Hydraulic Pumps	5
Cylinders	6
Three Point Hitch	6
Standard Torque Data for Nuts and Bolts	7
Trouble Shooting	8
Testing Procedures	
Backhoes and Loaders	12
Pump Efficiency	12
Gresen Control Valves	
Principles of Operation	12
Single Spool Gresen Valve Service	14
Two Spool Gresen Valve Service	20
Husco Control Valve	
Principles of Operation	28
Husco Control Valve Service	29
Drott Hydraulic Cylinder Service	
International Hydraulic Cylinder Service	
Lift Cylinder - International Loader (3-1/2 inch)	42
Tilt, Angle or Lift Cylinder - No. 10 or 11 Bullgrader (3 inch)	45
Tilt Cylinder - International Loader or Lift Cylinder - No. 5G2 Bullgrader (2-1/2 inch)	48
Hydraulic Pump Service	
9 GPM Pump - Engine Mounted (timing gear driven)	51
10 GPM Pump - Engine Mounted (timing gear driven)	52
12 GPM Pump - Front Mounted (PTO driven)	54
17 GPM Pump - Front Mounted (PTO driven)	60
Break-In of All Repaired Pumps	64
Hydraulic Oil Filter	
Three Point Hitch	
Principles of Operation	66
Three Point Hitch Service	67
Three Point Hitch Linkage	
Top Link	71
Lift Rod	71
Leveling Rod	72
Hydraulic Circuits	
500 Crawler Tractor with 5G2, 5D2 or No. 11 Bullgrader	75
500 Crawler Tractor with 5G2, 5D2 or No. 11 Bullgrader and Hitch or Remote Control Single Acting Cylinder	77
500 Crawler Tractor with 5G2, 5D2 or No. 11 Bullgrader and Remote Control Double Acting Cylinder	79
500 Crawler Tractor with No. 10 Bullgrader	81
500 Crawler Tractor with International Loader and Materials Bucket	83
500 Crawler Tractor with International Loader and Drott 4-in-1 Bucket	85
500 Crawler Tractor with International Loader, 4-in-1 Bucket and 3121, 3131 or 3141 Backhoe	87

SPECIAL SERVICE TOOLS REQUIRED

- | | |
|--|--|
| FES 1-2 - 3000 psi gauge | FES 58-2C - 1/2" x 1/2" Connector |
| FES 43-1 - Relief valve adjusting tool | FES 58-2D - 1/2" x 3/8" Connector |
| FES 43-2 - Special tapped plug | FES 88 - Spanner wrench |
| FES 51A - Flo-Rater | FES 94-3 - 3/8" x 1/4" NPT Connector |
| FES 57-1 - Seal installing tool | FES 98-12 - 1/2" x 7/8" - 14 Connector |
| FES 57-2 - Valve seat remover | FES 98-18 - 1/2" Service tee |
| FES 57-3 - O-ring and packing gland
remover | |

SPECIFICATIONS

Gresen Control Valve

Relief valve cracking pressure 1800 psi
 Relief valve seat torque 30 ft. lbs.

Spring Specifications

Spring Description	Free Length (inches)	Total Number of Coils	Test Length (inches)	Test Load (pounds)
Relief valve	1-9/32	6-1/2 ± 1/2	1-3/32	300 ± 30
Float spool centering	1-25/32	6-1/2	1-1/4	25
Relief valve	1-21/32	8-1/2	1-1/2	135
Three-way spool centering	1-9/64	5	15/16	23
Detent	7/16	4-1/2	23/64	60
Four-way spool centering	1-11/64 ± 1/32	4-1/4 ± 1/2	15/16	27 ± 3

Husco Control Valve

Relief valve cracking pressure
 Main relief valve 2000 psi
 Pilot relief valve 1850 to 1950 psi

Spring Specifications

Spring Description	Free Length (inches)	Total Number of Coils	Test Length (inches)	Test Load (pounds)
Relief valve poppet	1-15/16	10	1-5/8	112
Relief valve pilot	1-1/32	12	7/8	18
Check valve poppet	1-3/8	20	9/16	65
Float spool detent	1-13/16	20	1-1/4	17.5
Standard spool return	3-1/16	9	1-1/16	45.4
Float spool return	5-5/16	15	1-21/32	45

Hydraulic Pumps

Spring Specifications

Spring Description	Free Length (inches)	Total Number of Coils
Check ball - (12 & 17 GPM)	21/32	16 ± 1/4
Check ball - (9 GPM)	1-1/4	15

* Pump output at 1800 engine rpm (no load)

Engine mounted (Gas) (9 GPM Pump) (3712 pump rpm)	8.35 gpm
(Diesel) (10 GPM Pump) (2285 pump rpm)	8.7 gpm
Front mounted (PTO driven) (Gas or Diesel) (12 GPM Pump)	10.9 gpm
(Gas or Diesel) (17 GPM Pump)	15 gpm

* Output readings are based on Hy-Tran fluid at 90° - 120°F at 100 psi below relief valve setting.

T.I.R. (total indicated runout) of adapter bore in front crankshaft pulley (inch) . . . . .	.005
T.I.R. of adapter when mounted in front pulley (inch) . . . . .	.010
T.I.R. of front pump drive shaft (inch) . . . . .	.0015
T.I.R. of pump bore in mounting bracket (inch) . . . . .	.015
T.I.R. of front pump drive shaft when installed on tractor (inch) . . . . .	.050
T.I.R. of pump mounting bracket to engine (squareness) (inch) . . . . .	.015

Wear Tolerances

Pump	10 GPM	12 GPM	17 GPM
Gear tip to bore clearance (max.) (inch) . .	.004	.003	.003
Bearing I.D. (max.) (inch) . . . . .	.6885	.691	.752
Gear shaft diameter (min.) (inch) . . . . .	.683	.685	.746
Gear thickness (min.) (inches) . . . . .	.950	1.107	1.137

Cylinders

Piston rod nut torque

Drott cylinder

2-3/4 inch I.D. clam - 4-in-1 bucket	633 ft. lbs.
3-1/2 inch I.D. clam - 4-in-1 bucket	1250 ft. lbs.

International cylinder

2-1/2 inch I.D. lift - No. 5D2 or 5G2	220 ft. lbs.
2-1/2 inch I.D. tilt - International loader	380 ft. lbs.
3 inch I.D. angle - No. 10	Tighten securely and install pin
3 inch I.D. lift - No. 10 or 11	700 ft. lbs.
3 inch I.D. tilt - No. 10	700 ft. lbs.
3-1/2 inch I.D. lift - International loader	560 ft. lbs.

Front head retaining ring torque 625 ft. lbs.

Three Point Hitch

Spring Specifications

Spring Description	Free Length (inches)	Total Number of Coils	Test Length (inches)	Test Load (pounds)
Depth control	*9-5/16	12-7/8	*9	1540
Relief valve	11/16	8	1/2	12-1/2

* Length when installed in cylinder assembly.

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.

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