

TITAN

10" X 2 1/4" BRAKES

FREE BACKING* UNI-SERVO

u.s. PATENT 4,787,487

PREMIER & STANDARD



UNI-SERVO
Without Parking Brake

Limited Warranty TITAN Inc. ("TITAN") warrants its products to be free from defects in material and workmanship for one year from date of delivery to the original purchaser when properly installed, used and maintained by the purchaser.

TITAN LIMITED WARRANTY

TITAN warrants its complete braking systems (TITAN PREMIER, MARINE & STANDARD brakes, TITAN hubs/drums, and TITAN actuators) to be free from defects in material and workmanship for two years when properly installed, used and maintained.

TITAN warrants that the PREMIER BRAKE will be free from a corrosion-related failure of brake components for two years when properly installed, used and maintained.

This warranty does not apply to damage or loss caused by any or all of the following circumstances or conditions:
Freight damage.

Parts, accessories, materials or components not obtained from or approved in writing by TITAN. Misapplication, misuse and failure to follow the directions or observe cautions and warnings on installation, operation, application, inspection or maintenance specified in any TITAN quotation, acknowledgement, sales literature, specification sheet or installation instruction and service manual ("applicable literature").

If any TITAN products are found upon TITAN's examination to have been defective when supplied, TITAN will either: credit the purchaser's account for the purchase price of the TITAN product; replace the TITAN product; or repair the product. TITAN has sole discretion in choosing which option to provide. For this LIMITED WARRANTY to apply, TITAN must receive notice of the alleged defect within 30 days of either the discovery of the alleged defect or the expiration of the warranty period, whichever is earlier. Any claim not made within this period shall conclusively be deemed waived.

If requested by TITAN, purchaser shall return the alleged defective product to TITAN for examination at TITAN's direction and expense. TITAN will not pay for expenses incurred in returning a product to TITAN without TITAN's prior written authority. TITAN shall not be liable for any other expenses purchaser incurs to remedy any defect. Purchasers waive subrogation on all claims under any insurance.

Limitation of Liability. It is expressly agreed that the liability of TITAN is limited and TITAN does not function as an insurer. THE REMEDIES SET FORTH IN THIS WARRANTY SHALL CONSTITUTE THE EXCLUSIVE REMEDIES AVAILABLE TO THE PURCHASER OR USER AND ARE IN LIEU OF ALL OTHER REMEDIES, EXPRESS OR IMPLIED. THE LIABILITY OF TITAN, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE OF THE PARTICULAR PRODUCT MANUFACTURED, SOLD OR SUPPLIED BY TITAN.

To Obtain Technical Assistance. To enable TITAN to respond to a request for assistance or evaluation of customer or user operating difficulty, please provide at a minimum the following information by calling 1-800-247-1781 or within Iowa 1-515-244-7286:

Model number, serial number and all other data on the specific component which appears to be involved in the difficulty. The date and from whom you purchased your TITAN product.

State your difficulty, being sure to mention at least the following: Application, Nature of load involved, and Weight of the load.

Field Service. If field service at the request of the purchaser is rendered and the difficulty is found not to be with TITAN's product, the purchaser shall pay the time and expense (at the prevailing rate at the time of service) of seller's field representative(s). Charges for service, labor and other expenses that have been incurred by the purchaser, its customer or agent without prior written authorization of TITAN will not be accepted.

TITAN EXTENDS NO WARRANTY, EXPRESS OR IMPLIED, ON PRODUCTS NOT MANUFACTURED BY TITAN OR TO TITAN'S DESIGN SPECIFICATION, INCLUDING BUT NOT LIMITED TO SUCH ITEMS AS NON-TITAN TIRES, BEARINGS, HOSE AND TUBING. PURCHASER'S RECOURSE SHALL BE LIMITED TO ANY WARRANTY OF THE RESPECTIVE MANUFACTURERS.

THIS WARRANTY EXCLUDES ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY PURPOSE.

THIS WARRANTY DOES NOT COVER NOR EXTEND TO INCIDENTAL OR CONSEQUENTIAL DAMAGE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

No representative has authority to make any representation, promise or agreement except as stated in this Limited Warranty. TITAN reserves the right to make design and other changes upon its products without any obligation to install the same on any previously sold or delivered products.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THOSE DESCRIBED ABOVE. EFFECTIVE JULY 1, 1991 THIS WARRANTY SUPERSEDES ALL PRIOR WARRANTIES, WRITTEN OR IMPLIED.

DUE TO THE WIDE VARIATION IN USES TO WHICH TITAN PRODUCTS (WHEELS, HUBS, BRAKES, ETC.) ARE SUBJECT BY USERS, WE ARE UNABLE TO SPECIFY CARRYING CAPACITIES OR SPEEDS FOR A PARTICULAR APPLICATION. THEREFORE, THE MANUFACTURER MUST TEST HIS EQUIPMENT UNDER THE MOST SEVERE CONDITIONS TO DETERMINE THAT TITAN PRODUCTS ARE SUITABLE

PNEUMATIC TIRE WARNING
Danger-Only specially trained persons using proper equipment shall mount or demount pneumatic tires. Serious or fatal injuries can result from using improper mounting procedures.

INSTRUCTIONS FOR 10" BRAKES

BRAKE INSTALLATION

1. Brake Mounting Flange

To assure correct brake action, the mounting flange must be square and concentric with the axle spindle. A flange that is not properly installed will contribute to rapid lining wear and improper brake action.

The 10" TITAN brake is designed to interchange with existing equipment mounting on flanges with (4) holes on 4" B.C. and a 3" register diameter. Several manufacturers offer complete axles with flanges attached, or you may choose to install flanges yourself.

Use a flange welding fixture to properly position the flange for welding. Bolt the flange to the welding fixture securely with all bolts.

Install the fixture (and flange) onto the spindle and tighten spindle nut. If flange is being installed on a round axle, rotate to secure "wheel cylinder up" location when the axle is installed.

It is best not to make a continuous weld around the flange. First, tack weld on all four sides between the bolts. Follow this with a full weld up each side of the axle. It is usually not advisable or necessary to weld across the top and bottom of the axle. The bottom of the axle is its most highly stressed area and a weld at this point will weaken the axle. Allow the axle, spindle, and flange to cool before removing welding fixture.

2. Installing Brakes

Place the brake against spindle flange. In mounting the brake, be sure the hydraulic wheel cylinder is at the top. Brakes are also marked as "RIGHTS" and "LEFTS". The brake designated as "LEFT" travels on the driver's side of the road.

3. Installing Brake Drum

When the brakes have been correctly assembled to the axle flanges, the hub and drum assemblies may be mounted on the axle spindle.

Pack the inside bearing with suitable wheel bearing grease. Force grease through and around the rollers. Place the bearing in the hub and install the grease seal flush with the end of the hub using an arbor press or soft mallet. Remove excess grease.

To avoid injury to bearing seal, lubricate seal seat prior to putting on the brake drum. Grease pack and install the outer bearing on spindle. Place flat washer and spindle nut on spindle. Turn drum as you tighten nut. When a pronounced drag is felt in the bearings, back off nut one complete slot and install cotter pin and dust cap.

Caution: Do not pack hub full of grease. Excessive grease may leak into brake drums causing brake failure.

Wheels may now be mounted on the trailers.

4. Adjusting Brakes

Before removing the jacks, adjust the brakes.

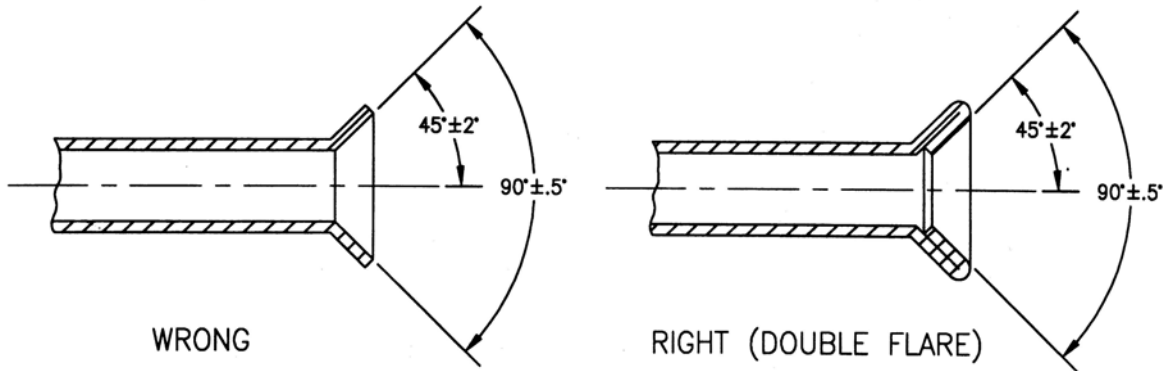
The brake adjustment nut is located behind a slot at the bottom of the backing plate. Tighten until you cannot rotate wheel by hand, then back off the adjustment 10 notches.

ALWAYS ROTATE DRUM IN DIRECTION OF FORWARD ROTATION ONLY.

10" BRAKE Installation

5. Hydraulic Lines

Use care in forming tubing to avoid sharp bends or kinks. Double flare steel tubing to assure tight leak proof connections. Anchor all hydraulic lines at two foot intervals to prevent chafing and vibration. Use hydraulic rubber hose at points of flexing. Anchor hose ends to avoid stress on tubing.



6. Bleeding the System

The first requisite for safe, sure hydraulic braking is the use of quality brake fluid. Use only DOT-3 or DOT-4 heavy duty fluid.

If pressure bleeding equipment is available, follow the manufacturer's instruction in bleeding the system.

If system must be bled manually, proceed as follows: Fill master cylinder with fluid. Install bleeder hose on first wheel cylinder to be bled, (if tandem axle trailer, bleed rear axle first). Have loose end of hose submerged in brake fluid in glass container to observe bubbling.

By loosening the bleeder screw located in the wheel cylinder one turn, the system is open to the atmosphere through the passage drilled in the screw. Pump actuator with long steady strokes. The bleeding operation is completed when bubbles no longer rise to the surface of the fluid. Be sure to close bleeder screw securely.

Repeat bleeding operation at each wheel cylinder. During the bleeding process, replenish the brake fluid, so the level does not fall below the 1/2 full level in the master cylinder reservoir. After bleeding is completed, make sure master cylinder is filled to 3/8 inch below the top of the reservoir, and filler cap 'securely in place.

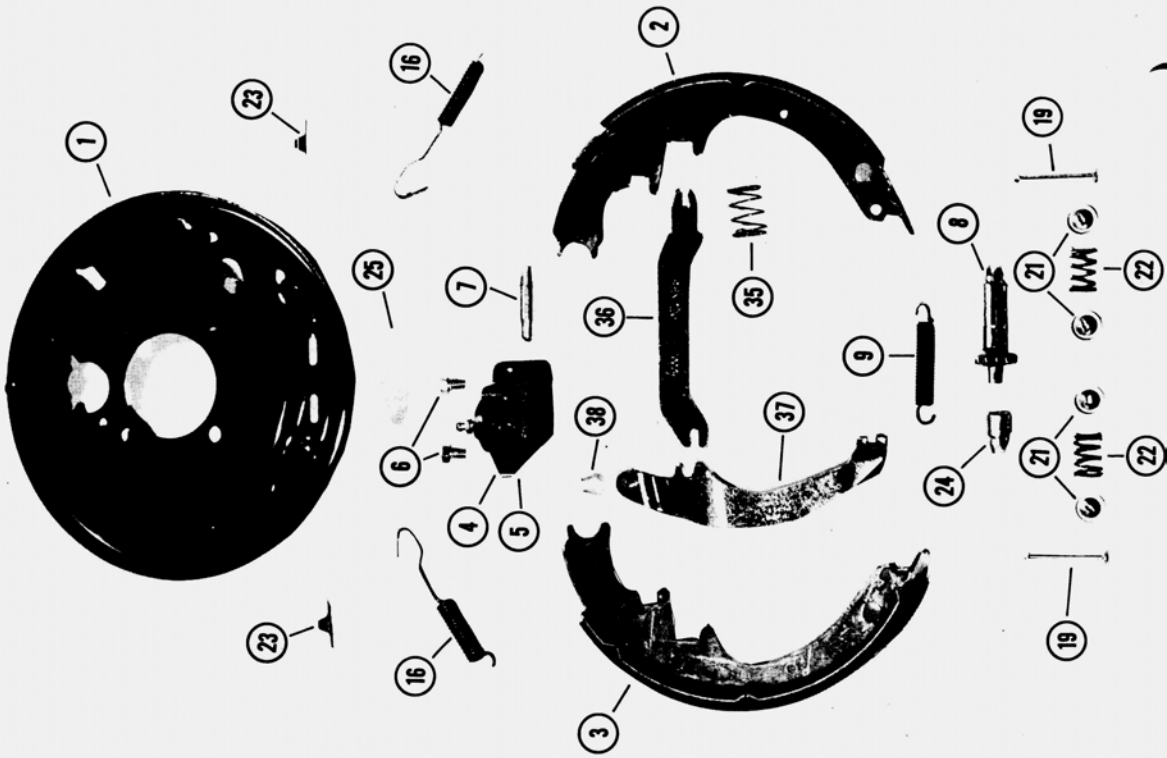
WARNING

Saltwater, granular fertilizers and other corrosive materials are destructive to metal. To prolong the life of a braking system used under corrosive conditions, we recommend that the Actuator be flushed after use with a high pressure water hose. Be sure to re-grease bearings and oil all moving parts after the unit has dried. At the end of the season, when unit is to be stored, remove the brake drums and clean inside the brakes. Pack wheel bearings before drum is installed. Failure to properly and adequately grease and maintain the actuator could weaken it and/or cause it to fail and result in serious injury and/or property damage.

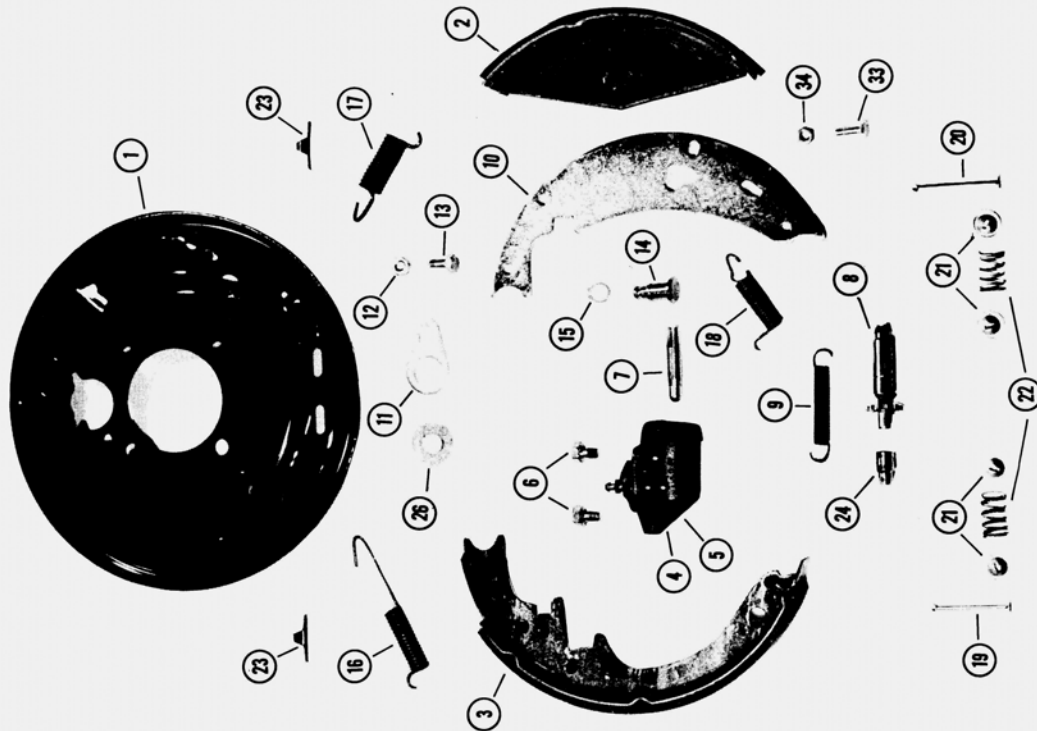
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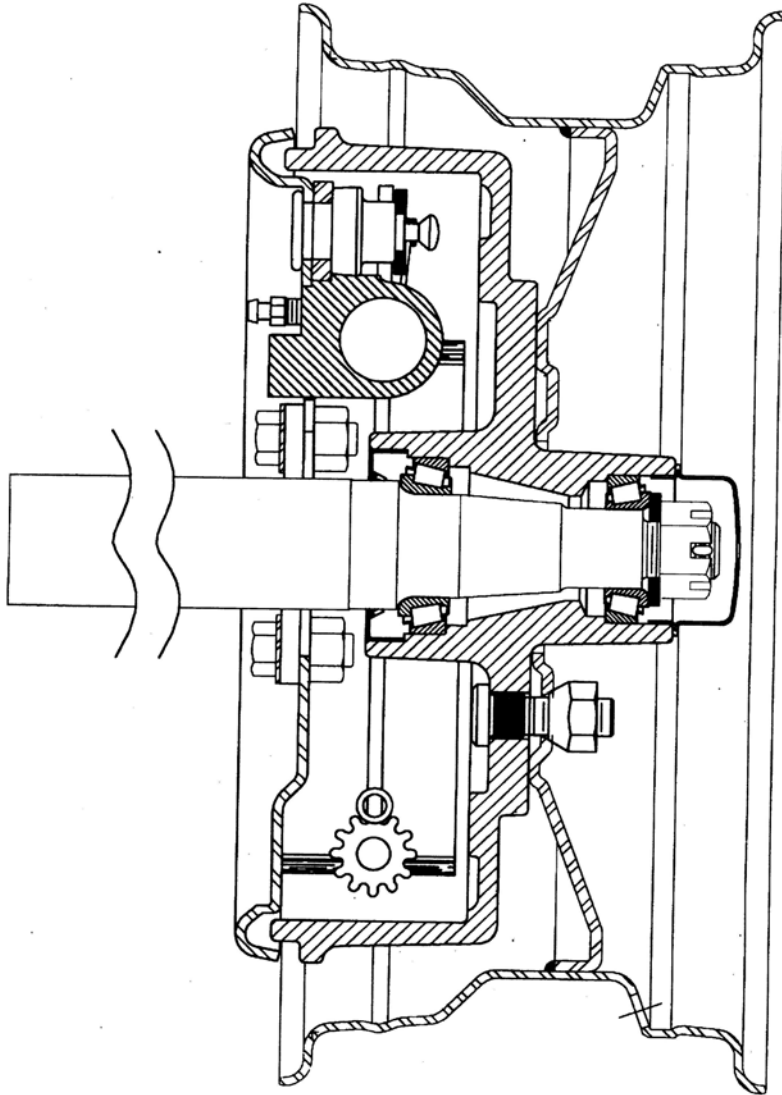
10" UNI-SERVO BRAKE DIAGRAM



10" FREE BACKING BRAKE DIAGRAM



10" BRAKE DIAGRAM, SIDE VIEW



REF. NO.	PART NO.	PART DESCRIPTION	BRAKE TYPE				
			PREMIER FREE BACKING	PREMIER UNI-SERVO	GALVANIZED FREE BACKING	FREE BACKING	UNI-SERVO
0	-	Complete Brake w/o Parking Brake-Right	4423400	4445300	4522800	4071500	1878700
0	-	Complete Brake w/o Parking Brake-Left	4423500	4445400	4522900	4071600	1878800
Q	-	Complete Brake w/ Parking Brake-Right	4423600			N/A	
0	-	Complete Brake w/ Parking Brake-Left	4423700			N/A	
1	2463600042	Back Plate Assembly-Black				1	1
1	2463650	Back Plate Assembly-Galvanized			1		
1	2463600410	Back Plate Assembly-Premier	1	1			
2	1791000	Front Shoe Assembly			1		
2	1095200	Front Shoe Assembly					1
2	4437100	Front Shoe Assembly	1				
2	4445900	Front Shoe Assembly		1			
3	1095300	Rear Shoe Assembly				1	1
3	4437200	Rear Shoe Assembly	1	1			
4	0977600	Wheel Cylinder Assembly-Right, Greased and Painted			1	1	1
5	0977700	Wheel Cylinder Assembly-Left, Greased and Painted			1	1	1
6	0977800	Cap Screw & Lockwasher, 5/16-18NC X 112			2	2	2
6	4439700	Cap Screw & Lockwasher, 5/16-18NC X 112	2	2			
7	0978300	Push Rod			1	1	1
7	4437700	Push Rod	1	1			
8	4437500	Adjusting Screw Assembly	1	1			
9	1095700	Spring-Adjusting Screw				1	1
9	4438400	Spring-Adjusting Screw	1	1			
10	4720800183	Shoe Lever-Clear Zinc			1	1	
10	4720800317	Shoe Lever-E-Coat	1				
11	1791700183	Travel Link-Clear Zinc			1	1	
11	1791700184	Travel Link-Olive Drab	1				
12	1740600	Hex Locknut, 5/16 - 18 NC (2 Way)	1		1	1	
13	0794900	Hex Cap Screw, 5/16 - 18NC X 5/8			1	1	
13	4424700	Hex Cap Screw, 5/16 - 18NC X 5/8	1				
14	125600183	Pin-Front Shoe, w/o Parking Brake-Clear Zinc			1	1	
14	1256000184	Pin-Front Shoe, w/o Parking Brake-Olive Drab	1				
15	0777801184	Retaining Ring-Yellow Dichromate Plating	1		1	1	
16	1095800	Spring-Shoe Return				1	2
16	4438500	Spring-Stainless Steel Shoe Return	1	2			
17	0978500	Spring-Lever				1	
17	4438600	Spring-Lever Stainless Steel	1				

REF. NO.	PART NO.	PART DESCRIPTION	BRAKE TYPE				
			PREMIER FREE BACKING	PREMIER UNI-SERVO	GALVANIZED FREE BACKING	FREE BACKING	UNI-SERVO
18	0681400	Spring-Lower Free Backing Shoe				1	
18	4438700	Spring-S.S. Lower Free Backing Shoe	1				
19	1095900	Pin-Shoe Hold Down, #8, Stainless Steel	1	2	1	1	2
20	0978800	Pin-Shoe Hold Down, #1, Stainless Steel	1		1	1	
21	0978900	Cup-Shoe Hold Down, Stainless Steel	4	4	4	4	4
22	1096000	Spring-Shoe Hold Down				2	2
22	4438800	Spring-Shoe Hold Down, Stainless Steel	2	2			
23	2475700	Cover-Adjusting Hole, Plastic	2	2	2		
24	4437600	Socket-Adjusting Screw	1	1			
25	4446000	Shoe Guide		1			
26	1895000	Washer, Shoe Guide, 17/32IDX1-3/160DX10 GA			1	1	
26	4439500	Washer, Shoe Guide, 17/32IDX1-3/160DX10 GA	1				
33	1050800	Hex Cap Screw, 1/4 - 20NC X 3/4				1	
33	4424900	Hex Cap Screw, 1/4 - 20NC X 3/4	1				
34	4070700	Hex Locknut, 1/4 - 20NC (2 Way)	1		1	1	
*37	4439200	Parking Lever Assembly-Right	1	1			
*37	4439300	Parking Lever Assembly-Left	1	1			
*38	0979500	Retainer	1	1	1		1
* -	4364800	Toggle Link Assy.-R			1		
* -	4364900	Toggle Link Assy.-L			1		
*	4440000	Hex Nut, 7/16 - 20NF	4				
*	4439600	Lockwasher, 7/16 Std.	4				
* -	1584500	Wheel Cyl. Kit-Wagner FC 13620	1	1	1	1	1
-	4744600	Dust Plug-Parking Brake, Not Shown	2	2	2	2	2
-	4745900	Flush Kit Plug, Not Shown	1	1	1	1	1
*	4743300	Mounting Bolt 7/16-20NF	4				
*14	4438300	Anchor Pin, Parking Brake	1				
-	4424800	Locknut 5/16, Not Shown	1		1		
-	4439800	Locknut 1/4, Not Shown	1		1		
-	4748800	Premier Brake Shoe Kit 10 x 2 1/4 F.B.	1		1		
-	4748403	L.H. Premier Free Backing Shoe Assembly	1		1		
-	4748404	R.H. Premier Free Backing Shoe Assembly	1		1		
-	4742700	Premier Brake Shoe Kit - Uni-Servo		1			
-	4043100	Brake Shoe Kit - Uni-Servo					1
-	4748401	L.H. Free Backing Shoe Assembly				1	
-	4748402	RH. Free Backing Shoe Assembly				1	

*Used on models with parking brakes linkages.