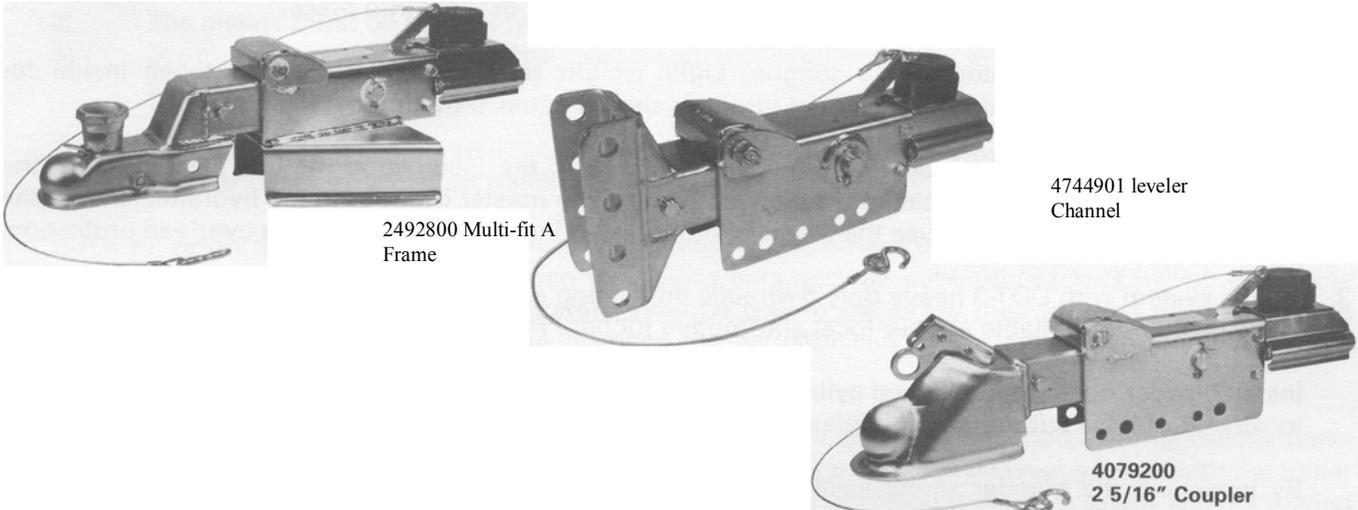


INSTALLATION INSTRUCTION AND SERVICE MANUAL Actuator/Trailer
Dealer - Please provide these instructions to the consumer. Consumer - Read and follow
these instructions. Keep them with the trailer for future reference.

TITAN MODEL 6 SURG-O-MATIC ACTUATOR FOR TRAILER BRAKES



Surge actuators of this type provide a service life of approximately five years with proper installation, usage, and maintenance. However, a well cared-for actuator can often exceed this estimate. To get the most benefit from your TITAN surge actuator, follow the instructions given in this manual and use common sense in caring for the TITAN MODEL 6 actuator and your entire trailer brake system.

WARNING:
Do not exceed these ratings.

RATED CAPACITY AND USAGE

7,500 POUNDS MAXIMUM GROSS LOAD with 2 5/16" coupler, 3" lunette eye or leveler channel. This is the weight of the trailer fully loaded with all cargo and equipment. To find your trailer's Gross Load, use a commercial vehicle scale at a truck weigh station, grain elevator, etc.

6000 POUND MAXIMUM GROSS LOAD with multi-fit ball coupler.

600 POUND MAXIMUM TONGUE LOAD with any Model 6 actuator. This is the weight applied downward by the fully loaded trailer's coupler on the tow vehicle's hitch. Measure your trailer's Tongue Load with the tongue in a horizontal towing position, using a commercial scale. Upward tongue loads are not permissible.

The Model 6 actuator is intended for use with recreational trailers subject to more frequent use, light utility trailers, and light occasional-use industrial trailers, which are towed by passenger cars and pickups. The actual in-service rating is limited to that of the ball and hitch being used or the trailer manufacturer's G.V.W.R. shown on the certification label, whichever is lower.

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MODEL 6 ACTUATOR INSTALLATION INSTRUCTIONS

Surge braking requires the installation of an actuator at the tongue of the trailer.

The "surge" or "push" of the trailer toward the tow vehicle automatically synchronizes the trailer brakes with the tow vehicle brake. As the trailer pushes against the tow vehicle the actuator telescopes together and applies the force to the master cylinder, supplying hydraulic pressure to the brakes.

The Model 6 Actuator is completely assembled and ready to bolt or weld into place.

1. Bolt or weld the actuator to the tongue. Light weight tongues require spacer tubes inside for reinforcement when bolting. Attachment strength should equal 1-1/2 times trailer G.V.W.R.
2. Install hydraulic brake lines on the trailer as described in the installation manual supplied with the brakes. Be sure to use a flexible hose when connecting the master cylinder to the hydraulic line on the trailer. This is necessary because the master cylinder is spring mounted to provide overload protection.
3. Fill the system with DOT-3 heavy duty hydraulic fluid using a pressure type brake bleeder. (This type of brake bleeder is available at your local automotive jobber.) Follow manufacturer's directions.

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 a glass container of brake fluid 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. The bleeding operation is complete when bubbling stops. 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 half full level in the master cylinder reservoir.

4. After bleeding is completed, make sure master cylinder is filled to 3/8" below the top of the reservoir and filler cap is securely in place.

HITCHING TRAILER

1. The towing hitch and ball must have a rating equal to or greater than trailer GVWR.
2. Multi-fit Ball coupler will accept 1-7/8", 50MM and 2" trailer balls. Tighten hand wheel to secure ball in socket. Make certain ball latch is in correct position to retain the ball, and that the hand wheel lock is clicking while tightening. You must depress the lock to loosen hand wheel in order to un-hitch trailer. Do not tow trailer if coupler is damaged.
3. Connect safety chains using crossed pattern under tongue, or follow trailer manufacturer's directions.
4. Connect breakaway S-hook.
5. The breakaway system should only operate after both the coupling and safety chains have failed. The breakaway is not a parking brake.
6. Should the breakaway be accidentally applied while un-hitching, pry the spring clip out of notch to release lever.
7. Sway control devices that restrict operation of the actuator cannot be used. The actuator must be free to telescope in response to braking requirements.

MODEL 6 ACTUATOR INSTALLATION INSTRUCTIONS

8. Weight distributing (equalizing) hitches have been an important part of trailering for many years. They shift excess tongue weight from the end of the tow vehicle by distributing it across all vehicle and trailer axles. Leveling the tow vehicle and the trailer reduces the stress on the suspension components and increases towing stability.

All TITAN surge brake actuators are fully compatible with equalizing hitches. When using weight distributing hitches with TITAN actuators, observe the following rules:

- 1) Allow six to eight inches of free chain length,
- 2) The chains must be vertical (straight up and down) under pulling load, and
- 3) Tongue weight beyond the specified actuator rating WILL interfere with brake performance.

The above statement summarizes TITAN's three "rules of thumb" for equalizer/actuator compatibility. Each rule contributes to optimum trailer braking.

RULE #1: Allow six to eight inches of free chain length. This means that the equalizer's chains must be at least six to eight inches long between the spring bars and the hook-up brackets (which attach the chains to the trailer). **Surge brake actuators must be free to compress their internal master cylinder.** Shorter lengths of chain will limit the distance the actuator can move, and this restricts the unit's braking.

RULE #2: The chains must be vertical (straight up and down) under pulling load. During towing, these chains must be aligned straight up and down. This should be confirmed on level ground with the trailer coupled (using the equalizing hitch) to the tow vehicle. After checking that the actuator is in its towing position (not compressed), adjust the position of the hook-up brackets on the trailer until the chains are vertical. If the chains are angled forward or back on the TITAN actuator, they have a tendency to either impede the braking action by limiting the distance the actuator can stroke or prematurely apply the brakes by pulling the trailer forward relative to the tow vehicle.

RULE #3: Tongue weight beyond the specified actuator rating WILL interfere with brake performance. Weight distributing hitches spread tongue weight over the axles of both the tow vehicle and the trailer by applying leverage against the trailer tongue and actuator/coupler. This additional force and torque on the trailer system approximately doubles the load on the actuator, potentially exceeding its load rating.

For example, a fully-loaded trailer with a hitched tongue weight of 250 pounds might be equipped with a TITAN Model 6 actuator. A weight distributing hitch would then cause the actuator to receive the equivalent of a 500 pound tongue load. Since 500 pounds is less than the TITAN Model 6 actuator's 600 pound tongue load rating, this set-up would be acceptable. If a similar trailer has a 350 pound tongue weight, and once again an equalizer is hooked up, the actuator would perceive a 700 pound tongue load. That would put the system above the 600 pound tongue load rating of the actuator. Since the excess tongue load on a surge actuator can cause it to stroke less freely (resulting in less effective braking), this would be an inappropriate set-up.

Two factors in selecting towing equipment are gross trailer weight (GTW) and tongue load (TL). GTW is the weight of the trailer fully loaded in its actual towing condition. This can be measured by placing the fully loaded trailer on a vehicle scale. TL is the downward force exerted on the trailer hitch ball by the trailer coupler. In most cases it is 10% to 15% of the GTW.

With a heavier tongue load, roller kits are available. The roller kit attaches directly to the actuator, and extends back to a roller which rides on the trailer's tongue, allowing a higher tongue weight by shifting the equalizer's added load to the tongue roller instead of the actuator/coupler. Consult your trailer manufacturer, or your equalizer manufacturer for more information on roller kits.

9. The actuator is designed for use with Free-Backing trailer brakes. Do not block action in order to back up with other type of brakes. Failure to remove block will also prevent forward braking.

MODEL 6 ACTUATOR INSTALLATION INSTRUCTIONS

MAINTENANCE

1. Before towing check that brake fluid reservoir is at least half full. If not, re-fill to 3/8 inch below the top of the reservoir with DOT 3 brake fluid. Check for leaks and repair as required.
2. A film of grease on the coupler will extend coupler and ball life while eliminating squeaking. Wipe clean and renew film each time trailer is used.
3. Before towing, examine the actuator for bent parts or wear. Replace parts as necessary. Check to determine that mounting bolts are tight and welds not cracked.
4. There are no adjustments on the actuator.
5. Actuator travel (over one inch) shown by front roller path indicates a need to adjust the brakes. Adjust per instructions found in brake installation manual. In general, back-off adjusters 10 clicks from locked rotation. Adjust Free-Backing brakes by rotating in forward direction only. Failure to adjust may result in loss of braking.

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.

MODEL 6 ACTUATOR PRODUCT LIST

Part # Drum	Part # Disc	Description	Inner	Outer
4079200		2 5/16" coupler	4067700183	2480100183
	4747200	2 5/16" coupler	4067700183	2480100183
4079200317		2 5/16" coupler	4067700317	2480100317
4067600		2 5/16" coupler, A frame	4067700183	2493000
4093200		3" lunette eye	4045600183	2480100183
	4748000	3" lunette eye	4045600183	2480100183
4045500		3" lunette eye, A frame	4045600183	2493000
2480000		multi fit coupler	4391600	2480100183
	4747900	multi fit coupler	4391600	2480100183
2492800		multi fit coupler, A frame	4391600	2493000
4744900		leveler channel	4717600317	4745100317
	4748100	leveler channel	4717600317	4745100317
4744901		leveler channel	4717600183	4745100183
	4748101	leveler channel	4717600183	4745100183
4022300		multi fit coupler	4391600	2493201
4057900		less coupler, A frame	1776900	2493000
1777401		master cylinder w/mtg brackets		
	1777405	master cylinder w/mtg brackets		

KEY NO.	PART NO.	DESCRIPTION	QUANTITY REQUIRED
1	2480100183	Outer Case Assembly	1
1A	2493000	Outer Case Assembly	1
2	1020900	Bearing	2
3	1776300	Front Roller	1
4	1776600	Front Roller Pin	1
5	0799700	Cotter Pin 1/8 x 3/4	2
6	1776700	Front Roller Cover #6000	1
6	4350700183	Front Roller Cover #7500	1
7	4594100	Breakaway Lever with Pin	1
8	1055500	S-Hook - Part of 4594100	1
9	1780300	Breakaway Spring	1
10	1781500	Hex Bolt 5/16 x 1/2 Self Tapping	4
11	1861900	Washer	1
12	1776200	Cylinder Mounting Plate	1
13	1027300	Hex Bolt 3/8 NC x 5	2
14	4390500	Push Rod Assembly	1
*15	2496400	Lock-Ring	1
16	1027100	Master Cylinder	1
17	1755600	Master Cylinder Cap with Gasket	1
18	1209800	Connector, 1/64 Orifice	1
19	0797600	Nut - Hex 3/8 NC	2
20	0782000	Washer 3/8	2
21	1027400	Spring	2
22	1242600	Damper	1
23	0829100	Rear Roller	2
24	1777300	Master Pin	1
25	0815200	Cotter Pin	1
26	1777200	Damper Pin	1
27	4391600	Inner Slide Assembly with Bolt & Locknut	1
28	1831600	Washer	1
29	1806600183	Cover	1
*30	2338100	Latch Bolt	1
*31	1809000	Lock Plate	1
*32	4335800	Ball Latch	1
*33	4336800	Compression Spring	1
*34	2338300	Hand Wheel Lock	1
*35	2420000	Hand Wheel	1
*36	2339000	Bolt - Hex 7/16 NF x 2-5/8	1
*37	2339100	Locknut - Hex 7/16 NF Thin	1
38	4045600	Inner Slide w/3" Lunette Eye	1
39	4067700183	Inner Slide w/2-5/16" Ball Coupler	1
	1502600	Master Cylinder Repair Kit Wagner #13634	1
	4045400	Multi-Fit Coupler Repair Kit (Bolt and Locknut Replace Riveted Pin)	1
	1848700	2-5/16" Ball Coupler Repair Kit	1
	480800	Back Up Valve Kit	1

MODEL 6 ACTUATOR PARTS DIAGRAM

