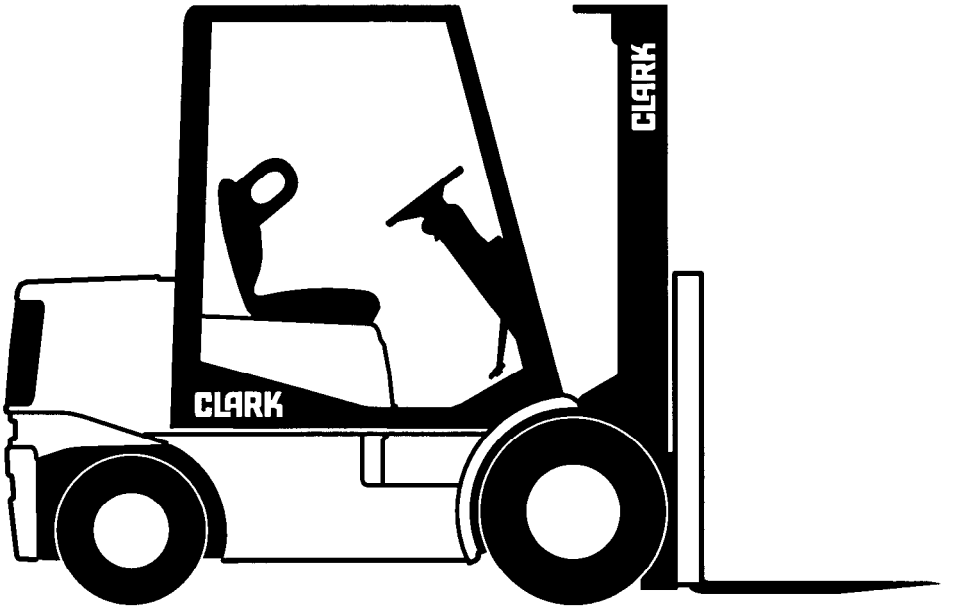
Main Table of Contents

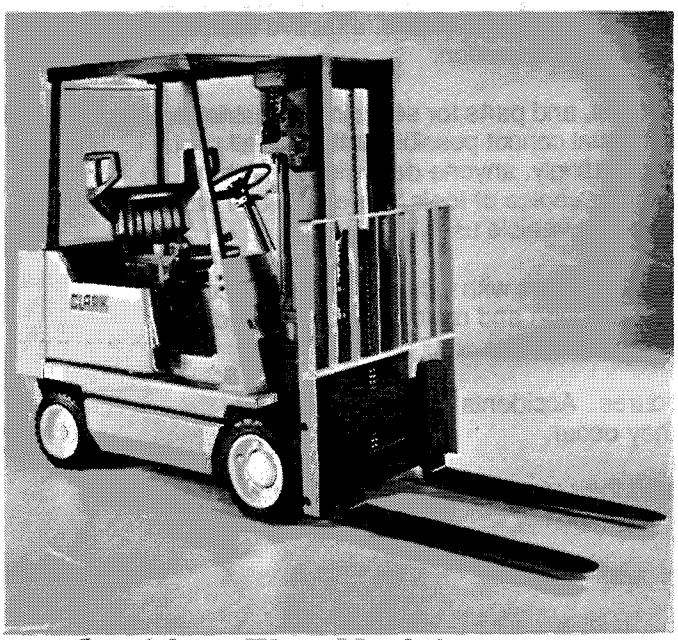
SM-520R
GCS/GCS



CLARK Technical Publications
Lexington, KY
40508

Product Identification

Model Nomenclature



Cushion Tire Models

GCX	20/22/25/27/30	-,C
GCS	20/22/25/27/30	MB
GCS	17/20/22/25/27/30	MC,WC,I
DCS	17/20/22/25/27/30	I

Pneumatic Tire Models

GPX	20/22/25/27/30	-,C
GPS	20/22/25/27/30	MB
GPS	20/22/25/27/30	MC,WC,I
DPS	20/22/25/27/30	I

Rated Load Capacity* @ 24 inch [500 mm] Load Center

Model	17	20	22	25	27	30
Basic Capacity lbs [kgs]	3500 [1750]	4000 [2000]	4500 [2250]	5000 [2500]	5500 [2750]	6000 [3000]

*This is the basic capacity of the truck chassis. The actual capacity of the truck may be less due to the use of high lift uprights and/or attachments.

Product Identification

Model Designation by Engine and Transaxle Application

	Engine				Transaxle			
Serial No. Prefix	Mitsubishi 4G54 Gas/LPG	Continental TM27 Gas/LPG	Continental TMD27 Diesel	Waukesha D176GA Gas/LPG	HR500 1-spd	HR600 1-spd	HR600 2-spd	TA18 1-spd
Cushion Models GX230C		•	•					•
GX230	•							•2
G138 MB	•				•1			
G138 MC	•					•		
G138 WC				•5		•		
G138 I		•3	•4			•		
Pneumatic Models GPX230C		•	•					•
GPX230	•							•7
GP138 MB	•				•6			
GP138 MC	•					•		
GP138 WC				•8			•	
GP138 I		•9	•10				•	

Notes:
1 - Lot 5521 thru 7157
2 - Lot 7158 and above
3 - Lot 6200 and above
4 - Lot 6200 and above
5 - Lot 5510 thru 6086
6 - Lot 5536 thru 7169
7 - Lot 7170 and above
8 - Lot 5525 thru 6091
9 - Lot 6205 and above
10 - Lot 6205 and above

• HR500 and TA18 transaxles incorporate full-floating straight drive axles with drum-and-shoe brakes.
• HR600 transaxles incorporate pre-reduction enclosed oil-cooled disc brakes & offset drive axles.

Model Serial Number Code

Cushion Tire Trucks Model Designation	Sequence No.	Lot No.	Plant of Mfr	Plant of Manufacture
GX 230	-XXXX	-XXXX	-XX	None.....Battle Creek, MI FA.....Georgetown, KY FB.....Lexington, KY KOF.....Republic of Korea
GX 230C	-XXXX	-XXXX	-XX	
G138 MB	-XXXX	-XXXX	-XX	
G138 MC	-XXXX	-XXXX	-XX	
G138 WC	-XXXX	-XXXX	-XX	
G138 I	-XXXX	-XXXX	-XX	
Pneumatic Tire Trucks Model Designation	Sequence No.	Lot No.	Plant of Mfr	Plant of Manufacture
GPX 230	-XXXX	-XXXX	-XX	See above
GPX 230C	-XXXX	-XXXX	-XX	
GP138 MB	-XXXX	-XXXX	-XX	
GP138 MC	-XXXX	-XXXX	-XX	
GP138 WC	-XXXX	-XXXX	-XX	
GP138 I	-XXXX	-XXXX	-XX	

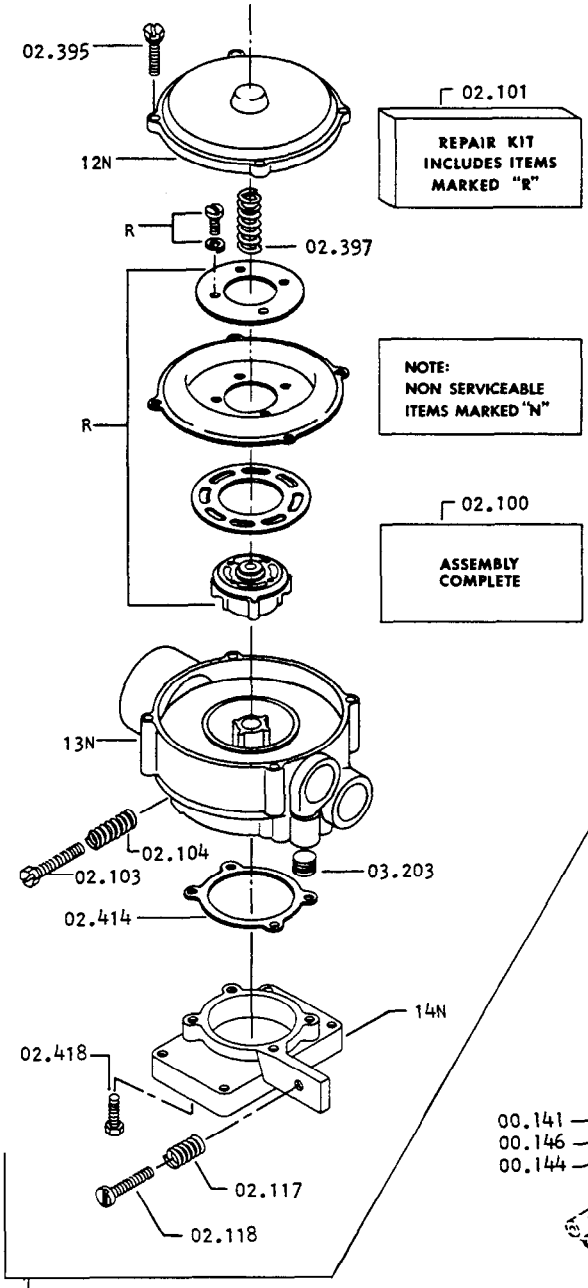
SM520 2/27/91

Carburetor - 4G54 [2.6L] LPG Engine

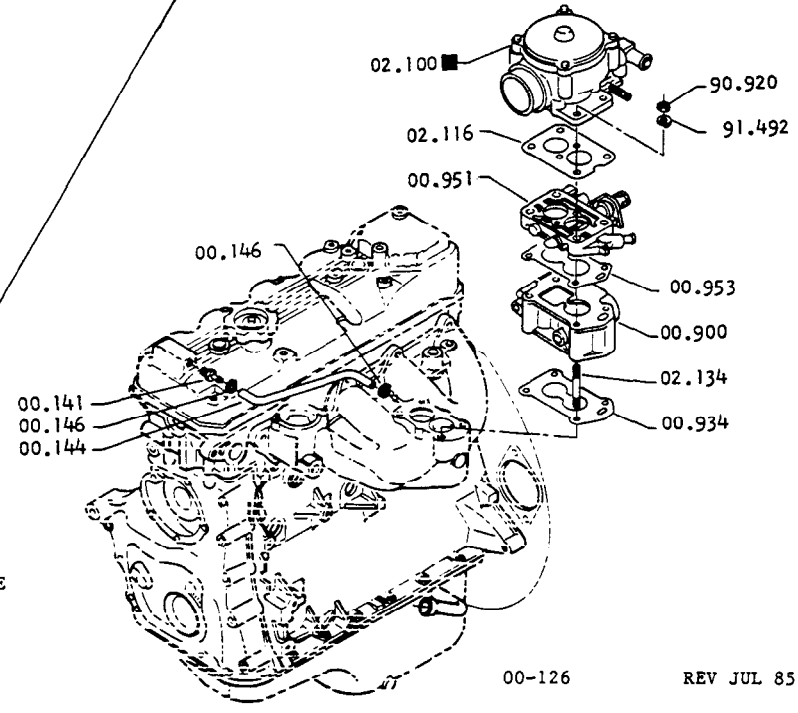
Downdraft, Certified Low Emission
IMPCO Model CA100

The structure of the LPG carburetor for 4G54 engines is a combination of the IMPCO carburetor upper body and an adapter to fit the throttle body on the velocity governor.

02.100	CARBURETOR ASSEMBLY	
02.101	REPAIR KIT, CARBURETOR	
02.103	ADJUSTOR, CARBURETOR IDLE	
02.104	SPRING, CARBURETOR IDLE ADJUSTOR	
02.117	SPRING, CARBURETOR THROTTLE STOP	
02.118	STOP, CARBURETOR THROTTLE	
02.395	FASTENER, CARBURETOR METERING DIAPHRAGM COVER	
02.397	SPRING, CARBURETOR METERING DIAPHRAGM	
02.414	GASKET, CARBURETOR METERING VALVE	
02.418	FASTENER, CARBURETOR ADAPTOR	
03.203	PLUG, CARBURETOR	
12N	COVER, CARB METERING DIAPHRAGM	USE 02.100
13N	HOUSING, CARB METERING CONTROL	USE 02.100
14N	ADAPTOR, CARB TO THROTTLE BODY	USE 02.100



03-233 AUG 84



00-126 REV JUL 85

00.141	FITTING, CRANKCASE VENT LINE
00.144	LINE, CRANKCASE VENTILATION
00.146	CLAMP, CRANKCASE VENT LINE
00.900	GOVERNOR, ENGINE
00.934	GASKET, GOVERNOR MOUNTING
00.951	THROTTLE, ENGINE
00.953	GASKET, THROTTLE MOUNTING
02.116	GASKET, CARBURETOR MOUNTING
02.134	FASTENER, CARBURETOR MOUNTING
90.920	NUT, CARBURETOR MOUNTING FASTENER
91.492	LOCKWASHER, CARBURETOR MOUNTING FASTENER

OPTIONAL STROBE BEACON
OPTIONAL REVERSE ALARM
OPTIONAL BACK UP LAMP
OPTIONAL TAIL-STOP LAMP
OPTIONAL OVERLOAD PROTECTION SWITCH
OPTIONAL HEADLAMP LEFT
12 VOLT BATTERY
OPTIONAL DISCONNECT SW.
FUEL GAUGE SENDER UNIT
HORN BUTTON
OPTIONAL REVERSE SWITCH N.O.
OPTIONAL BRAKELAMP SWITCH N.C.
HORN
OPTIONAL HEADLAMP SWITCH
OPTIONAL LOW FUEL LAMP
HORN RELAY N.O.
SEAT BELT BUZZER
ENG OIL PRESS SW.
ALTERNATOR
OPTIONAL ENCLOSED ALTERNATOR
RED W/ PURPLE
PURPLE
STARTER RELAY N.O.
IGNITION SWITCH
SEAT BELT WARNING LAMP
OPTIONAL OVERLOAD INDICATOR LAMP
OPTIONAL HI TEMP/LO OIL ENGINE SHUT DOWN SPST N.C.
MATE-IF BOTH OPTIONS USED
BREAKERLESS TYPE
ENG COOLANT TEMP.SW.N.O.
BLACK W/STRIPE
66A TRANS TEMP SW. N.O.
WARNING LAMPS
ENG OIL PRESS
ENG COOLANT TEMP
TRANS TEMP
BATTERY CHARGE
OPTIONAL SEAT SW. N.O.
OPTIONAL SEAT ENGINE SHUT DOWN SPST N.O.
OPTIONAL LOW LPG PRESSURE SWITCH N.C.
OPTIONAL AUX. VALVE SWITCH
OPTIONAL AUX. SOLENOIDS
FUEL GAUGE
HOUR METER
DISTRIBUTOR
SPARK PLUG
BALLAST
IGNITION COIL
FUEL CUT OFF
STARTING MOTOR
MITSUBISHI
NOTE: ALL WIRES IN IGNITION SYSTEM W/O NUMBERS-FURNISHED W/ ENGINE.
DIRECTIONAL CONTROL LEVER & SWITCHES
START INTERLOCK RELAY
TRANS. CONTROL SOLENOIDS
FWD REV
OPTIONAL HEADLAMP RIGHT

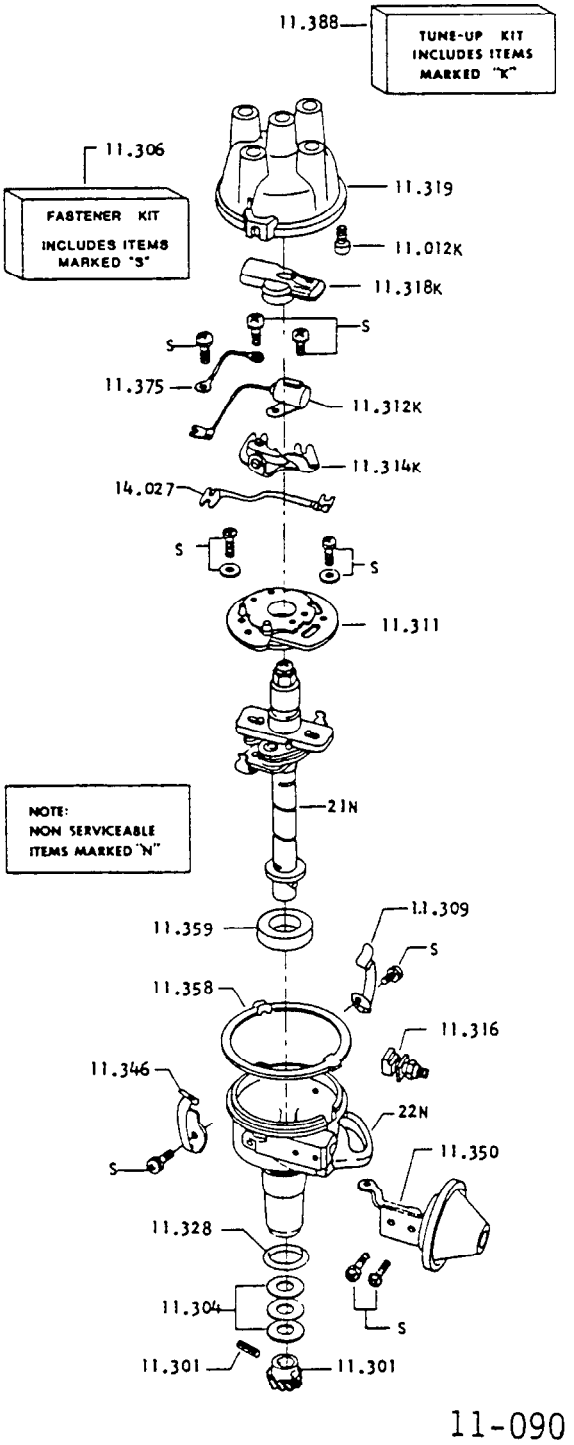
81 HOUR METER
66A TRANS TEMP
78 CHARGE
77A ENG COOLANT TEMP
76 ENG OIL PRESS
36 FUEL GAUGE SENDER
64 GROUND
62 STARTER CONTROL
14G IGNITION SW
15B BATTERY

PD IN-22084.01
OP IN-22084.A
OP IN-22084.B

D HOYT	08OCT86	GAS / LPG	
DRF	24MAR86	DIAGRAM-WIRING	
F86-1744	31MAR86	CLARK IN-22084	
RELEASED	F861744 31MAR86	2CS17-30	SHEET 1 OF 1

COMPUTER PRINT

(Type 1)-Contact Breaker Point Distributor



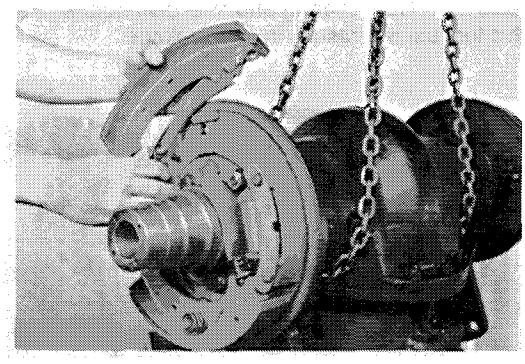
11.300	DISTRIBUTOR ASSEMBLY	
11.012	CONTACT, DISTRIBUTOR HIGH TENSION LEAD	
11.301	GEAR, DISTRIBUTOR	
11.304	WASHER, DISTRIBUTOR GEAR	
11.306	FASTENER KIT, DISTRIBUTOR	
11.309	SPRING CLIP, DISTRIBUTOR CAP	
11.311	PLATE, DISTRIBUTOR BREAKER	
11.312	CONDENSER, DISTRIBUTOR	
11.314	POINT SET, DISTRIBUTOR	
11.316	TERMINAL KIT, DISTRIBUTOR	
11.318	ROTOR, DISTRIBUTOR	
11.319	CAP, DISTRIBUTOR	
11.328	SEAL, DISTRIBUTOR HOUSING	
11.346	SPRING CLIP, DISTRIBUTOR CAP	
11.350	VACUUM ADVANCE, DISTRIBUTOR	
11.358	SEAL, DISTRIBUTOR CAP	
11.359	SEAL, DISTRIBUTOR HOUSING	
11.375	LEAD, DISTRIBUTOR BREAKER GROUND	
11.388	KIT, DISTRIBUTOR TUNE-UP	
14.027	LEAD, DISTRIBUTOR PRIMARY	
21N	MAINSHAFT & WEIGHT ASSEMBLY, DIST	USE 11.300
22N	HOUSING, DISTRIBUTOR	USE 11.300

Distributor Specification

Description	*Specification*
Type	Contact point
Model	T3T04582
Firing Order	1-3-4-2
Rotation (viewed from cap)	Clockwise
Ignition Timing Gasoline LPG	6° BTDC @ 500 rpm 9° BTDC @ 500 rpm
Centrifugal advance characteristics: deg/rpm (engine)	Beginning 0°/1000 End 10°/5000
Vacuum advance characteristics: deg/mmHg	Beginning 0°/220 End 8.5°/450
Dwell angle: degrees	52° (49°-55°)
Condenser capacity: µF	0.27 µF
Point gap: [mm] in.	[0,45-0,55] .018-.022 in.

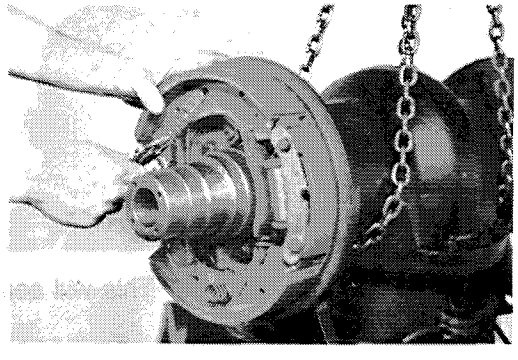
4. *See note below.* Tighten stud nuts to torque spec: [169-190 Nm] 125-140 lbf.ft. Tighten capscrew to torque spec: [111-122 Nm] 82-90 lbf.ft.

Note - To install brake backing plate, criss-cross torque top 4 nuts, then torque lower nut and capscrew.

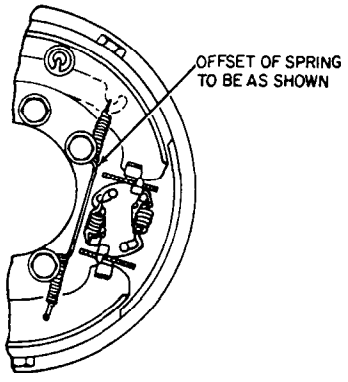


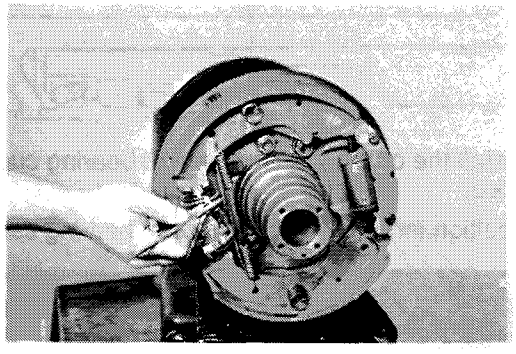
5. Install first brake shoe (without cam) and holddown (guide) spring, on side towards transmission. Position cross strut (brake operating arm) in notch in this brake shoe. Install spring seat and operating arm spring.

6. Position second brake shoe with cam assembly. Connect parking brake cable to notch in brake shoe cam. Install brake shoe in place. Connect operating arm.

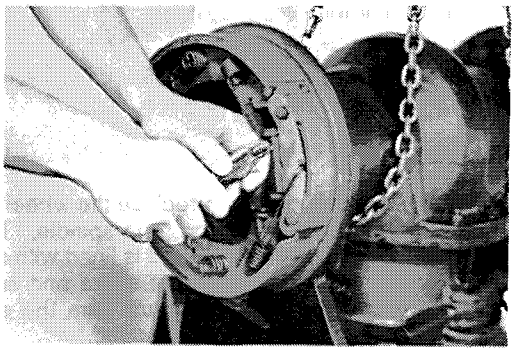


7. Install brake shoe holddown (guide) spring.





8. Install lower brake shoe return spring, with offset of spring away from spindle hub center.



9. Install upper brake shoe return springs.

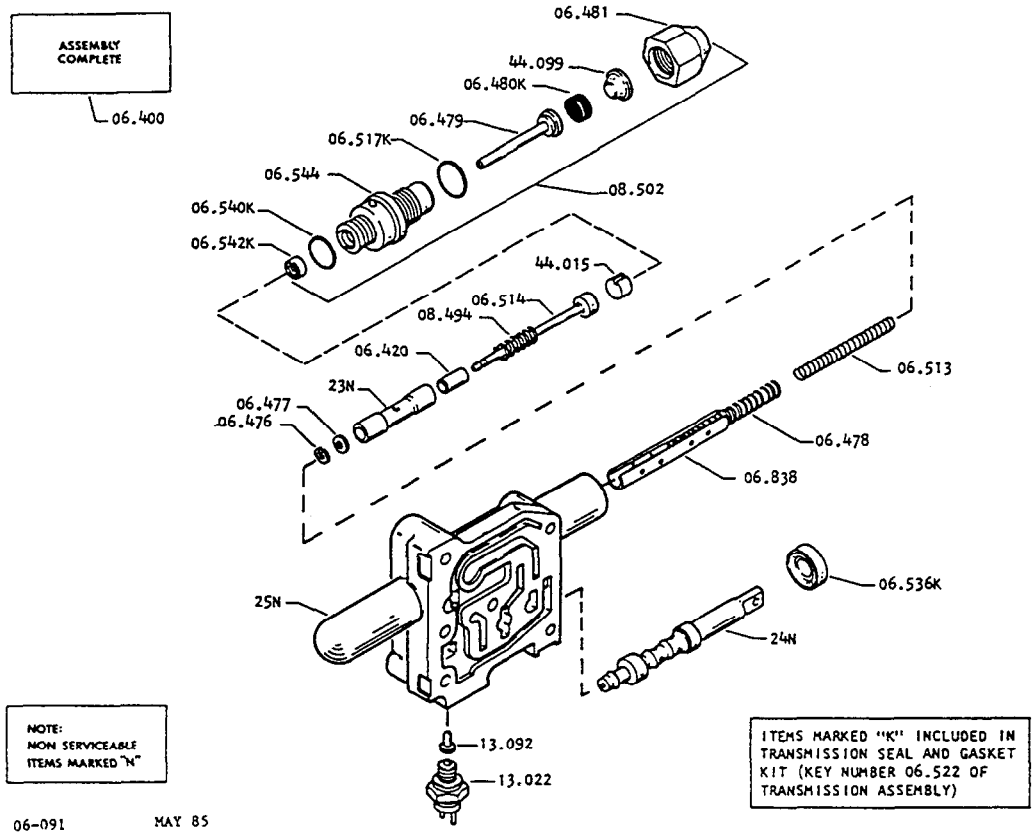
NOTE - For brake adjustment, refer to *M. Service Brake Adjustment procedure,* Page 7.7-64.

Transmission Control Cover

(Style 1) Without modulator and accumulator

Used on 11FHR510-2, -3, -5 models (modulator and accumulator in charging pump).
Prior to Dec 1986, Thru Lot 6477 (Cush), Lot 6486 (Pneu) and below.

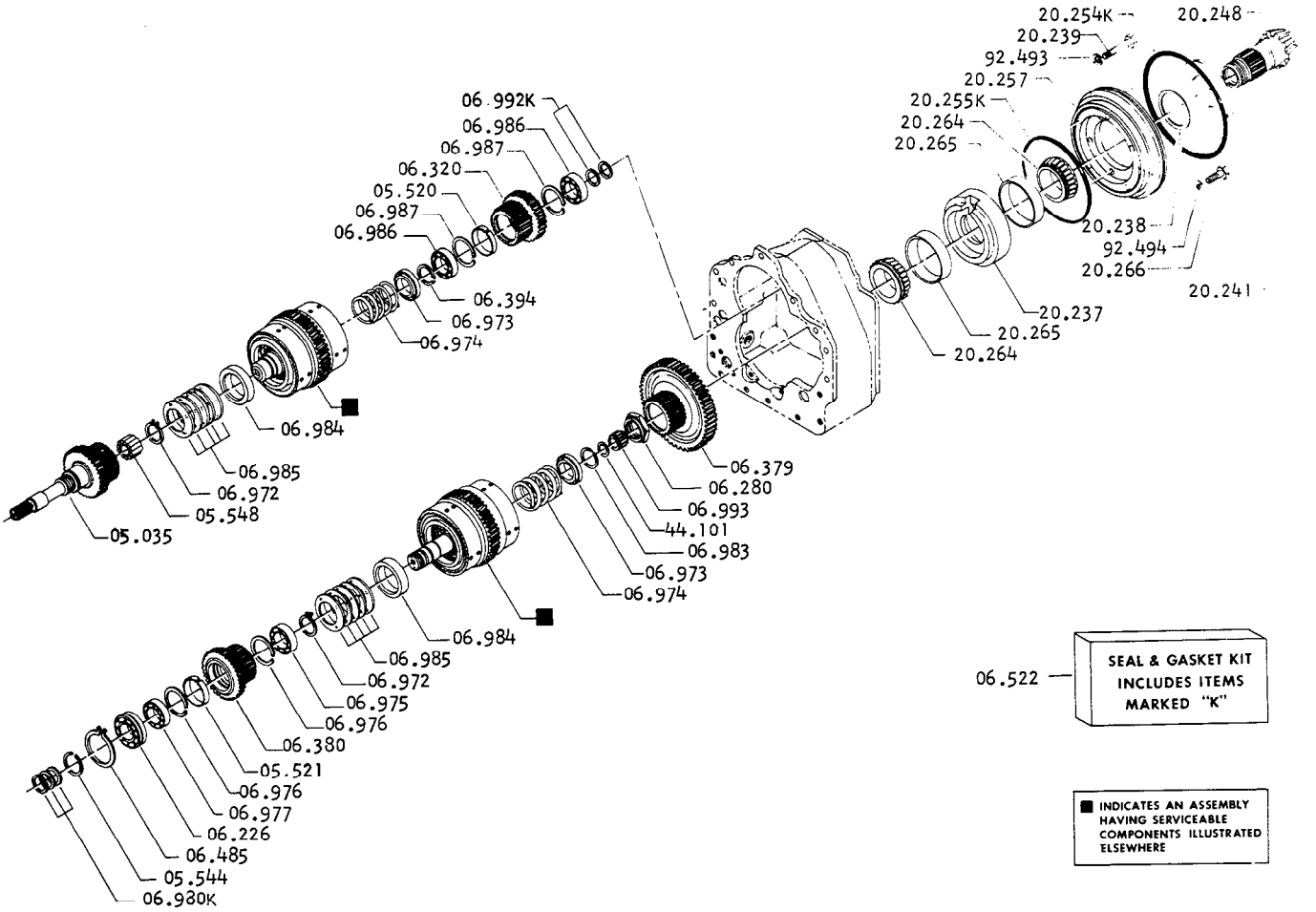
***NOTICE** - Refer to Page 7.7-14 for (Style 2) Control Valve (with modulator and accumulator).*



06.400	CONTROL COVER ASSEMBLY, TRANSMISSION	06.542	SEAL, INCHING ACTUATOR PISTON ROD	
06.420	SPACER, INCHING SPOOL RETURN SPRING	06.544	HOUSING, INCHING ACTUATOR PISTON	
06.476	RETAINER, INCHING VALVE PISTON	06.838	STOP, INCHING VALVE SPOOL	
06.477	WASHER, INCHING VALVE PISTON	08.494	SPRING, INCHING SPOOL RETURN	
06.478	SPRING, INCHING VALVE PISTON RETURN (OUTER)	08.502	ACTUATOR ASSEMBLY, INCHING VALVE	
06.479	PISTON, INCHING ACTUATOR	13.022	SWITCH, NEUTRAL START	
06.480	SEAL, INCHING ACTUATOR PISTON	13.092	ACTUATOR, NEUTRAL START SWITCH	
06.481	FITTING, INCHING VALVE ACTUATOR INLET	44.015	STOP, INCHING VALVE PISTON	
06.513	SPRING, INCHING VALVE PISTON RETURN (INNER)	44.099	STOP, INCHING ACTUATOR PISTON	
06.514	PISTON, INCHING VALVE	23N	SPOOL, INCHING VALVE	USE 06.400
06.517	SEAL, INCHING ACTUATOR INLET FITTING	24N	VALVE, DIRECTIONAL SELECTOR	USE 06.400
06.536	SEAL, DIRECTIONAL SELECTOR VALVE	25N	HOUSING, CONTROL COVER	USE 06.400
06.540	SEAL, INCHING ACTUATOR PISTON HOUSING			

Turbine Shaft, Clutches, Differential Bearing Carrier, Pinion Gear

WC, I Models - HR620/621 2-speed transaxle



06-574 APR 84

06.200	TRANSMISSION ASSEMBLY	06.983	RING-RETAINING, CLUTCH RELEASE SPRING
05.035	SHAFT, TORQUE CONVERTER TURBINE	06.984	RETAINER, CLUTCH RELEASE SPRING
05.520	SPACER, FORWARD GEAR BEARING	06.985	SPRING, CLUTCH RELEASE
05.521	SPACER, REVERSE GEAR BEARING	06.986	BEARING, FORWARD CLUTCH HUB
05.544	RING, REVERSE CLUTCH SHAFT BEARING LOCATING	06.987	RING, FORWARD CLUTCH HUB BEARING LOCATING
05.548	BEARING, FORWARD CLUTCH SHAFT PILOT	06.992	SEAL, CLUTCH SHAFT OIL
06.226	BEARING, REVERSE SHAFT INNER	06.993	BEARING, CLUTCH SHAFT PILOT
06.280	FASTENER, OUTPUT SHAFT	20.237	RETAINER, DIFFERENTIAL PINION BEARING
06.320	HUB, LOW CLUTCH DISC	20.238	SHIM KIT, DIFFERENTIAL PINION BEARING CAGE
06.379	HUB, HIGH CLUTCH DISC	20.239	FASTENER, DIFFERENTIAL PINION BEARING CARRIER
06.380	HUB, REVERSE CLUTCH DISC	20.241	WASHER, DIFFERENTIAL PINION BEARING THRUST
06.394	RING-RETAINING, FORWARD CLUTCH HUB BEARING	20.248	RING GEAR & PINION SET, DIFFERENTIAL
06.485	RETAINER, REVERSE SHAFT INNER BEARING	20.254	SEAL, DIFFERENTIAL BEARING CARRIER (OUTER)
06.522	KIT, TRANSMISSION SEAL & GASKET	20.255	SEAL, DIFFERENTIAL BEARING CARRIER (INNER)
06.972	RING-RETAINING, CLUTCH RELEASE SPRING	20.257	BEARING CARRIER, DIFFERENTIAL
06.973	RETAINER, CLUTCH RELEASE SPRING	20.264	CONE, DIFFERENTIAL PINION OUTER BEARINC
06.974	SPRING, CLUTCH RELEASE	20.265	CUP, DIFFERENTIAL PINION OUTER BEARING
06.975	BEARING, REVERSE CLUTCH HUB (AXLE END)	20.266	FASTENER, DIFFERENTIAL PINION BEARING RETAINER
06.976	RING, REVERSE CLUTCH HUB BEARING LOCATING	44.101	THRUST WASHER, CLUTCH SHAFT PILOT BEARING
06.977	BEARING, REVERSE CLUTCH HUB (ENGINE END)	92.493	LOCKWASHER, DIFFERENTIAL PINION BRG CARRIER FAST
06.980	SEAL, CLUTCH SHAFT OIL	92.494	LOCKWASHER, DIFFERENTIAL PINION BRG RETAINER FAS

Service Brake Adjustment (Cont'd)
TA18 Transaxle

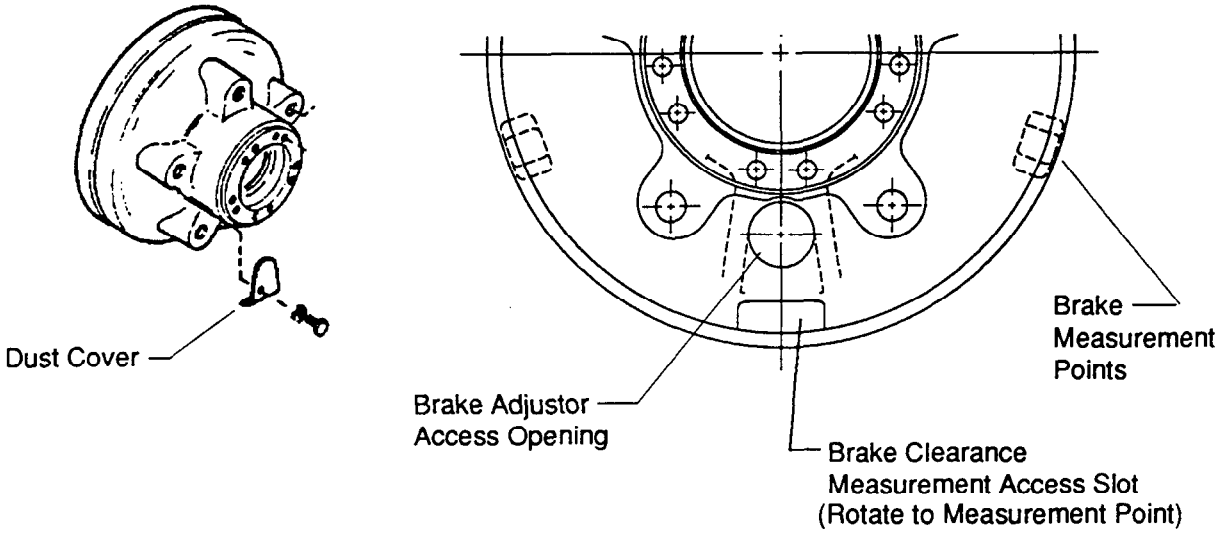


Figure 5. Service Brake Access Openings in Wheel Hub

2. Adjustment Thru Wheel Hub

Openings in the wheel hub/brake drum have been provided for easier access to check and adjust the service brakes from the outer side. Requires removal of drive wheel and tire assembly. Some models may have only a slot for measuring brake clearance; adjustment is made through the plug openings on backing plate. Later models have a slot and circular opening for access also to the adjustor. The opening is enclosed with a dust cover held in place by a single screw.

1. Remove wheel and tire assembly from wheel hub. Do not deflate pneumatic tires mounted on conventional lock-ring type wheels.

NOTICE - Split-Rim Wheel Assemblies Only

DANGER
Split-Rim Wheel Separation
Before loosening wheel mounting bolts or nuts, remove the air from the tire. Failure to remove the air from the tire can result in serious injury.

2. Remove dust cover from access opening in wheel hub/brake drum.

3. Use a feeler (thickness) gauge to check the clearance between each shoe and drum. Use a screwdriver or equivalent tool to rotate the adjustor ratchet wheel in the brake.

4. Use a tool with a hook to pull on and release the ratchet pawl when it is necessary to back off adjustment (increase clearance) of the brake.

IMPORTANT - Do not overtighten brakes. *It is very difficult to release the ratchet wheel pawl and back off adjustment of the brake.*

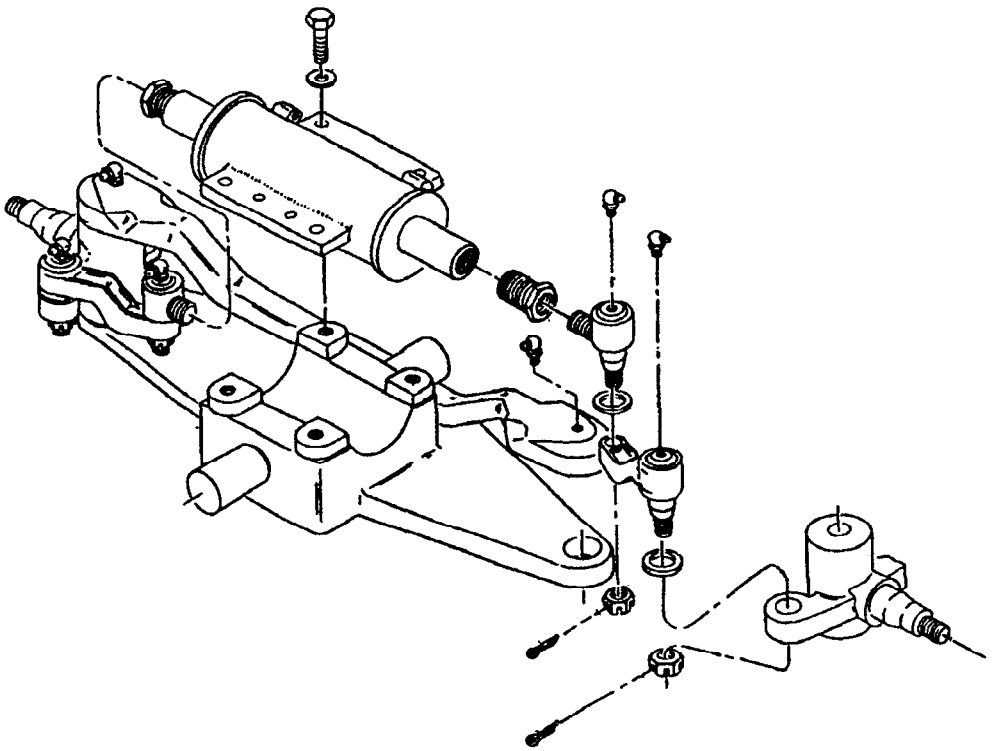
5. Carefully adjust clearance between brake shoes and drum to [0,255-0,304 mm] .010-.012 in. measured at slot opening. Move slot by rotating brake drum to check clearance at positions shown by Fig.4, on each brake shoe.

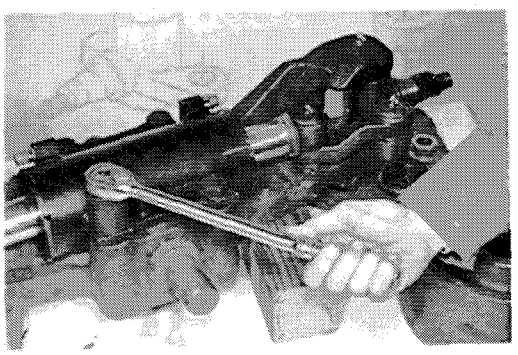
6. After adjusting brakes, install dust cover over access opening in wheel hub.

7. Install wheel and tire assembly on drive axle wheel hub.

8. Install wheel mounting lug nuts and tighten to torque spec: [637-718 Nm] 470-530 lbf.ft.

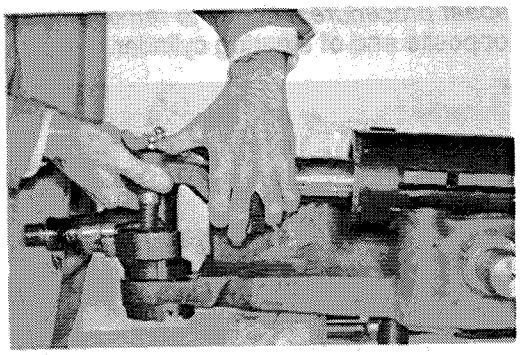
2. Power Steering Cylinder and Tie Rod Assembly Removal





1. Remove the four steering cylinder mounting bolts and washers.

2. Remove the cotter pin from tie rod end (left side shown).
3. Remove the tie rod end nut at steering knuckle.

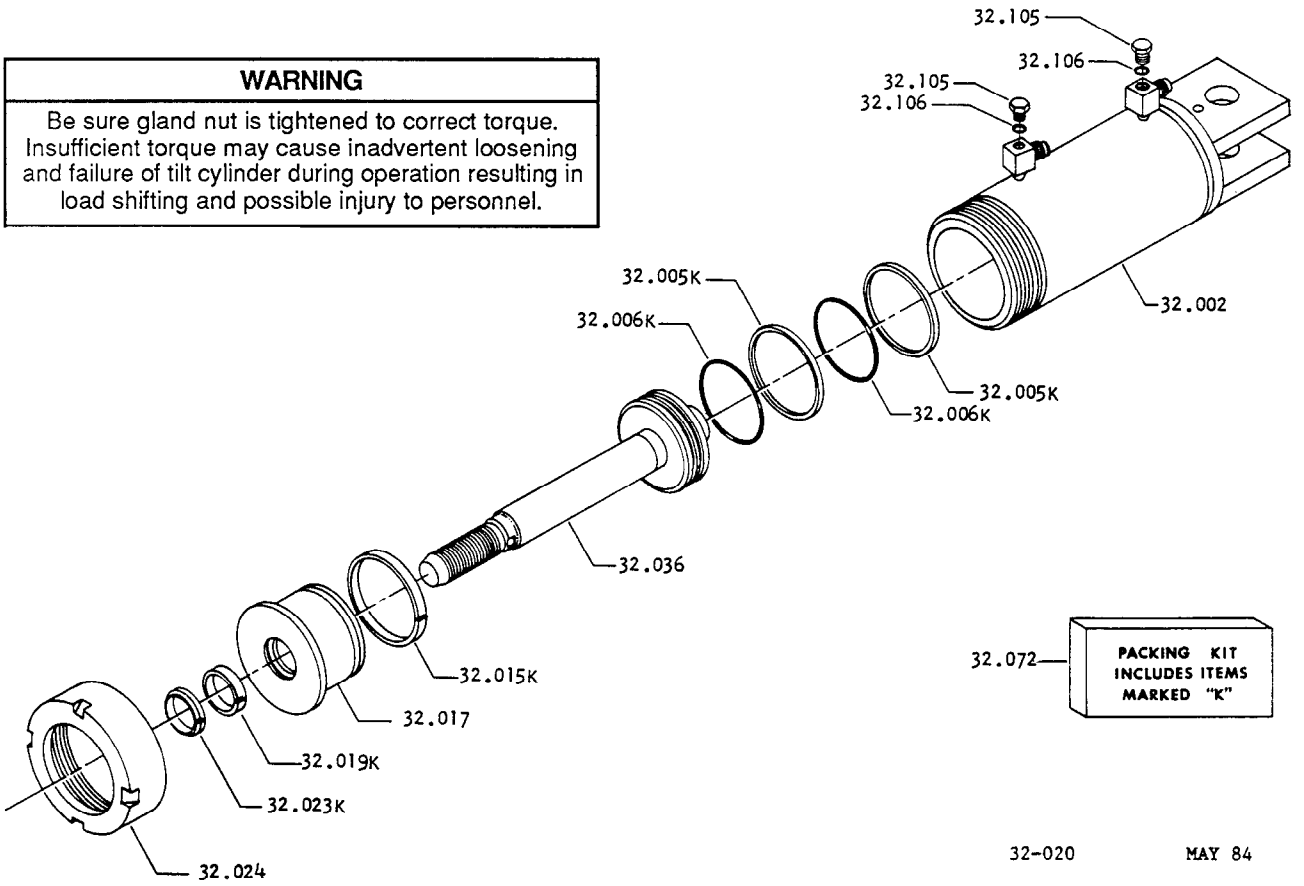


4. Loosen and remove the tie rod end and dust shield from the steering knuckle arm. **Note** - You may have to drive the tie rod end from the knuckle arm socket using a hammer and brass drift pin.
5. Repeat this procedure for the opposite (RH) tie rod end.

Tilt Cylinder Assembly Parts

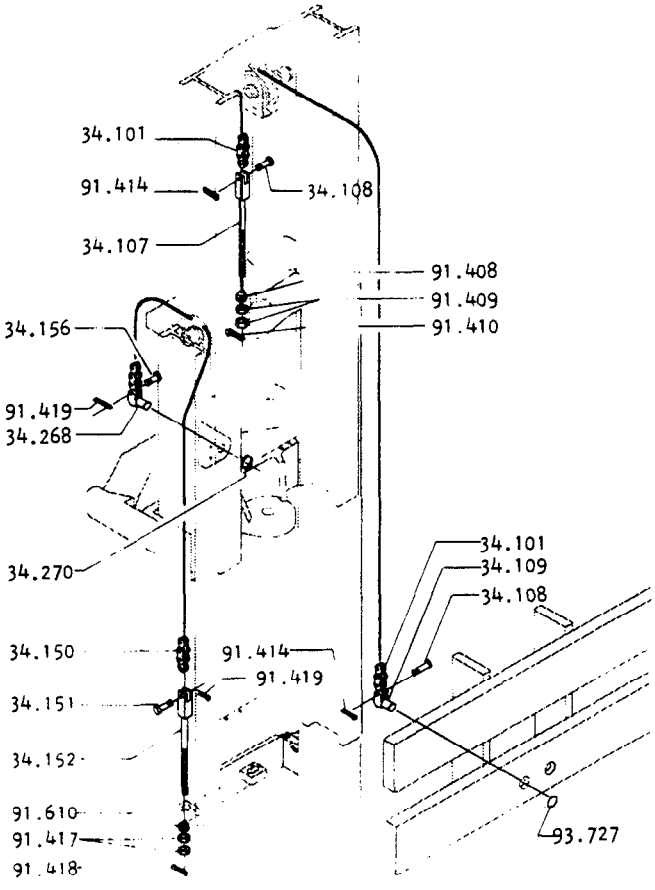
WARNING

Be sure gland nut is tightened to correct torque. Insufficient torque may cause inadvertent loosening and failure of tilt cylinder during operation resulting in load shifting and possible injury to personnel.



32.000	TILT CYLINDER ASSEMBLY
32.002	BARREL, TILT CYLINDER
32.005	SEAL, TILT CYLINDER PISTON
32.006	RING, TILT CYLINDER PISTON BACK-UP
32.015	SEAL, TILT CYLINDER GLAND
32.017	GLAND, TILT CYLINDER
32.019	PACKING, TILT CYLINDER GLAND
32.023	WIPER, TILT CYLINDER PISTON ROD
32.024	NUT, TILT CYLINDER GLAND
32.036	ROD & PISTON, TILT CYLINDER
32.072	PACKING KIT, TILT CYLINDER
32.105	PLUG, TILT CYLINDER PORT FITTING
32.106	SEAL, TILT CYLINDER PORT FITTING PLUG

Lift Chain - TSU Upright



34.101	CHAIN, LIFT
34.107	ANCHOR, LIFT CHAIN (CYLINDER END)
34.108	PIN, LIFT CHAIN ANCHOR
34.109	ANCHOR, LIFT CHAIN (CARRIAGE END)
34.150	CHAIN, RAIL LIFT
34.151	PIN, RAIL LIFT CHAIN ANCHOR
34.152	ANCHOR, RAIL LIFT CHAIN
34.156	PIN, RAIL LIFT CHAIN ANCHOR
34.268	ANCHOR, RAIL LIFT CHAIN
34.270	RETAINER, RAIL LIFT CHAIN ANCHOR
91.408	NUT, LIFT CHAIN ANCHOR (SPHERICAL)
91.409	NUT, LIFT CHAIN ANCHOR (CYLINDER END)
91.410	RETAINER, CHAIN ANCHOR NUT (CYLINDER END)
91.414	RETAINER, LIFT CHAIN ANCHOR PIN
91.417	NUT, RAIL LIFT CHAIN ANCHOR
91.418	RETAINER, RAIL LIFT CHAIN ANCHOR NUT
91.419	RETAINER, RAIL LIFT CHAIN ANCHOR PIN
91.610	NUT, RAIL LIFT CHAIN ANCHOR (SPHERICAL)
93.727	RETAINER, LIFT CHAIN ANCHOR (CARRIAGE END)

66-316 MAY 87