

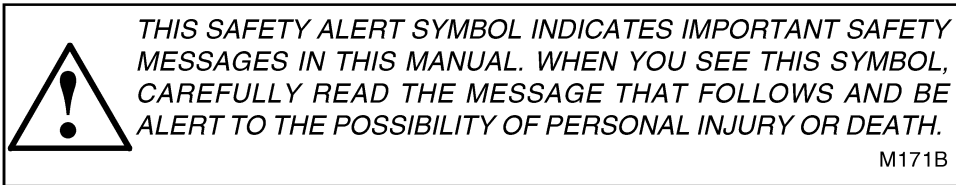
**CHASSIS  
766, 966, 1066, 1466, 1468  
and Model 100 Hydrostatic  
Tractors**

**Service Manual**

GSS-14311R0

Reprinted





If Safety Decals on this machine use the words **Danger, Warning or Caution**, which are defined as follows:

- **DANGER:** Indicates an immediate hazardous situation which if not avoided, will result in death or serious injury. The color associated with Danger is RED.
- **WARNING:** Indicates a potentially hazardous situation which if not avoided, will result in serious injury. The color associated with Warning is ORANGE.
- **CAUTION:** Indicates a potentially hazardous situation which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

If Safety Decals on this machine are ISO two panel Pictorial, decals are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background color is YELLOW.
- Prohibition symbols such as   and  if used, are RED.

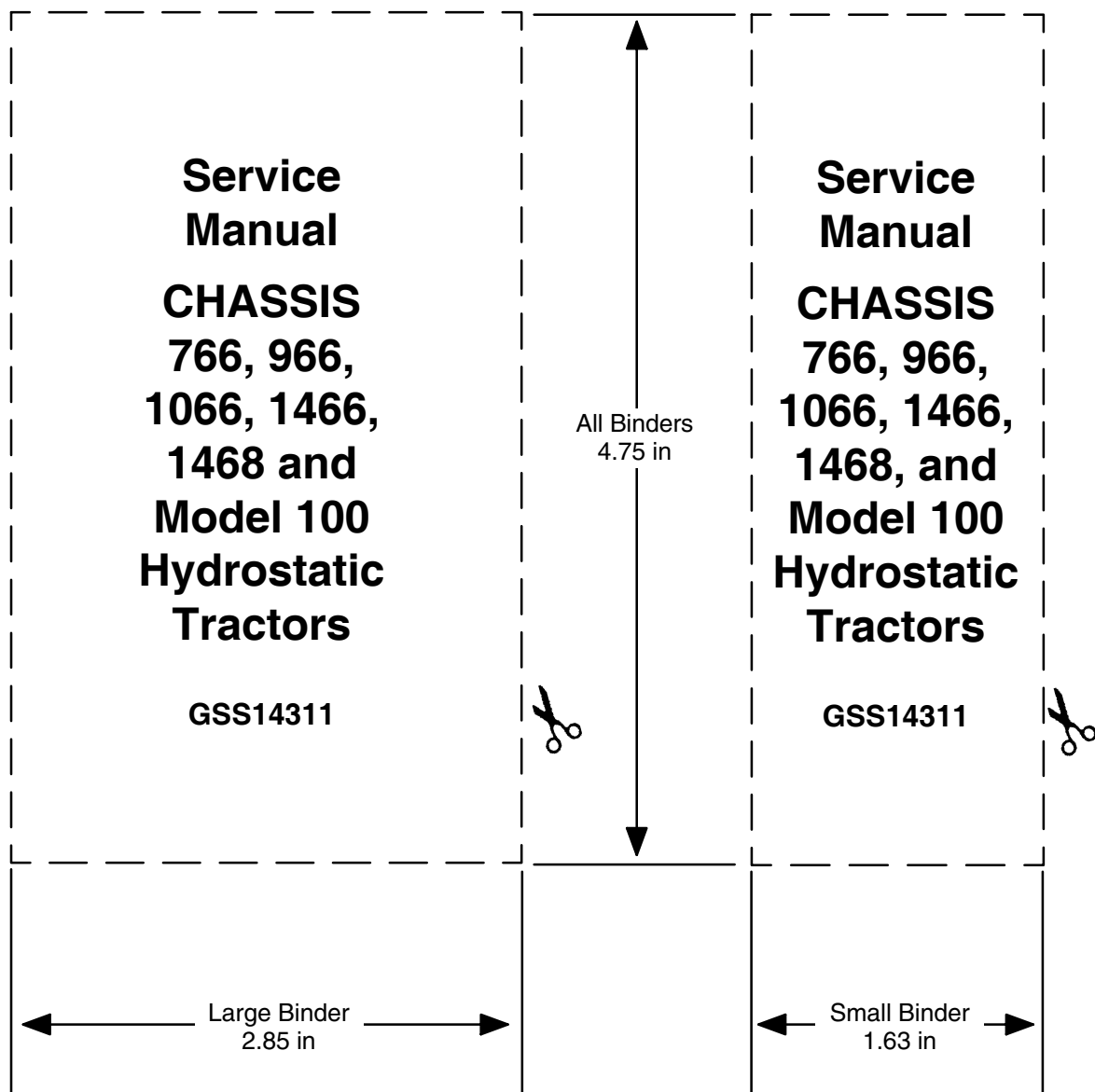


# WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH. BEFORE USING THIS MACHINE, MAKE CERTAIN THAT EVERY OPERATOR:

- Is instructed in safe and proper use of the machine.
- Reads and understands the Manual(s) pertaining to the machine.
- Reads and understands ALL Safety Decals on the machine.
- Clears the area of other persons.
- Learns and practices safe use of machine controls in a safe, clear area before operating this machine on a job site.

It is your responsibility to observe pertinent laws and regulations and follow Case Corporation instructions on machine operation and maintenance.



Due to a continuous program of research and development, some procedures, specifications and parts may be altered in a constant effort to improve our products.

When changes and improvements are made in our products, periodic revisions may be made to this manual to keep it up-to-date. It is suggested that customers contact their dealer for information on the latest revision.

## **LIBRARY FILING INFORMATION**

File this Manual after Divider Tab GSS-1431.  
Destroy GSS-1431-K.

## **CHASSIS 766, 966, 1066, 1466, 1468 and Model 100 Hydrostatic Tractors**

**GSS-1431-1  
August, 1977**

**NOTE:** Refer to the following service manuals for service information not contained in this manual:

|          |                                            |
|----------|--------------------------------------------|
| GSS-1052 | Testing and Servicing Electrical Equipment |
| GSS-1387 | Gasoline Engines and Fuel System           |
| GSS-1427 | Diesel Engines and Fuel System             |
| GSS-1432 | DV-500 Diesel Engine and Fuel System       |
| GSS-1455 | Basic Air Conditioning                     |

Click on the image link below for the full  
version of the service manual



## General Contents

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| Standard Torque Data for Nuts and Bolts .....               | VI   |
| Metric Conversion Tables .....                              | VIII |
| Standard Torque Data for Hydraulic Tubes and Fittings ..... | X    |
| Special Service Tools Required .....                        | XII  |

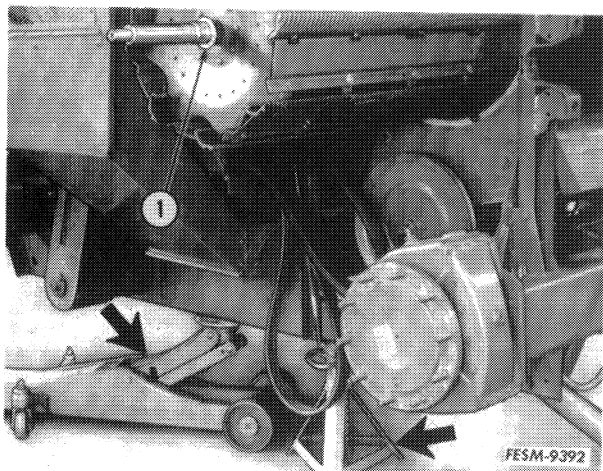
|           |                                                        |
|-----------|--------------------------------------------------------|
| <b>1</b>  | <b>CAB, AIR CONDITIONING AND SPLITTING THE TRACTOR</b> |
| <b>2</b>  | <b>FRONT END, AXLE AND WHEELS</b>                      |
| <b>3</b>  | <b>STEERING</b>                                        |
| <b>4</b>  | <b>ENGINE</b>                                          |
| <b>5</b>  | <b>FUEL SYSTEM</b>                                     |
| <b>6</b>  | <b>ELECTRICAL SYSTEM</b>                               |
| <b>7</b>  | <b>COOLING SYSTEM</b>                                  |
| <b>8</b>  | <b>CLUTCH AND FLYWHEEL</b>                             |
| <b>9</b>  | <b>TRANSMISSION</b>                                    |
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| <b>11</b> | <b>REAR AXLE, HOUSING AND WHEELS</b>                   |
| <b>12</b> | <b>BRAKES</b>                                          |
| <b>13</b> | <b>INDEPENDENT POWER TAKE-OFF</b>                      |
| <b>14</b> | <b>HYDRAULIC SYSTEM</b>                                |
| <b>15</b> | <b>TESTING HYDRAULIC SYSTEM</b>                        |



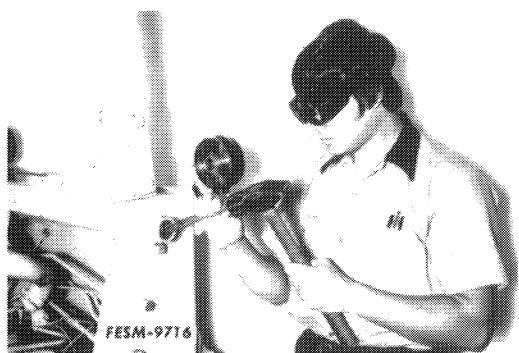
## WORK SAFELY — FOLLOW THESE RULES

This symbol is used to call your attention to instructions concerning your personal safety. Be sure to observe and follow these instructions.

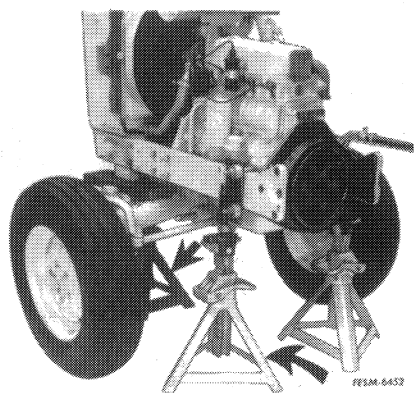
1. To prevent injury, do not allow children or by-standers around the machine while it is being adjusted and/or serviced.



2. Always use safety stands in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.



3. Always wear safety glasses when using a hammer, chisel or other tools that may cause chips to fly.
4. Keep work area organized and clean. Wipe up oil or spills of any kind. Keep tools and parts off of the floor. Eliminate the possibility of a fall which could result in a serious injury.
5. Be sure to reinstall safety devices, guards or shields after adjusting and/or servicing the machine.
6. After servicing, be sure all tools, parts, or servicing equipment are removed from the machine.



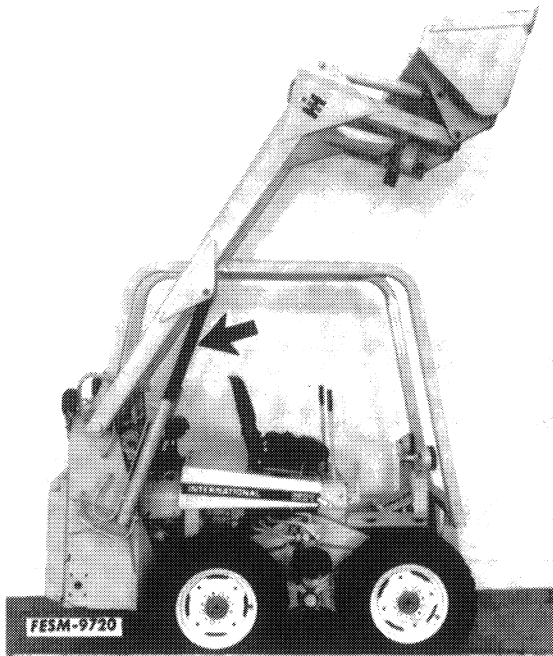
7. When splitting tractors, or disassembling machines, be sure to use safety stands and adequate supports to prevent tipping or rollover.



8. Use a safety catch on all hoist hooks. Do not take a chance, the load could slip off of the hook.



9. When using an acetylene torch always wear welding goggles and gloves. Keep a "charged" fire extinguisher within reach. Be sure the acetylene and oxygen tanks are separated by a metal shield and are chained to the cart. Do not weld or heat areas near fuel tanks or fuel lines and utilize proper shielding around hydraulic lines.



10. Always use a safety bar to block hydraulic cylinders. Never rely on the machine hydraulic system to hold when working on loaders, etc. A hydraulic line or cylinder could fail or someone could accidentally strike the control levers causing the loader to fall.

11. Electrical storage batteries give off highly inflammable hydrogen gas when charging and continue to do so for some time after receiving a steady charge. Do not under any circumstances allow an electric spark or an open flame near the battery. Always disconnect a battery cable before working on the electrical system.

12. Hydraulic fluid escaping under pressure can have enough force to penetrate the skin. Hydraulic fluid may also infect a minor cut or opening in the skin. If injured by escaping fluid, see a doctor at once. Serious infection or reaction can result if medical treatment is not given immediately.

Do not attempt to repair or tighten hoses that are under pressure, when the boom is raised, or with the tractor engine running. Cycle all hydraulic control valves to relieve all pressure before disconnecting the lines or performing other work on the hydraulic system. Make sure all connections are tight and hoses and lines are in good condition before applying pressure to the system. To locate a leak under pressure, use a small piece of cardboard or wood. Never use hands.

13. Handle gasoline with care - it is highly flammable:

- (a) Use approved gasoline container.
- (b) Never remove the fuel tank cap or fill the fuel tank when the engine is running, is hot, or indoors. Also, do not smoke when working around flammable fuel.
- (c) When refueling, keep the hose and nozzle of the funnel and container in contact with the metal of the fuel tank to avoid the possibility of an electric spark igniting the fuel. Do not overfill the fuel tank - overflow creates fire hazard. Wipe up spilled gasoline.
- (d) Replace fuel tank cap securely.

14. Always use a protective fixture when inflating tubeless tires that have been repaired or are loose on the rim. Do not inflate over 30 psi to seat the tire bead.

15. Use pullers to remove bearings, bushings, gears, cylinder sleeves, etc. when applicable. Use hammers, punches and chisels only when absolutely necessary. Then, be sure to wear safety glasses.

16. Be careful when using compressed air to dry parts. Use approved air blow guns, do not exceed 30 psi, wear safety glasses or goggles and use proper shielding to protect everyone in the work area.

17. Do not wear rings, wrist watches or loose fitting clothing when working on machinery, they could catch on moving parts causing serious injury. Wear sturdy, rough-soled work shoes. Never adjust and/or service a machine in bare feet, sandals or sneakers.

18. Excessive or repeated skin contact with sealants or solvents may cause skin irritation. In case of skin contact, remove sealant or solvent promptly by washing with soap and water.

**IMPORTANT:** The above is only a partial list of safe work rules. In addition, always refer to the Operator's Manual for the specific machine for additional safe work rules regarding the machine operation.

# STANDARD TORQUE DATA FOR NUTS AND BOLTS— FOOT POUNDS

Recommended torque 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 and zinc bolts w/waxed zinc nuts are used.
- .90 when hardened surfaces are used under the nut or bolt head.

1 FOOT POUND = 1.355 NEWTON METERS

| Bolt or Stud Diameter |      | Type 1 Studs Only |      | Type 1 Bolts 6" length or less |      | Type 1 Bolts longer than 6" |      | Type 5 (all lengths) |      | Type 8 (all lengths)                |      |                        |      |
|-----------------------|------|-------------------|------|--------------------------------|------|-----------------------------|------|----------------------|------|-------------------------------------|------|------------------------|------|
|                       |      |                   |      |                                |      |                             |      |                      |      | Only when used† in cast (gray) iron |      | All other applications |      |
| Inches                | MM   | Min.              | Max. | Min.                           | Max. | Min.                        | Max. | Min.                 | Max. | Min.                                | Max. | Min.                   | Max. |
| 1/4                   | 6.4  | 5                 | 6    | 5                              | 6    | 3                           | 3    | 9                    | 10   | 11                                  | 13   | 12                     | 14   |
| 5/16                  | 8.0  | 12                | 13   | 12                             | 13   | 6                           | 7    | 19                   | 21   | 24                                  | 27   | 27                     | 30   |
| 3/8                   | 9.5  | 21                | 24   | 21                             | 24   | 11                          | 13   | 33                   | 37   | 43                                  | 47   | 45                     | 50   |
| 7/16                  | 11.1 | 35                | 38   | 35                             | 38   | 19                          | 21   | 53                   | 60   | 69                                  | 76   | 75                     | 85   |
| 1/2                   | 12.7 | 52                | 58   | 52                             | 58   | 29                          | 32   | 80                   | 90   | 104                                 | 117  | 115                    | 130  |
| 9/16                  | 14.3 | 70                | 80   | 70                             | 80   | 41                          | 46   | 115                  | 130  | 150                                 | 170  | 165                    | 185  |
| 5/8                   | 15.9 | 98                | 110  | 98                             | 110  | 57                          | 63   | 160                  | 180  | 210                                 | 230  | 220                    | 250  |
| 3/4                   | 19.0 | 174               | 195  | 174                            | 195  | 100                         | 112  | 290                  | 320  | 350                                 | 390  | 400                    | 450  |
| 7/8                   | 22.2 | 300               | 330  | 162                            | 181  | 162                         | 181  | 420                  | 470  | 570                                 | 630  | 650                    | 730  |
| 1                     | 25.4 | 420               | 470  | 250                            | 270  | 250                         | 270  | 630                  | 710  | 850                                 | 950  | 970                    | 1090 |
| 1-1/8                 | 28.6 | 600               | 660  | 350                            | 380  | 350                         | 380  | 850                  | 950  | 1200                                | 1350 | 1380                   | 1550 |
| 1-1/4                 | 31.8 | 840               | 940  | 490                            | 540  | 490                         | 540  | 1200                 | 1350 | 1700                                | 1900 | 1940                   | 2180 |
| 1-3/8                 | 34.9 | 1100              | 1230 | 640                            | 710  | 640                         | 710  | 1570                 | 1760 | 2300                                | 2500 | 2600                   | 2800 |
| 1-1/2                 | 38.1 | 1470              | 1640 | 850                            | 940  | 850                         | 940  | 2000                 | 2300 | 3000                                | 3300 | 3300                   | 3700 |
| 1-3/4                 | 44.5 | 2350              | 2450 | 1330                           | 1490 | 1330                        | 1490 | 3300                 | 3700 | 4700                                | 5200 | 5300                   | 6000 |
| 2                     | 50.8 | 3500              | 3900 | 2000                           | 2200 | 2000                        | 2200 | 5000                 | 5500 | 7000                                | 7800 | 8000                   | 9000 |

†When bolt penetration is 1-1/2 times the diameter of the bolt.

## BOLT TYPE IDENTIFICATION CHART

| IH TYPE | S.A.E. GRADE               | DESCRIPTION                                                                                                                                                                                | BOLT HEAD MARKING *                                                                   |
|---------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1       | 1<br>Equivalent<br>or<br>2 | WILL HAVE A  STANDARD MONOGRAM IN THE CENTER OF THE HEAD<br>Low or Medium Carbon Steel Not Heat Treated |  |
| 5       | 5                          | WILL HAVE A  AND 3 RADIAL LINES<br>Quenched and Tempered Medium Carbon Steel                            |  |
| 8       | 8                          | WILL HAVE A  AND 6 RADIAL LINES<br>Quenched and Tempered Special Carbon or Alloy Steel                  |  |

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

# STANDARD TORQUE DATA FOR NUTS AND BOLTS— NEWTON METERS

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

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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 and zinc bolts w/waxed zinc nuts are used.
- .90 when hardened surfaces are used under the nut or bolt head.

1 NEWTON METER = 0.738 FOOT POUND

| Bolt or Stud Diameter |      | Type 1 Studs Only |      | Type 1 Bolts 6" length or less |      | Type 1 Bolts longer than 6" |      | Type 5 (all lengths) |      | Type 8 (all lengths)                |       |                        |       |
|-----------------------|------|-------------------|------|--------------------------------|------|-----------------------------|------|----------------------|------|-------------------------------------|-------|------------------------|-------|
|                       |      |                   |      |                                |      |                             |      |                      |      | Only when used† in cast (gray) iron |       | All other applications |       |
| Inches                | MM   | Min.              | Max. | Min.                           | Max. | Min.                        | Max. | Min.                 | Max. | Min.                                | Max.  | Min.                   | Max.  |
| 1/4                   | 6.4  | 7                 | 8    | 7                              | 8    | 4                           | 4    | 12                   | 14   | 15                                  | 18    | 16                     | 19    |
| 5/16                  | 8.0  | 17                | 18   | 17                             | 18   | 8                           | 10   | 26                   | 29   | 33                                  | 37    | 37                     | 41    |
| 3/8                   | 9.5  | 29                | 33   | 29                             | 33   | 15                          | 18   | 45                   | 50   | 58                                  | 64    | 61                     | 68    |
| 7/16                  | 11.1 | 48                | 52   | 48                             | 52   | 26                          | 29   | 72                   | 81   | 94                                  | 103   | 102                    | 115   |
| 1/2                   | 12.7 | 71                | 79   | 71                             | 79   | 39                          | 43   | 108                  | 122  | 141                                 | 159   | 156                    | 176   |
| 9/16                  | 14.3 | 95                | 108  | 95                             | 108  | 56                          | 62   | 156                  | 176  | 205                                 | 230   | 225                    | 250   |
| 5/8                   | 15.9 | 133               | 149  | 133                            | 133  | 77                          | 85   | 220                  | 245  | 285                                 | 310   | 300                    | 340   |
| 3/4                   | 19.0 | 240               | 265  | 240                            | 265  | 136                         | 152  | 390                  | 430  | 470                                 | 530   | 540                    | 610   |
| 7/8                   | 22.0 | 400               | 450  | 220                            | 245  | 220                         | 245  | 570                  | 640  | 770                                 | 850   | 880                    | 990   |
| 1                     | 25.4 | 570               | 640  | 340                            | 365  | 340                         | 365  | 850                  | 960  | 1150                                | 1290  | 1300                   | 1480  |
| 1-1/8                 | 28.6 | 810               | 900  | 470                            | 510  | 470                         | 510  | 1150                 | 1290 | 1630                                | 1830  | 1870                   | 2100  |
| 1-1/4                 | 31.8 | 1140              | 1270 | 660                            | 730  | 660                         | 730  | 1600                 | 1830 | 2300                                | 2600  | 2600                   | 3000  |
| 1-3/8                 | 34.9 | 1490              | 1670 | 870                            | 960  | 870                         | 960  | 2100                 | 2400 | 3100                                | 3400  | 3500                   | 3800  |
| 1-1/2                 | 38.1 | 2000              | 2200 | 1150                           | 1270 | 1150                        | 1270 | 2700                 | 3100 | 4100                                | 4500  | 4500                   | 5000  |
| 1-3/4                 | 44.5 | 3200              | 3300 | 1800                           | 2000 | 1800                        | 2000 | 4500                 | 5000 | 6400                                | 7000  | 7100                   | 8100  |
| 2                     | 50.8 | 4750              | 5300 | 2700                           | 3000 | 2700                        | 3000 | 6800                 | 7500 | 9500                                | 10500 | 10800                  | 12200 |

†When bolt penetration is 1-1/2 times the diameter of the bolt.

## BOLT TYPE IDENTIFICATION CHART

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|---------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1       | Equivalent 1 or 2 | WILL HAVE A  STANDARD MONOGRAM IN THE CENTER OF THE HEAD<br>Low or Medium Carbon Steel Not Heat Treated |  |
| 5       | 5                 | WILL HAVE A  AND 3 RADIAL LINES<br>Quenched and Tempered Medium Carbon Steel                            |  |
| 8       | 8                 | WILL HAVE A  AND 6 RADIAL LINES<br>Quenched and Tempered Special Carbon or Alloy Steel                  |  |

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

# CONVERSION TABLE

## —inches to millimeters—

| Inches | Millimeters | Inches | Millimeters | Inches | Millimeters | Inches | Millimeters |
|--------|-------------|--------|-------------|--------|-------------|--------|-------------|
| 1      | 25.4        | 26     | 660.4       | 51     | 1295.4      | 76     | 1930.4      |
| 2      | 50.8        | 27     | 685.8       | 52     | 1320.8      | 77     | 1955.8      |
| 3      | 76.2        | 28     | 711.2       | 53     | 1346.2      | 78     | 1981.2      |
| 4      | 101.6       | 29     | 736.6       | 54     | 1371.6      | 79     | 2006.6      |
| 5      | 127.0       | 30     | 762.0       | 55     | 1397.0      | 80     | 2032.0      |
| 6      | 152.4       | 31     | 787.4       | 56     | 1422.4      | 81     | 2057.4      |
| 7      | 177.8       | 32     | 812.8       | 57     | 1447.8      | 82     | 2082.8      |
| 8      | 203.2       | 33     | 838.2       | 58     | 1473.2      | 83     | 2108.2      |
| 9      | 228.6       | 34     | 863.6       | 59     | 1498.6      | 84     | 2133.6      |
| 10     | 254.0       | 35     | 889.0       | 60     | 1524.0      | 85     | 2159.0      |
| 11     | 279.4       | 36     | 914.4       | 61     | 1549.4      | 86     | 2184.4      |
| 12     | 304.8       | 37     | 939.8       | 62     | 1574.8      | 87     | 2209.8      |
| 13     | 330.2       | 38     | 965.2       | 63     | 1600.2      | 88     | 2235.2      |
| 14     | 355.6       | 39     | 990.6       | 64     | 1625.6      | 89     | 2260.6      |
| 15     | 381.0       | 40     | 1016.0      | 65     | 1651.0      | 90     | 2286.0      |
| 16     | 406.4       | 41     | 1041.4      | 66     | 1676.4      | 91     | 2311.4      |
| 17     | 431.8       | 42     | 1066.8      | 67     | 1701.8      | 92     | 2336.8      |
| 18     | 457.2       | 43     | 1092.2      | 68     | 1727.2      | 93     | 2362.2      |
| 19     | 482.6       | 44     | 1117.6      | 69     | 1752.6      | 94     | 2387.6      |
| 20     | 508.0       | 45     | 1143.0      | 70     | 1778.0      | 95     | 2413.0      |
| 21     | 533.4       | 46     | 1168.4      | 71     | 1803.4      | 96     | 2438.4      |
| 22     | 558.8       | 47     | 1193.8      | 72     | 1828.8      | 97     | 2463.8      |
| 23     | 584.2       | 48     | 1219.2      | 73     | 1854.2      | 98     | 2489.2      |
| 24     | 609.6       | 49     | 1244.6      | 74     | 1879.6      | 99     | 2514.6      |
| 25     | 635.0       | 50     | 1270.0      | 75     | 1905.0      | 100    | 2540.0      |

1 inch = 25.4 millimeters

To convert inches to millimeters, the inch value to be converted should be written down, carried to as many decimal places as the desired accuracy requires. It should then be split into groups of not more than two figures each. The equivalent of each group should then be taken from the table, proper regard being given to the position of the decimal point in each case, and the equivalent of the inch value given.

For example, to convert 2.4635 inches to millimeters:

2.0000 inches = 50.80000 millimeters

.4600 inches = 11.68400

.0035 inches = .08890

2.4635 inches = 62.57290 millimeters

Correct to 3 decimal places.

2.4635 inches = 62.573 millimeters

# CONVERSION TABLE

## —millimeters to inches—

| Millimeters | Inches     | Millimeters | Inches    | Millimeters | Inches    | Millimeters | Inches    |
|-------------|------------|-------------|-----------|-------------|-----------|-------------|-----------|
| 1           | 0.03937008 | 26          | 1.0236220 | 51          | 2.0078740 | 76          | 2.9921260 |
| 2           | 0.07874016 | 27          | 1.0629921 | 52          | 2.0472441 | 77          | 3.0314961 |
| 3           | .11811024  | 28          | 1.1023622 | 53          | 2.0866142 | 78          | 3.0708661 |
| 4           | .15748031  | 29          | 1.1417323 | 54          | 2.1259842 | 79          | 3.1102362 |
| 5           | .19685039  | 30          | 1.1811024 | 55          | 2.1653543 | 80          | 3.1496063 |
| 6           | .23622047  | 31          | 1.2204724 | 56          | 2.2047244 | 81          | 3.1889764 |
| 7           | .27559055  | 32          | 1.2598425 | 57          | 2.2440945 | 82          | 3.2283465 |
| 8           | .31496063  | 33          | 1.2992126 | 58          | 2.2834646 | 83          | 3.2677165 |
| 9           | .35433071  | 34          | 1.3385827 | 59          | 2.3228346 | 84          | 3.3070866 |
| 10          | .3937008   | 35          | 1.3779528 | 60          | 2.3622047 | 85          | 3.3464567 |
| 11          | .4330709   | 36          | 1.4173228 | 61          | 2.4015748 | 86          | 3.3858268 |
| 12          | .4724409   | 37          | 1.4566929 | 62          | 2.4409449 | 87          | 3.4251968 |
| 13          | .5118110   | 38          | 1.4960630 | 63          | 2.4803150 | 88          | 3.4645669 |
| 14          | .5511811   | 39          | 1.5354331 | 64          | 2.5196850 | 89          | 3.5039370 |
| 15          | .5905512   | 40          | 1.5748031 | 65          | 2.5590551 | 90          | 3.5433071 |
| 16          | .6299213   | 41          | 1.6141732 | 66          | 2.5984252 | 91          | 3.5826772 |
| 17          | .6692913   | 42          | 1.6535433 | 67          | 2.6377953 | 92          | 3.6220472 |
| 18          | .7086614   | 43          | 1.6929134 | 68          | 2.6771654 | 93          | 3.6614173 |
| 19          | .7480315   | 44          | 1.7322835 | 69          | 2.7165354 | 94          | 3.7007874 |
| 20          | .7874016   | 45          | 1.7716535 | 70          | 2.7559055 | 95          | 3.7401575 |
| 21          | .8267717   | 46          | 1.8110236 | 71          | 2.7952756 | 96          | 3.7795276 |
| 22          | .8661417   | 47          | 1.8503937 | 72          | 2.8346457 | 97          | 3.8188976 |
| 23          | .9055118   | 48          | 1.8897638 | 73          | 2.8740157 | 98          | 3.8582677 |
| 24          | .9448819   | 49          | 1.9291339 | 74          | 2.9133858 | 99          | 3.8976378 |
| 25          | .9842520   | 50          | 1.9685039 | 75          | 2.9527559 | 100         | 3.937008  |

1 mm = .03937008 inches

To convert millimeters to inches the millimeter value to be converted should be written down, carried to as many decimal places as the desired accuracy requires. It should then be split up into groups of not more than two figures each. The equivalent of each group should then be taken from the table, proper regard being given to the position of the decimal point in each case, and the equivalent of the several groups found by addition. This sum will be the inch equivalent of the millimeter value given.

For example to convert 75.384 millimeters to inches:

75.000 millimeters = 2.9527559 inches  
 .380 millimeters = .0149606  
.004 millimeters = .0001574  
 75.384 millimeters = 2.9678739 inches  
 Correct to 5 decimal places.  
 75.384 millimeters = 2.96787 inches

# STANDARD TORQUE DATA FOR HYDRAULIC TUBES AND FITTINGS

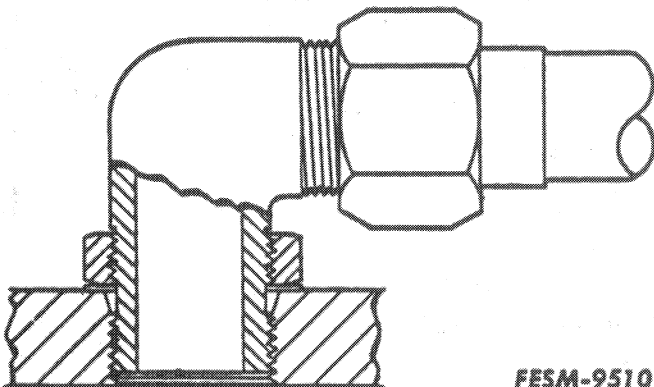
| TUBE NUTS<br>FOR 37° FLARED FITTINGS |                |      |                |                |      |                  |      | O-RING BOSS PLUGS,<br>ADJUSTABLE FITTING<br>LOCK NUTS, SWIVEL<br>JIC - 37° SEATS |      |                  |      |
|--------------------------------------|----------------|------|----------------|----------------|------|------------------|------|----------------------------------------------------------------------------------|------|------------------|------|
| SIZE                                 | TUBING<br>O.D. |      | THREAD<br>SIZE | TORQUE         |      |                  |      | TORQUE                                                                           |      |                  |      |
|                                      |                |      |                | FOOT<br>POUNDS |      | NEWTON<br>METERS |      | FOOT<br>POUNDS                                                                   |      | NEWTON<br>METERS |      |
|                                      | Inches         | mm   |                | Min.           | Max. | Min.             | Max. | Min.                                                                             | Max. | Min.             | Max. |
| 4                                    | 1/4            | 6.4  | 7/16-20        | 9              | 12   | 12               | 16   | 6                                                                                | 10   | 8                | 14   |
| 5                                    | 5/16           | 7.9  | 1/2-20         | 12             | 16   | 16               | 20   | 10                                                                               | 15   | 14               | 20   |
| 6                                    | 3/8            | 9.5  | 9/16-18        | 21             | 24   | 29               | 33   | 15                                                                               | 20   | 20               | 27   |
| 8                                    | 1/2            | 12.7 | 3/4-18         | 35             | 40   | 47               | 54   | 25                                                                               | 30   | 34               | 41   |
| 10                                   | 5/8            | 15.9 | 7/8-14         | 53             | 58   | 72               | 79   | 35                                                                               | 40   | 47               | 54   |
| 12                                   | 3/4            | 19.1 | 1-1/16-12      | 77             | 82   | 104              | 111  | 60                                                                               | 70   | 81               | 96   |
| 14                                   | 7/8            | 22.2 | 1-3/16-12      | 90             | 100  | 122              | 136  | 70                                                                               | 80   | 95               | 109  |
| 16                                   | 1              | 25.4 | 1-5/16-12      | 110            | 120  | 149              | 163  | 80                                                                               | 90   | 108              | 122  |
| 20                                   | 1-1/4          | 31.8 | 1-5/8-12       | 140            | 150  | 190              | 204  | 95                                                                               | 115  | 129              | 156  |
| 24                                   | 1-1/2          | 38.1 | 1-7/8-12       | 160            | 175  | 217              | 237  | 120                                                                              | 140  | 163              | 190  |
| 32                                   | 2              | 50.8 | 2-1/2-12       | 225            | 240  | 305              | 325  | 250                                                                              | 300  | 339              | 407  |

Above torque figures are recommended for plain, cadmium or zinc plated fittings, dry or wet installations.

Swivel nuts either swaged or brazed.

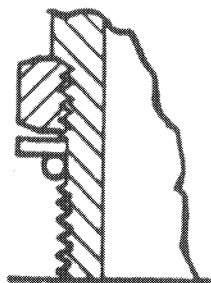
These torques are not recommended for tubes of 1/2" (12.7 mm) O.D. and larger with wall thickness of .035" (.889 mm) or less. The torque is specified for .035" (.889 mm) wall tubes on each application individually.

## INSTRUCTIONS FOR THE ADJUSTABLE STANDARD THREAD TUBE FITTINGS



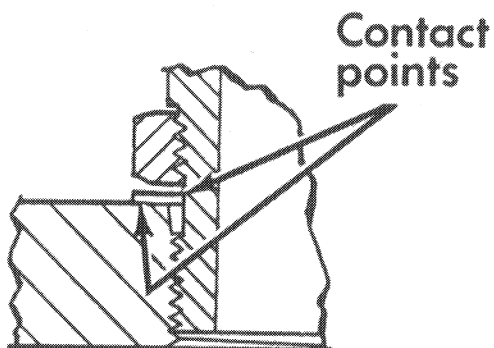
FESM-9510

The following general instructions will apply to the adjustable straight threaded hydraulic O-ring boss tube fitting of the 37° style shown.



FESM-9511

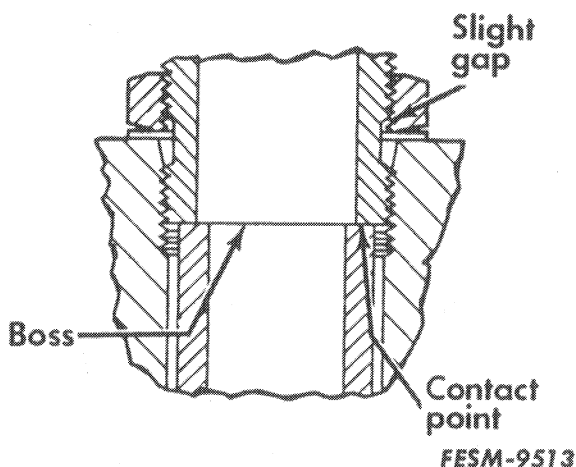
1. Lubricate the O-ring seal with a light coat of oil or petroleum jelly and install it into the groove of the fitting next to the metal back-up washer.



FESM-9512

2. Install the fitting until the metal back-up washer contacts the face of the boss. This locates the maximum depth of the fitting.

CAUTION: Do not overtighten and distort the metal back-up washer.



FESM-9513

3. Position the fitting by turning it out (counterclockwise) to a maximum of one complete turn and tighten the locknut to the recommended torque.

NOTE: In special applications where this fitting is used the fitting will contact the internal part of the straight threaded boss prior to the back-up washer.

## SPECIAL SERVICE TOOLS REQUIRED

### Section 1

|            |                                                  |
|------------|--------------------------------------------------|
| FES 10-21  | Aligning dowels                                  |
| FES 11-8   | Jack stand hooks                                 |
| FES 57-3   | O-ring removing tool                             |
| FES 138-1  | Lifting sling (5 ft.)                            |
| FES 138-2  | Lifting sling (7 ft.)                            |
| FES 142-1  | Stands                                           |
| FES 142-1B | Adapter plate                                    |
| FES 142-2  | Attaching plates (for use with stands FES 142-1) |
| FES 142-13 | Adapter plate                                    |
| FES 151-1  | Vacuum pump (SE 2159)                            |
| FES 152    | Manifold and gauge set (SE 2160)                 |
| FES 152-4  | Hoses (SE 2161) (use with FES 152)               |
| FES 153-1  | Leak detector torch (SE 2162)                    |
| FES 153-2  | Valve key wrench set (SE 2163)                   |
| FES 153-3  | Adapter valve (SE 2164)                          |
| FES 517-2  | Compressor seal remover                          |
| FES 526    | Tractor handler                                  |
| FES 526-2  | Brace                                            |
| FES 526-4  | Splitting adapter                                |

|           |                           |
|-----------|---------------------------|
| FES 526-5 | IPTO shaft alignment tool |
| FES 528   | IPTO gear locators        |
| FES 529   | Overhead cap lift         |
| **SE 1676 | Ratchet hoist             |

### Section 2

|           |                          |
|-----------|--------------------------|
| FES 67    | Universal dial indicator |
| FES 142-1 | Stands                   |
| †SE 1575  | Riveting jig             |

### Section 3

|           |                       |
|-----------|-----------------------|
| FES 41    | Steering wheel puller |
| FES 52    | Engine stand          |
| FES 52-1  | Attaching plate       |
| FES 57-3  | O-ring removing tool  |
| FES 138-1 | Lifting sling         |
| FES 141   | Depth micrometer      |
| FES 142-1 | Stands                |

### Section 4

|           |                                         |
|-----------|-----------------------------------------|
| FES 52    | Engine stand                            |
| FES 52-14 | Attaching plate                         |
| FES 100   | Universal engine lifting chain assembly |
| FES 138-2 | Lifting sling (7ft.)                    |
| FES 142-1 | Stands                                  |

### Section 5

None required

\* Order through Parts Distribution Center

\*\* Order from: Gurley-Ortman, Inc., 3210 N. Major Ave., Chicago, Illinois 60634

† Order from: F. A. Nugier Company, 6374 Arizona Circle, Los Angeles, California 90045