

SPECIFICATIONS

FOR

**920 & 930 WHEEL LOADER
AIR SYSTEM AND BRAKES**

SERIAL NUMBERS

920	930
41J1-UP	41K1-UP
62K1-UP	71H1-UP
75J1-UP	73U1-UP
	79J1-UP

INTRODUCTION

The specifications given in this book are on the basis of information available at the time the book was written. These specifications give the torques, operating pressure, measurements of new parts, adjustments and other items that will affect the service of the product.

When the words “use again” are in the description, the specification given can be used to determine if a part can be used again. If the part is equal to or within the specification given, use the part again.

When the word “permissible” is in the description, the specification given is the “maximum or minimum” tolerance permitted before adjustment, repair and/or new parts are needed.

A comparison can be made between the measurements of a worn part, and the specifications of a new part to find the amount of wear. A part that is worn can be safe to use if an estimate of the remainder of its service life is good. If a short service life is expected, replace the part.

NOTE: The specifications given for "use again" and "permissible" are intended for guidance only and Caterpillar Tractor Co. hereby expressly denies and excludes any representation, warranty or implied warranty of the reuse of any component.

77200x1

NOTE: For Systems Operation. Testing and Adjusting, make reference to the 920 & 930 WHEEL LOADERS AIR SYSTEM AND BRAKES, Form REG00545.

INDEX

Air Compressor (Clayton Dewandre).....6
 Control Valve for Emergency and Parking Brake 6
 Emergency and Parking Brake Linkage Adjustment..... 8
 Emergency and Parking Brake Chamber..... 8
 Lines, Plugs and Fittings.....4, 5
 Pressure Switches..... 7
 Safety Valve.....6
 Wheel Brake Assembly..... 7

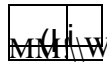
GENERAL TIGHTENING TORQUE FOR BOLTS, NUTS AND TAPERLOCK STUDS

The following charts give the standard torque values for bolts, nuts and taperlock studs of SAE Grade 5 or better quality. Exceptions are given in other sections of the Service Manual where needed.



THREAD DIAMETER		STANDARD TORQUE	
inches	millimeters	lb. ft.	N-m*

Standard thread



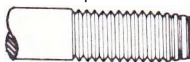
Use these torques for bolts and nuts with standard threads (conversions are approximate).

1/4	6.35	9 ± 3	12 ± 4
5/16	7.94	18 ± 5	25 ± 7
3/8	9.53	32 ± 5	45 ± 7
7/16	11.11	50 ± 10	70 ± 15
1/2	12.70	75 ± 10	100 ± 15
9/16	14.29	110 ± 15	150 ± 20
5/8	15.88	150 ± 20	200 ± 25
3/4	19.05	265 ± 35	360 ± 50
7/8	22.23	420 ± 60	570 ± 80
1	25.40	640 ± 80	875 ± 100
1 1/8	28.58	800 ± 100	1100 ± 150
1 1/4	31.75	1000 ± 120	1350 ± 175
1 3/8	34.93	1200 ± 150	1600 ± 200
1 1/2	38.10	1500 ± 200	2000 ± 275

Use these torques for bolts and nuts on hydraulic valve bodies.

5/16	7.94	13 ± 2	20 ± 3
3/8	9.53	24 ± 2	35 ± 3
7/16	11.11	39 ± 2	50 ± 3
1/2	12.70	60 ± 3	80 ± 4
5/8	15.88	118 ± 4	160 ± 6

Taperlock stud



Use these torques for studs with Taperlock threads.

1/4	6.35	5 ± 2	7 ± 3
5/16	7.94	10 ± 3	15 ± 5
3/8	9.53	20 ± 3	30 ± 5
7/16	11.11	30 ± 5	40 ± 10
1/2	12.70	40 ± 5	55 ± 10
9/16	14.29	60 ± 10	80 ± 15
5/8	15.88	75 ± 10	100 ± 15
3/4	19.05	110 ± 15	150 ± 20
7/8	22.23	170 ± 20	230 ± 30
1	25.40	260 ± 30	350 ± 40
1 1/8	28.58	320 ± 30	400 ± 40
1 1/4	31.75	400 ± 40	550 ± 50
1 3/8	34.93	480 ± 40	650 ± 50
1 1/2	38.10	550 ± 50	750 ± 70

*1 newton meter (N-m) is approximately the same as 0.1 mkg.

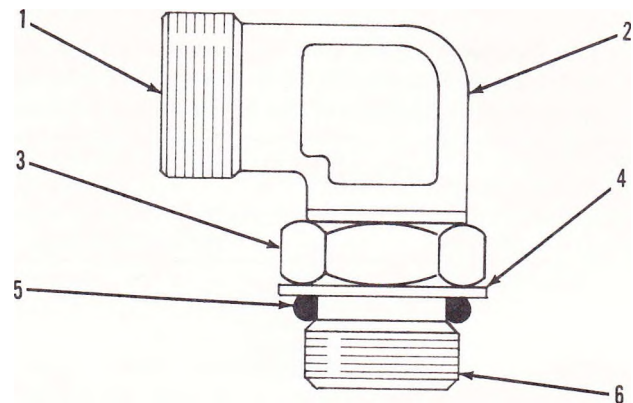
LINES, PLUGS AND FITTINGS

HYDRAULIC LINE INSTALLATION

1. For a metal tube to hose installation, install the tube and tighten all bolts finger tight.
2. Tighten the bolts at the rigid end.
3. Install the hose and tighten all bolts finger tight.
4. Put the hose in a position so that it does not make contact with the machine or another hose.
5. Tighten the bolts on both connections.
6. Start the engine.
7. Move the implement- control levers to all positions.
8. Look at the hose during movement of the implement. Make sure hose is not in contact with the machine or other hoses.
9. Shut off the engine.
10. If necessary, put the hose in a new position where it will not make contact when the implement is moved.

ASSEMBLY OF FITTINGS WITH STRAIGHT THREADS AND O-RING SEALS

This type of fitting is used in many applications. The tube end of the fitting will be different in design so that it can be used in many different applications. However, the installation procedure of the fitting is the same. If the tube end of the fitting body is the same as in the illustration (either an elbow or a straight body) it will be necessary to assemble the sleeve on the tube before connecting the tube to the end.



ELBOW BODY ASSEMBLY

1. End of fitting body (connects to tube). 2. Fitting body.
3. Locknut. 4. Backup washer. 5. O-ring seal. 6. End of fitting that goes into other part.

1. Put locknut (3), backup washer (4) and O-ring seal (5) as far back on fitting body (2) as possible. Hold these components in this position. Turn the fitting into the part it is used on, until backup washer (4) just makes contact with the face of the part it is used on.
2. To put the fitting assembly in its correct position turn the fitting body (2) out (counterclockwise) a maximum of 359°. Tighten locknut (3) finger tight.

NOTE: If the fitting is a connector (straight fitting) the hex on the body takes the place of the locknut. To install this type fitting tighten the hex against the face of the part it goes into.

TORQUES FOR FLARED AND O-RING FITTINGS

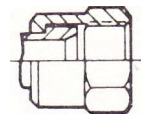
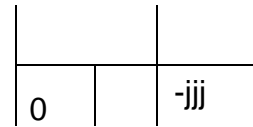
The torques shown in the chart that follows are to be used on the nut part of 37° Flared, 45° Flared and Inverted Flared fittings (when used with steel tubing), O-ring plugs, O-ring fittings and swivel nuts when used in applications to 3000 psi (20700 kPa).

A29919X2

es

OSO

00



INVERTED
45° FLARED

37 FLARED

45 FLARED

O-RING
FITTING - PLUG

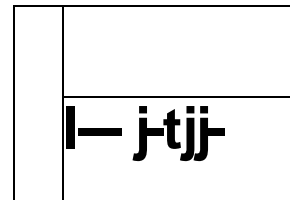
SWIVEL NUTS

TUBE SIZE (O.D.)	mm	3.18	4.78	6.35	7.92	9.52	TUBE SIZE (O.D.)	mm	12.70	15.88	19.05	22.22	25.40	31.75	38.10	50.80
	in.	.125	.188	.250	.312	.375		in.	.500	.625	.750	.875	1.000	1.250	1.500	2.000
THREA D SIZE (i 1.)		5/16	3/8	7/16	1/2	9/16 5/8	THREAD SIZE (in.)		3/4	7/8	1 1/16	1 3/16 1 1/4	1 5/16	1 5/8	1 7/8	2 1/2
TORQUE N-m		5 ±1	9 ±1	16 ±2	18 ±2	21 ±2	TORQUE N-m		40 ±7	55 ±7	75 ±7	90 ±7	110 ±7	135 ±15	160 ±15	310 ±30
TORQUE lb.in.		45 ±10	80 ±10	145 ±20	155 ±20	190 ±20	TORQUE lb.ft.		30 ±5	40 ±5	55 ±5	65 ±5	80 ±5	100 ±10	120 ±10	230 ±20

TORQUES FOR OTHER FITTINGS

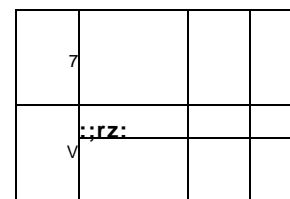
Ermeto Tube Fittings

Put nut and sleeve over the tube with head or shoulder end of sleeve next to nut. Push tube into counterbore of fitting body as far as possible. Turn nut clockwise until sleeve holds tube and prevents movement. Tighten the nut W_a turns more to seat sleeve and give a locking action. When necessary to assemble again, put sleeve over tube and tighten nut until a sudden increase in torque is felt. Then tighten 1/6 to 1/3 turn more to seat the sleeve.



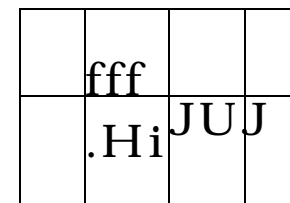
Flex Fittings

Put nut and sleeve over tubing and push tube into counterbore of fitting body as far as possible. Tighten the nut until it is against the hex part of the fitting body.



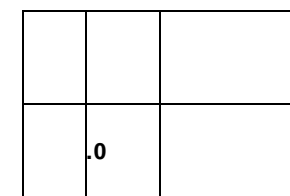
Hi Duty (shear sleeve) Tube Fittings

After tube has been put through the nut and makes contact against the tube shoulder in the fitting body, turn the nut with a wrench until a small decrease in torque is felt. This is an indication that the sleeve has been broken off of the nut. Hold the tube to prevent turning and tighten the nut 1 and 1/2 turns.

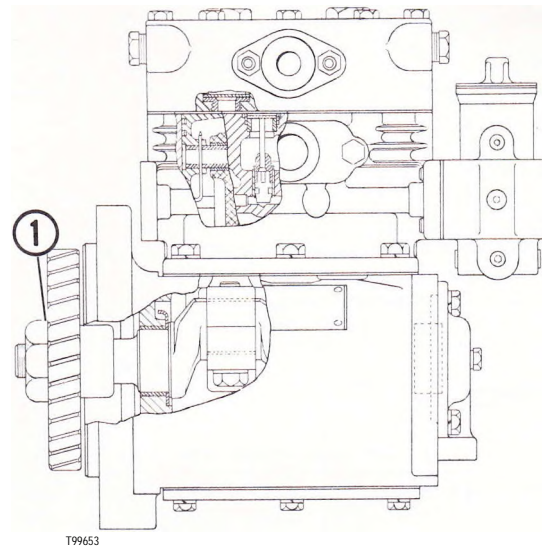


Hi Seal Fittings

Put nut and sleeve over the tubing with the short heavy end of the sleeve facing the end of tubing. Put the tube end against the counterbore in the body of the fitting and tighten until nut is over the last thread on the body. The remainder of space is used whenever the fitting is removed and installed again.

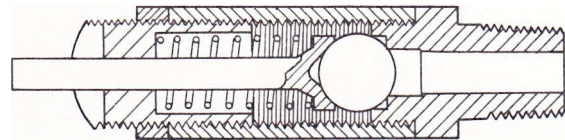


**AIR COMPRESSOR
(CLAYTON DEWANDRE)**



- (1) Torque of nut on the drive gear 150 ± 20 lb. ft. (205 ± 25 N-m)
- 920 Wheel Loader:
 - Governor cut-in pressure..... 104 ± 2 psi (718 ± 14kPa)
 - Governor cutout pressure 122 ± 2 psi (840 ±14 kPa)
- 930 Wheel Loader:
 - Governor cut-in pressure..... 91 ± 2 psi (630 ± 14 kPa)
 - Governor cutout pressure 105 ± 2 psi (725 ± 14 kPa)

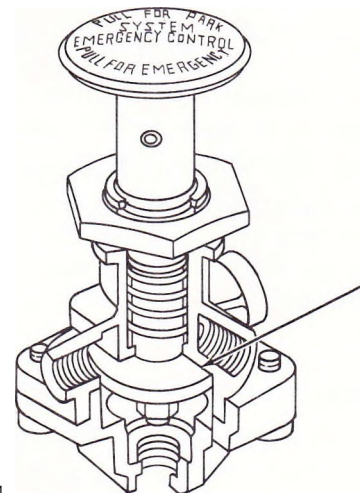
SAFETY RELIEF VALVE



T88834- A

Valve opens at 150 psi (1030 kPa)

**CONTROL VALVE FOR EMERGENCY
AND PARKING BRAKE**



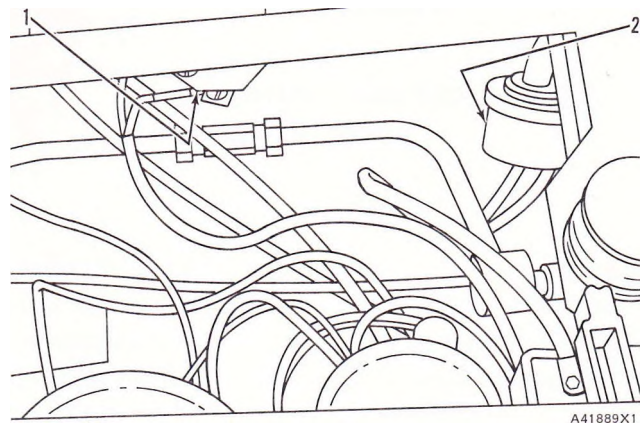
77725X1

- (1) Valve:
 - Opens at 40 ± 5 psi (280 ± 35 kPa)
 - Closes at 55 ± 5 psi (380 ± 35 kPa)

NOTE: FOR TORQUE VALUES NOT GIVEN, SEE THE FIRST PAGE OF SPECIFICATIONS FOR GENERAL TIGHTENING TORQUES

PRESSURE SWITCHES

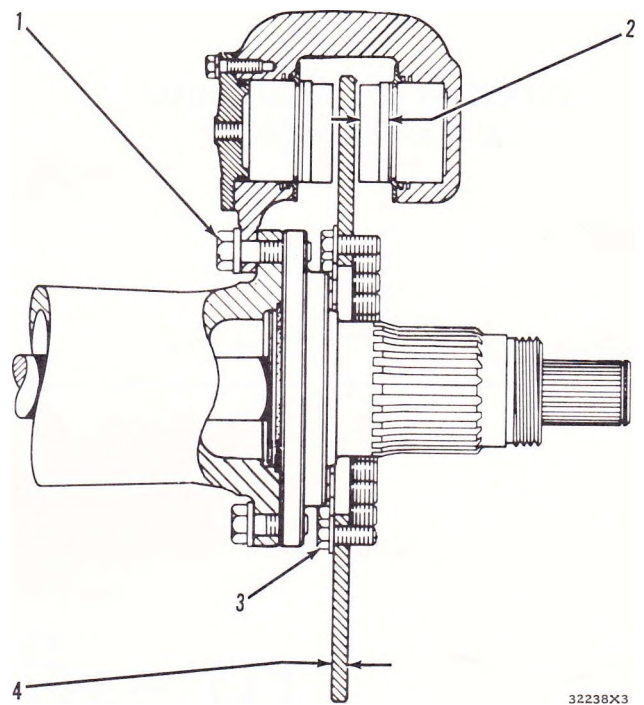
- (1) Buzzer Switch:
Position is normally closed.
Opening pressure..... 70 to 80 psi (480 to 550 kPa)
- (2) Indicator Switch:
Position is normally open.
Closing pressure..... 70 to 80 psi (480 to 550 kPa)



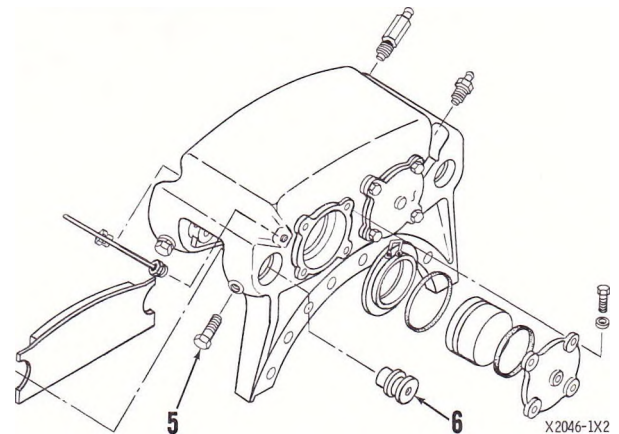
A41889X1

WHEEL BRAKE ASSEMBLY

- (1) Torque for the bolt..... 225 ± 25 lb. ft. (300 ± 35 N-m)
- (2) Thickness of lining material:
New......625 in. (15.88 mm)
Minimum permissible thickness in area
of most wear..... 125 in. (3.18 mm)
(Measure the lining at both ends because it can wear more at one
end than the other.)
- (3) Torque for the bolt (1/4 in.
diameter)..... 94 ± 10 lb. ft. (125 ± 14 N-m)
Torque for bolt (5/8 in.
diameter)..... 195 ± 10 lb. ft. (265 ± 14 N-m)
- (4) Thickness of brake disc:
New......500 in. (12.70 mm)
Minimum permissible thickness (worn) (in area where
pad and disc make contact)..... 450 in. (11.43 mm)
- (5) (6) Clearance between pin (6) and brake disc must not be less than
.010 in. (0.25 mm). If clearance is less than .010 in. (0.25 mm),
turn bolt (5) counterclockwise one turn, slide pin (6) to get .010
in. (0.25 mm) clearance and tighten bolt (5) again.



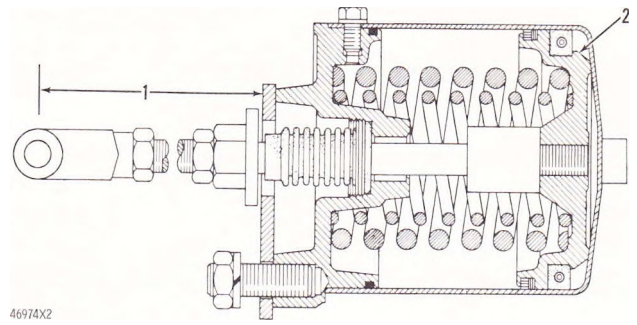
32238X3



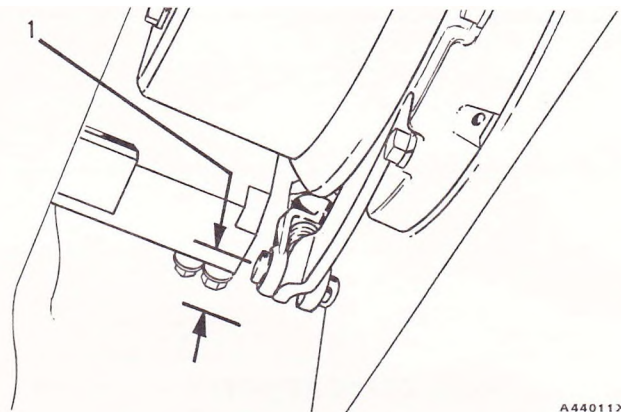
930 HEAD ASSEMBLY
(920 Head Assembly is similar, but
has only two pistons)

EMERGENCY AND PARKING BRAKE
CHAMBER

- (1) Length of rod 7.62 in. (193.5 mm)
- (2) Piston stroke..... 1.13 in. (28.7 mm)
- Spring force on piston..... 880 lbs. (3910 N)
- Release pressure (maximum)..... 63 psi (430 kPa)



EMERGENCY AND PARKING BRAKE
LINKAGE ADJUSTMENT



- (1) Travel at yoke625 to .875 in. (15.9 to 22.2 mm)

m CATERPILLAR

Caterpillar, Cat and Hare Trademarks of Caterpillar Tractor Co.