

SIMPSONS
Sears

TECHNICAL FLASH

Department 731A Toronto

T.F. #26-25
January 18, 1985

Wringer Washer Service Manual

SOURCE C960

Transmission

The transmission was engineered so that the die cast gear case carries all the internal moving parts and provides a rigid mount for the motor and the drain pump. Thus, all important units are held in a definite relationship to one another. Many features, such as the worm reduction drive, the use of a sliding pinion for clutching, one-piece oil pan, and the three-point mounting are used in this transmission.

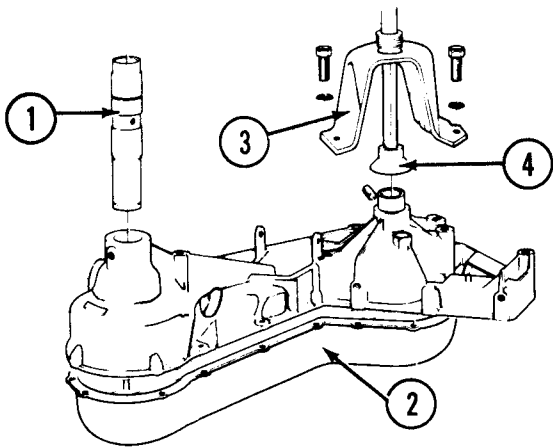
The gear case houses bearings for the worm. The worm gear and agitator pinion are carried on tubular axles. Both axles are pressed into the case and the worm gear axle (eccentric shaft) is locked in position by two set screws.

Precision adjustment between the worm and the worm gear is provided by means of the eccentric shaft (1).

The oil pan (2) is a deep drawn shape with no openings to become a source of oil leakage. By turning the washer upside down and removing the oil pan, the entire transmission can be inspected and adjusted. (See special note under Replacing Worm Gear)

The centre post bracket (3) bolts to the top of the gear case to become a seat on which the tub mounts. This bracket has a threaded boss to accept the centre post assembly.

The agitator drive shaft carries a deflector (4) to shed any moisture that might travel down through the centre post from the tub into the gear case.



The lubrication system assures complete and thorough oil circulation. The fibre oiler gear, turned by the worm, picks up the oil from the pan and applies it to the worm. A trough picks up surplus oil from the worm and distributes it to the rack where the pinion and clutch are thoroughly lubricated. Even with a low oil level, this circulation continues, since the oiler gear dips down deep into the oil pan.

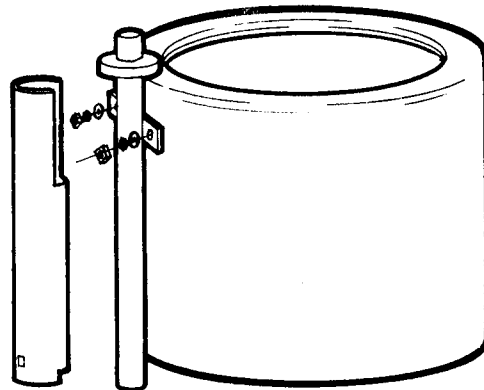
The transmission is mounted to the machine frame by three bolts, which provide a three-point bearing so that the tightening of the bolts cannot distort the gear case or washer frame.

For all practical purposes, it is not necessary to remove the transmission from the machine for repairs or adjustments, as the entire assembly is accessible by removing the oil pan with the oil intact and inverting the machine.

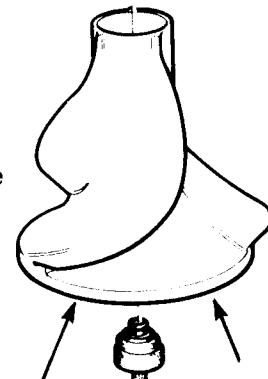
However, if it proves necessary to remove complete transmission, proceed as follows:

Removal from machine

1. Remove standard tube cover and standard tube from mounting on tub.



2. Remove agitator. Grip bottom edge and pull straight up until agitator disengages the splined drive shaft, as per sketch.

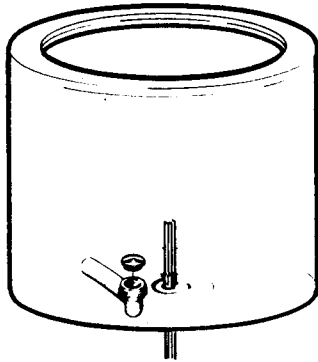


3. Cut away the rubber agitator retainer from the drive shaft.



4. Unscrew the centre post slowly. This will remove the underwater seal.

5. Remove lint screen and retainer. Lift tub slightly and remove hose from tub. Then lift tub clear of base.



6. Open retaining brackets and unhook springs. Remove pump assembly by removing hinge pin. Slide wash and pump control rods out of skirt. Disconnect wiring from motor.
7. Remove filler plate from skirt. Remove one bolt from short support bracket. Remove two bolts holding transmission to the long support bracket, and lower transmission out of base.

4. Drive agitator shaft out of transmission through centre post inside tub by tapping the pinion end of shaft slightly. Care should be taken not to burr the end of the shaft. Using a brass drift will prevent damage to the shaft.
5. Remove wringer driver from worm gear, truarc ring, thrust washer and spring washers from eccentric shaft, loosen set screws on outside hub of gear case and drive eccentric shaft out.
6. To remove clutch depress pinion as far as possible and slip out clutch.
7. Lift rack assembly, worm gear, saddle, slipper, pinion gear and clutch yoke assembly out of gear case as a complete unit. Be careful not to lose worm wheel wear plate.
8. Remove motor coupling screw at worm end and remove motor from cradle. Then remove screw holding oiler gear assembly. Remove bearing plate, loosen set screw on worm bearing and remove worm with bearings.
9. Oil trough can be taken out by removing two mounting screws.

Disassembly in machine

Complete disassembly can be made with the transmission mounted in the machine by following the procedure below:

To completely dismantle transmission, it is first necessary to remove the oil pan with oil intact. (This is necessary only when complete disassembly of the transmission is to be made.) In most cases, the necessary repairs or adjustments can be made by simply inverting the machine and removing the oil pan. The hollows in the gear case will contain the oil.

1. Remove standard tube cover and standard tube. Then invert machine on a padded surface. Always tip away from wringer drive side, as this allows the transmission oil to flow to the pinion end of transmission, away from drive opening.
2. Remove oil pan.
3. Using a centre punch, mark end of agitator drive shaft and clutch. This will assure proper alignment on reassembly. Then drive out clutch shaft pin.

Reassembly

Reassemble transmission in reverse order to above, and make the following adjustments to mechanism.

Water deflector

When installing agitator shaft make sure that the water deflector is in place on shaft. This is essential to prevent any water from entering the transmission through the pinion sleeve axle. The neoprene deflector resists the action of oil, grease, bleach solution and detergent. It seals tightly onto the agitator shaft.

Adjusting rack saddle

Slide slipper until a small amount of play remains between slipper and back of rack, while holding in close mesh with pinion gear. (Sliding slipper towards worm loosens mesh - sliding to other end tightens mesh.)

Tighten nut holding slipper to saddle, being sure that flat and lockwashers are in place. Re-check that some play remains between slipper and back of rack. Press yoke assembly down and make sure

pinion slides on rack smoothly and goes in and out of clutch freely. Try this in two or three positions along the rack face. If this is tight in any position on rack, re adjust rack to avoid any clutching difficulties.

Oil trough

Loosen oil trough mounting screws and slide trough towards worm gear. Check that it does not touch worm thread and that it clears rack crank pin boss on worm gear as it revolves. When properly positioned, tighten two mounting screws securely.

Oiler gear assembly

The oiler gear assembly should be in full contact with worm thread, but not too tight so as to be noisy when running.

Before adding oil (568 ml) to gear case and replacing oil pan, it is recommended that the motor be run and adjustments be made on the worm and gear. Checks should be made to previously adjusted components while the transmission is running. Clean all foreign particles from both gasket faces, and position gasket using Glyptol or gasket "goo" on gasket. Place oil pan on case and tighten all screws evenly and securely around oil pan.

Replacing worm and bearing

1. Remove standard tube cover and standard tube. Invert machine on padded surface with block of wood under wringer drive side to keep oil in pinion end of transmission.

SPECIAL NOTE:

When inverting machine, always tip away from wringer drive side, as this allows the transmission oil to flow to the pinion end of the transmission,

away from wringer drive opening, where it could leak out. When completely inverted, the hollows in the gear case are sufficient to hold all of the oil. However, if machine is to be left inverted for some time, it is advisable to remove oil pan with oil intact before inverting machine, as some oil could seep out around clutch yoke shaft and pinion axles, if machine is left upside down too long.

2. Remove oil pan.
3. Remove wringer drive from worm gear and truarc ring and washer from eccentric shaft.
4. Loosen two set screws on outside hub of transmission, drive eccentric shaft out of gear case and swing worm gear to clear worm thread.
5. Remove motor coupling screw at worm end and remove motor from cradle.
6. Remove oiler gear assembly, then pry out worm bearing plate from gear case and loosen set screws holding worm shaft sleeve bearing.
7. Pull worm shaft assembly, complete with bearings, out of case. If necessary, remove cover plate from sintered bearing end, and using a drift, tap assembly out of gear case.
8. Replace any defective parts and reassemble in reverse order, making any adjustments necessary as outlined in step "Reassembling Transmission".

NOTE:

When reassembling, grooved face of sleeve bearings must be toward worm thread. A thrust washer (Part #72505) must be placed on the worm journal at each end, between the bearings and the threaded section of the worm.

Oil

568 ml is required for the transmission. The oil used is Gulf Security 680. This oil has a high viscosity at normal operating temperature and forms and maintains an effective lubricant film between the moving parts.

NOTE:

A non-detergent SAE 50 can be used when Gulf Security 680 is not available.

Motor

The motor must run clockwise, looking at the switch end and must line up with worm gear shaft. Unless motor cradle has been moved, the line-up will not have been disturbed. If cradle has been moved, line up motor with worm shaft as close as possible by shimming motor cradle. When shafts are lined up, remove motor from cradle, place coupling in position, and re-install motor on cradle.

CHART FOR TESTING CURRENT READINGS UNDER LOAD

VOLTAGE	FREQUENCY	AMP.	WATTS
115 VAC	60 Hz	6.8	320-400
115 VAC	50-60 Hz	6.4	265
220 VAC	50-60 Hz	3.4	230-240

Oil leaks

On oil leaks, check pan gasket face for dents or cracks. Replace gasket and tighten pan screws securely. If any oil leaks past the worm bearing and out the cover plate, this can be stopped by removing the cover plate, wiping the bearing clean and then spreading gasket "goo" on the inner edge. Start new cover plate in squarely and hammer into final position, using a wooden block to prevent any distortion of the plate.

Underwater seal assembly

After tub is in place and secure with centre post, replace "O" ring. Place seal seat and retainer in centre post. Observe that the ceramic face is clean and free from any chip or crack. Put a drop of oil on face. Then take the seal and observe for crack or chip. Start seal on shaft and use a hardwood block about 100 mm (4") square and 100 mm (4") long with a 25 mm (1") hole drilled in centre straight through. Place block on seal and tap lightly in place.

Transmission seizing

This condition is usually caused by the worm and worm wheel getting out of adjustment. Adjusting the worm gear to the worm is comparatively simple, providing the following instructions are adhered to.

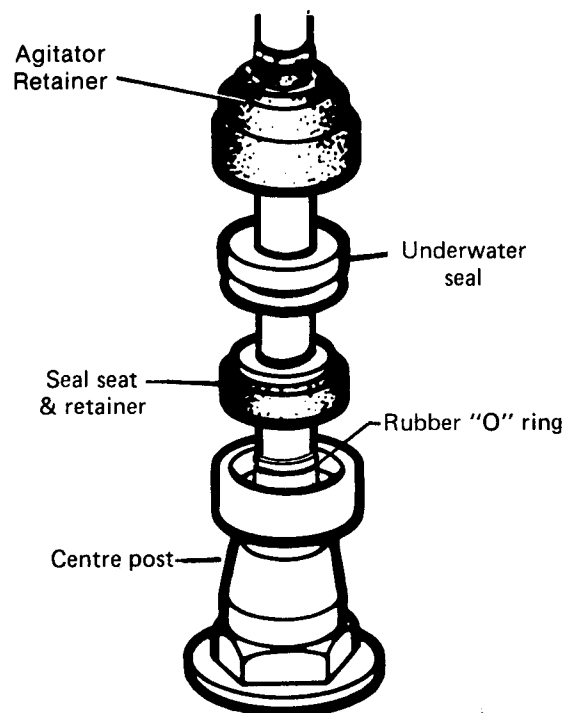
It is not necessary to remove the oil pan or invert the machine, as the adjustment is made by turning the eccentric shaft sleeve. This sleeve is eccentric where the worm gear mounts to it, thereby turning it, it is possible to move the worm gear up to or away from the worm as required.

NOTE:

Observe that the seal is flush or no more than 1.6 mm (1/16") below wide undercut on agitator shaft.

NOTE:

1. Remove standard tube cover assembly.
2. Loosen 2 set screws in hub.
3. Turn the sleeve counterclockwise until a scraping sound can be heard in transmission.
4. Mark both the sleeve and gear case with a line.
5. Turn sleeve back clockwise until marks are 1/8" apart. This is the standard adjustment.
6. Tighten set screw securely.
7. Reassemble tube cover, etc. and check operation, wash cycle. Check watts for loading.



Instinctive wringer head

LUBRICATION

The new wringer frame sits and pivots on the wringer head boss and bears on the two machined pads. The third bearing point is the back of the casting where the yoke swivels. (See composite diagram).

The above points should be lubricated with a silicone grease, not an oil.

HOW IT OPERATES:

1. When the operating lever is engaged, this is what happens:
 - (a) The cam within the wringer head rotates and indexes on the ball bearing in the spring loaded shaft and engages the clutch in either the upper or lower pinion, depending on the position of the operating lever.
 - (b) When the operator pulls back against the infeed of the rolls, or pulls or pushes the wringer frame, the frame assembly pivots with respect to the wringer head.

The bell crank stop is then brought into contact with the bell crank. As additional pressure is applied, the two cam shaft pins are moved upwards disengaging the index cam. When the cam is disengaged, the spring loaded shaft returns the cam to its neutral position, thereby disengaging the clutch. At this point, the wringer rolls stop rotating.

Adjusting instinctive head

ADJUSTING ROLL-STOP FEATURE

Tools Needed:

- 1 Blade Screw Driver 200 mm (8") or a hardwood tapered shim.
- 1 Box Wrench 16 mm (5/8").
- 1 Tapered Board with 50 mm (2") webbing attached (see Sketch on page 9A).
- 1 Spring Force Gauge (fish scale) 11 kg (25 lb.).

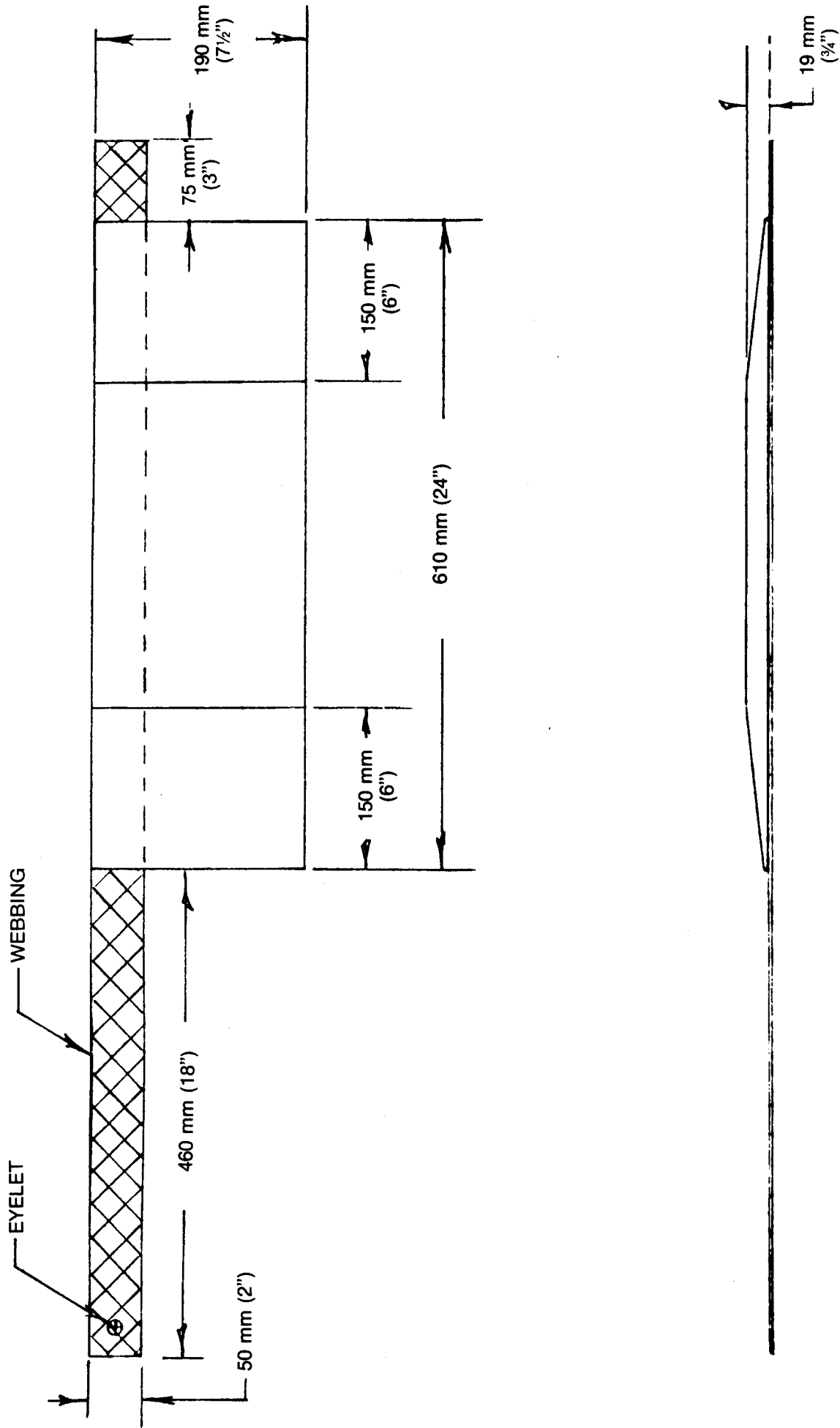
Method:

1. Remove end shells from the wringer head.
2. Engage operating lever and with the head and

wringer frame in line, determine the clearance between the bell crank stops and the bell crank on both sides of the wringer. This clearance is normally between 0.25 mm (.010") and 0.38 mm (0.15") but may have to be adjusted so that the instinctive mechanism operates properly. Too little clearance results in nuisance tripping while excessive clearance will not stop the rolls in accordance with safety requirements.

Test Procedure:

1. With the wringer rolls operating, insert the tapered board between the rolls with the webbing as close as possible to the wringer head assembly.
2. Disengage operating lever to stop rolls.
3. Attach spring force gauge to the end of webbing.
4. Engage operating lever to start the rolls and holding the webbing at 90° to the wringer, record the force required to disengage the clutch.
5. Repeat this test procedure holding the webbing in a downward position, close to, but not contacting, the handrest.
6. This test procedure is to be conducted from the other side of the wringer with the rolls running in the opposite direction.
7. The force required to stop the rolls must not exceed 9 kg (20 lbs.).
8. If the force required to stop the rolls exceeds 9 kg (20 lbs.) or is less than 7 kg (15 lbs.) proceed as follows:
 - 8.1 Loosen the screw holding the bell crank stop.
 - 8.2 Insert the blade of the screwdriver or the tapered shim between the spring loaded pin and the yoke and wedge the yoke hard against the gear case casting and maintain that pressure throughout the adjustment. **Wringer Head and Frame must be in line.**
 - 8.3 Move the bell crank stop in the desired direction: (a) closer to bell crank if force required to stop rolls is greater than 9 kg (20 lbs), (b) away from the bell crank if force required is less than 7 kg (15 lbs.).
 - 8.4 Tighten screw, remove screwdriver or shim and repeat force test as before.



DETAIL OF TEST BOARD

Assembly *Refer to illustration*

The following is the sequence to assemble the Wringer Head:

1. All bearing surfaces and bearings must be greased.
2. Assemble Item # 5, eccentric shaft, with cam face down.
3. Assemble bearing, Item # 2.
4. Assemble wear plate, Item #3, to Item #4, bevel gear. Then assemble this to case. Assemble clutch shift pin item #29 in hole in eccentric shaft.
5. Assemble wear plate, Item # 6 (large hole).
6. Start Item # 12, splined shaft, into bottom hole of Item # 1.
7. Place pinion lower, Item # 7 (large hole) in body and start Item # 12, splined shaft, through.
8. Place splined clutch, Item #8, in lower pinion, and engage Item #29 clutch shift pin. Make sure 1.6 mm (1/16") counterbore is in down position. (This is a must.) Then continue to push Item #12 through.
9. Place washer, Item # 9, on top of clutch.
10. Place Item #11, wear washer (small hole), on top of Item #10, upper pinion, and push splined shaft, Item #12, through to limit. Place washer first.
11. Assemble Item #13, truarc ring, to groove in Item #12, splined shaft.
12. Assemble steel ball, Item #23, 8 mm (5/16") dia. (chrome) to index pin, Item #16. Then insert in body for ball to contact cam on Item #5.
13. Assemble the two shift pins, Item #17, to body. Then place Item #15, washer, up to shoulder on Item #16, and assemble spring, Item #14, in place by depressing, and large end of spring to fit over boss on casting.
14. Assemble Item #18, bell crank, to body with Item #19, pivot pin.
15. Assemble Items #24, 25, 26, 27 and 28 to body.
16. Grease Spec. Sunoco Prestige 42.
17. Assemble Item #21, head covers, using screws, Item #22 (8-32 x 5/16).

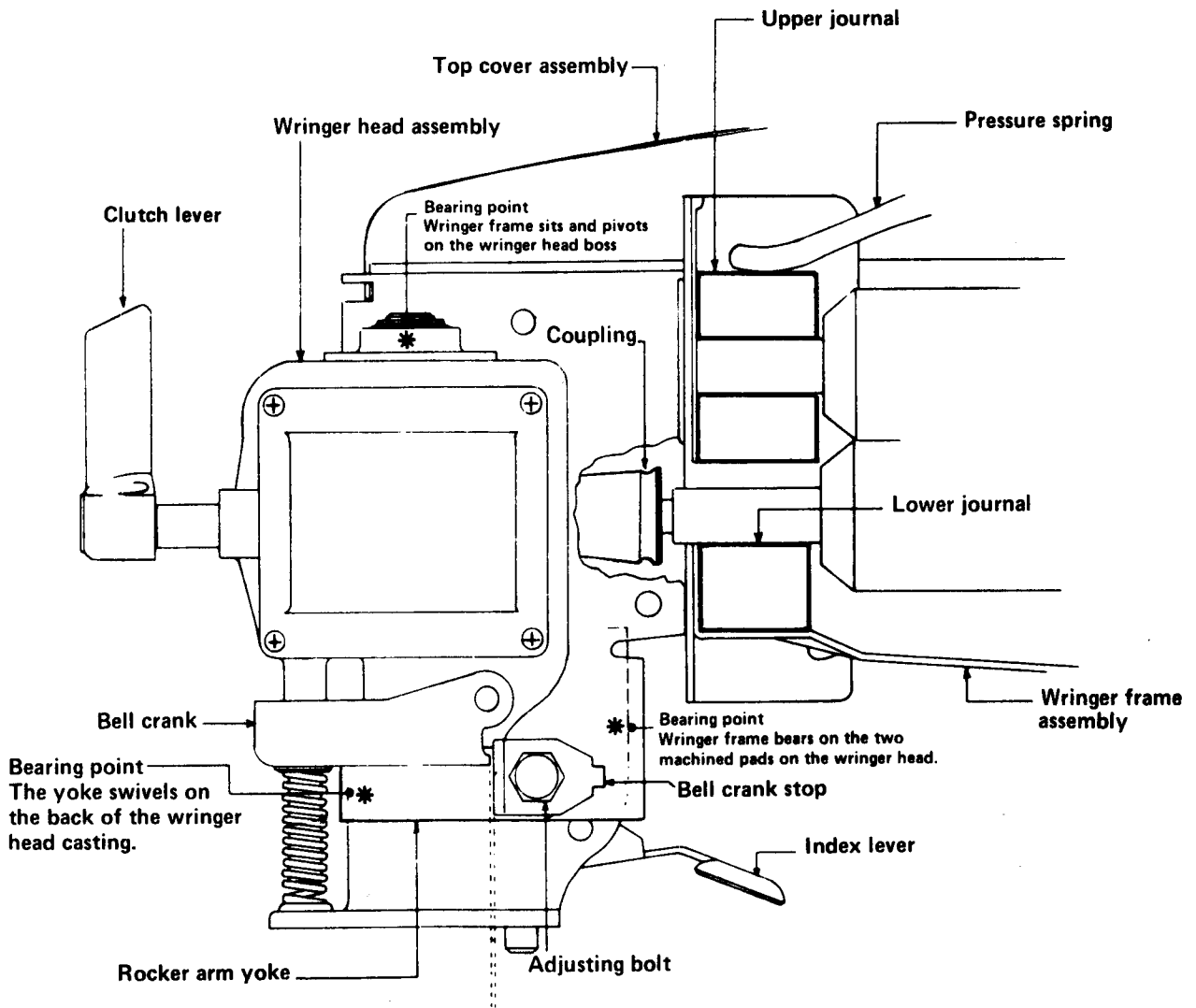
Disassembly

To disassemble complete reverse assembly procedure. However, if it is necessary to replace the gear train remove head from wringer and reverse steps 17, 11, 10, 9, 8, 7, 6, 5, 4, and 3.

Assembly *Refer to illustration* to wringer frame

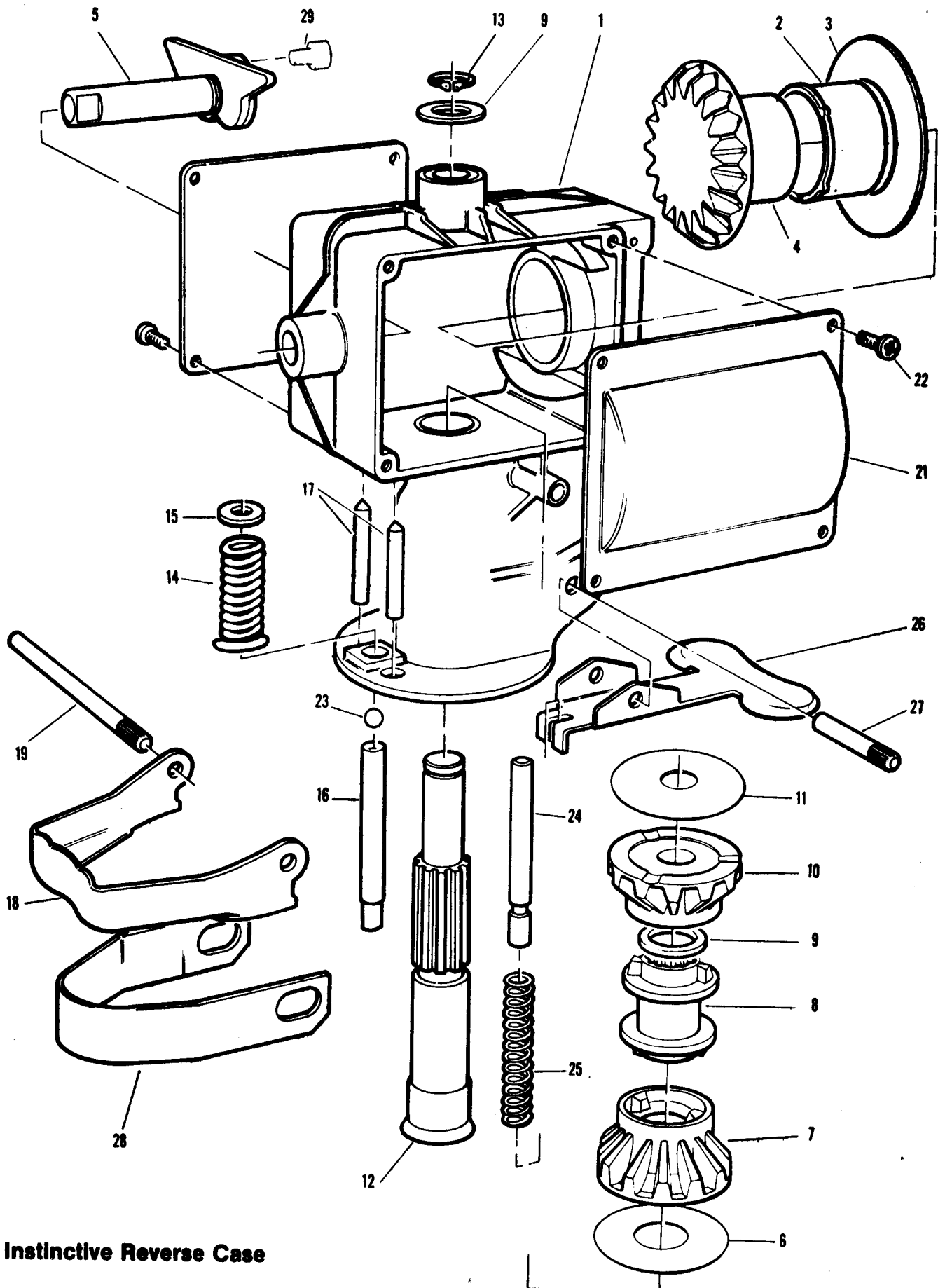
1. Lubricate head boss and two machined pads with a silicone grease.
2. Assemble drive coupling, Item #2, in face gear and grease drive end before insertion.
3. Assemble completed wringer head to pivot bracket on frame by inserting turned boss of head into extruded hole in pivot bracket.
4. Assemble yoke, Item #28. (Illustration)
5. Assemble bell crank stops, Item # 4, with Item # 5, mounting bolts (3/8-24 x 5/8) and washer #37.
6. Assemble clutch lever, Item # 6, with set screw, Item # 7 (1/4-20 x 1/4).
7. Place wringer on machine for adjustment.

Composite Drawing Instinctive Roll Stop Wringer



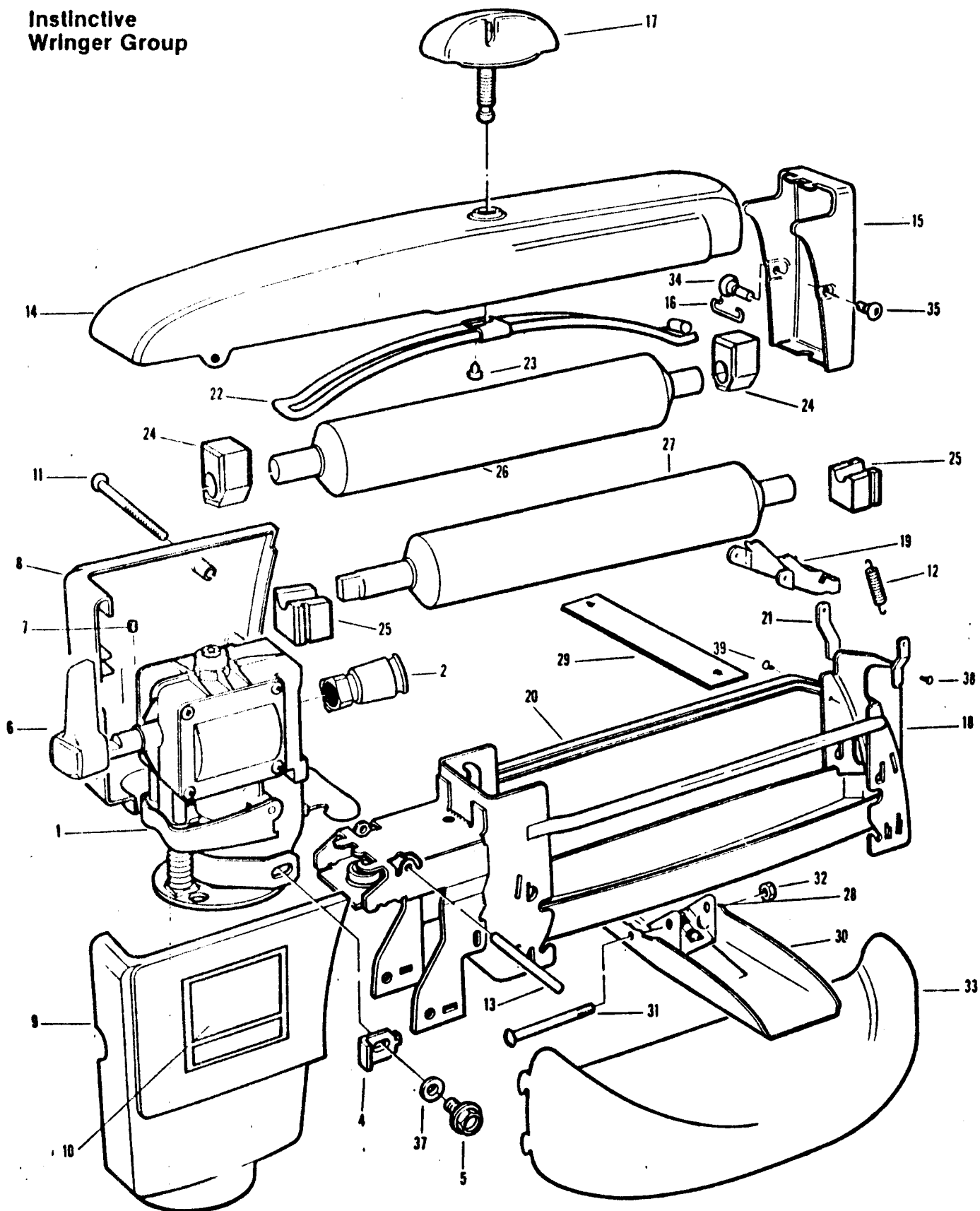
NOTE: Lubrication
Lubricate the three bearing points
(marked with asterisk *) with a
silicone grease.

Do not use oil.

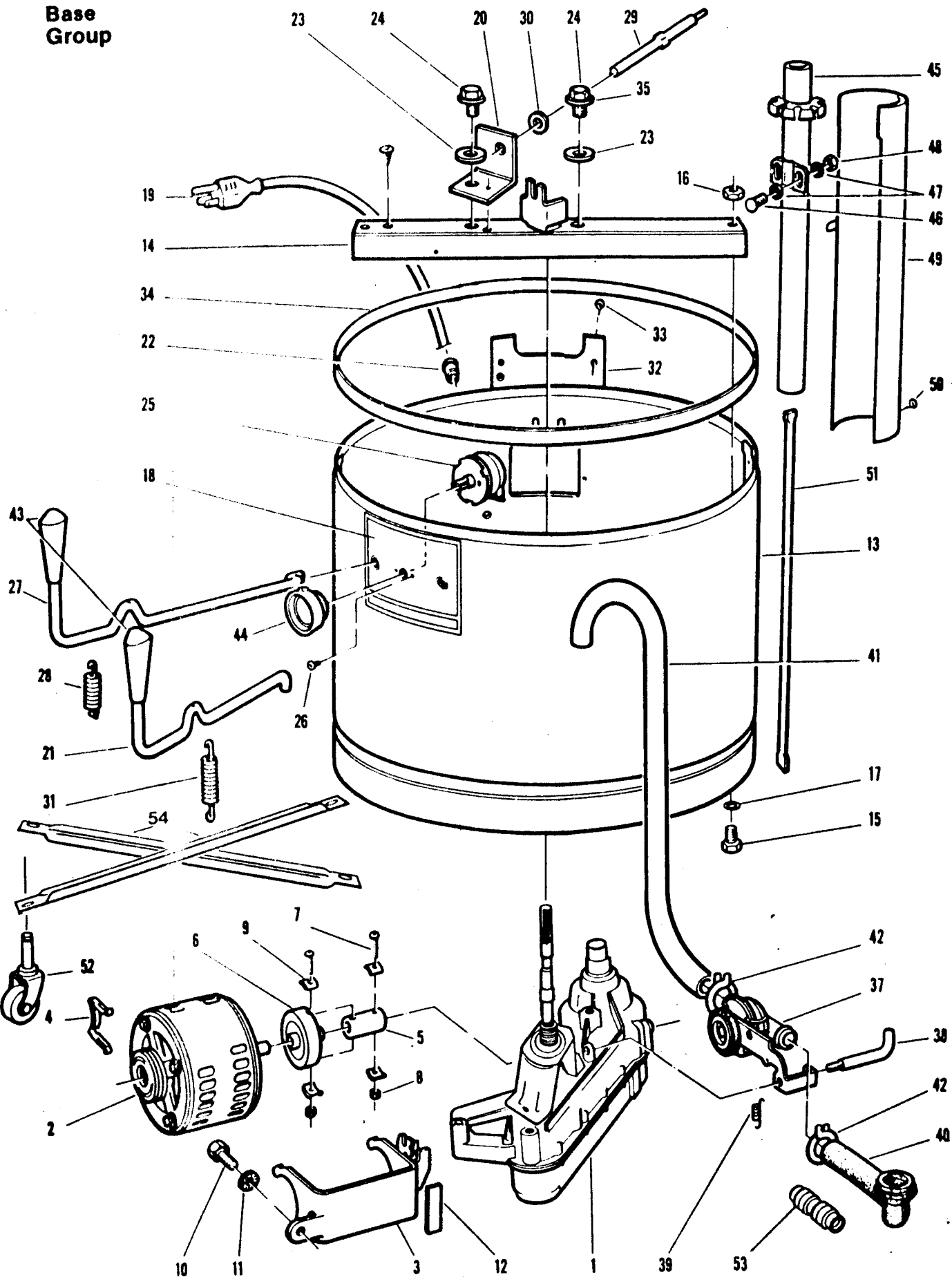


Instinctive Reverse Case

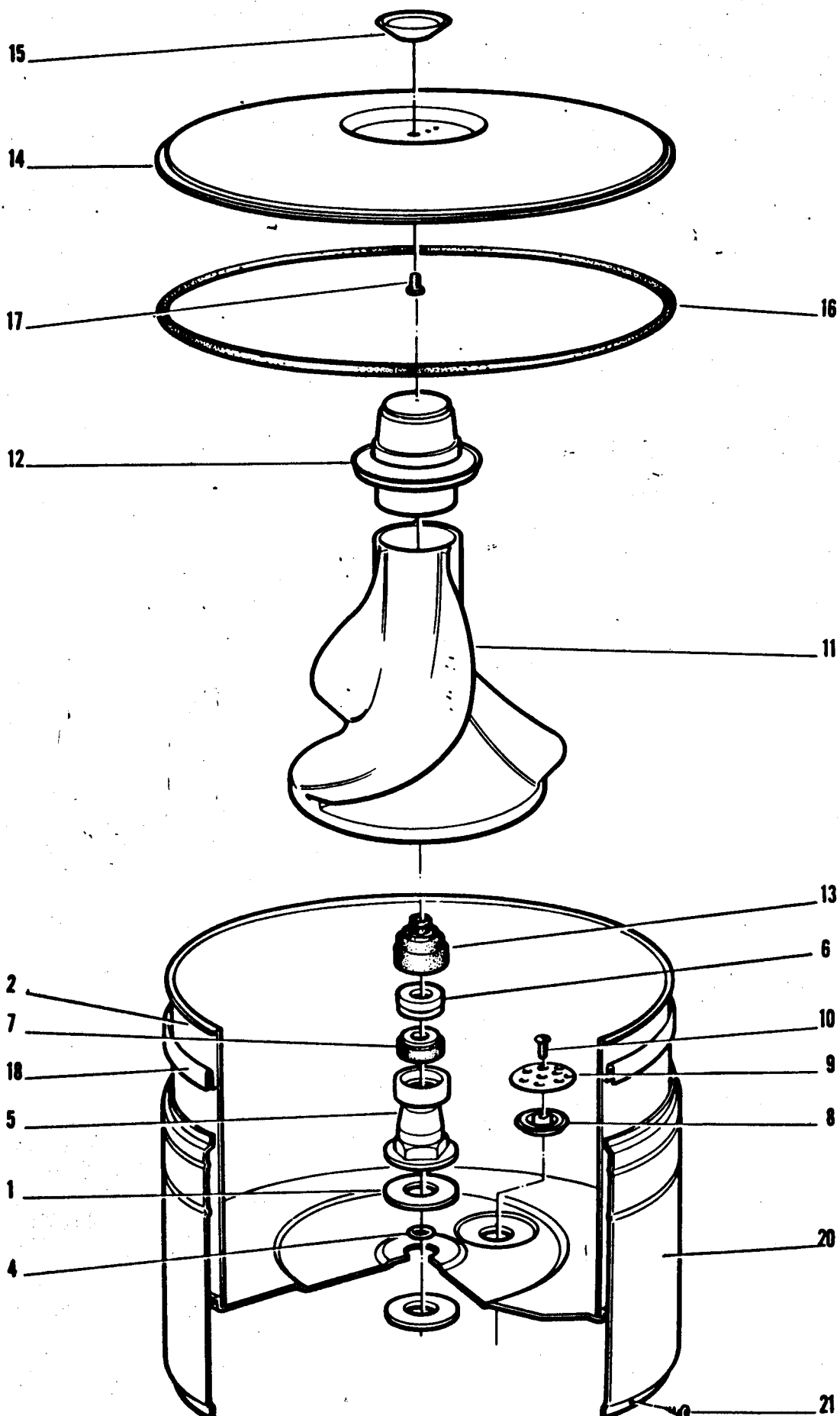
Instinctive Wringer Group



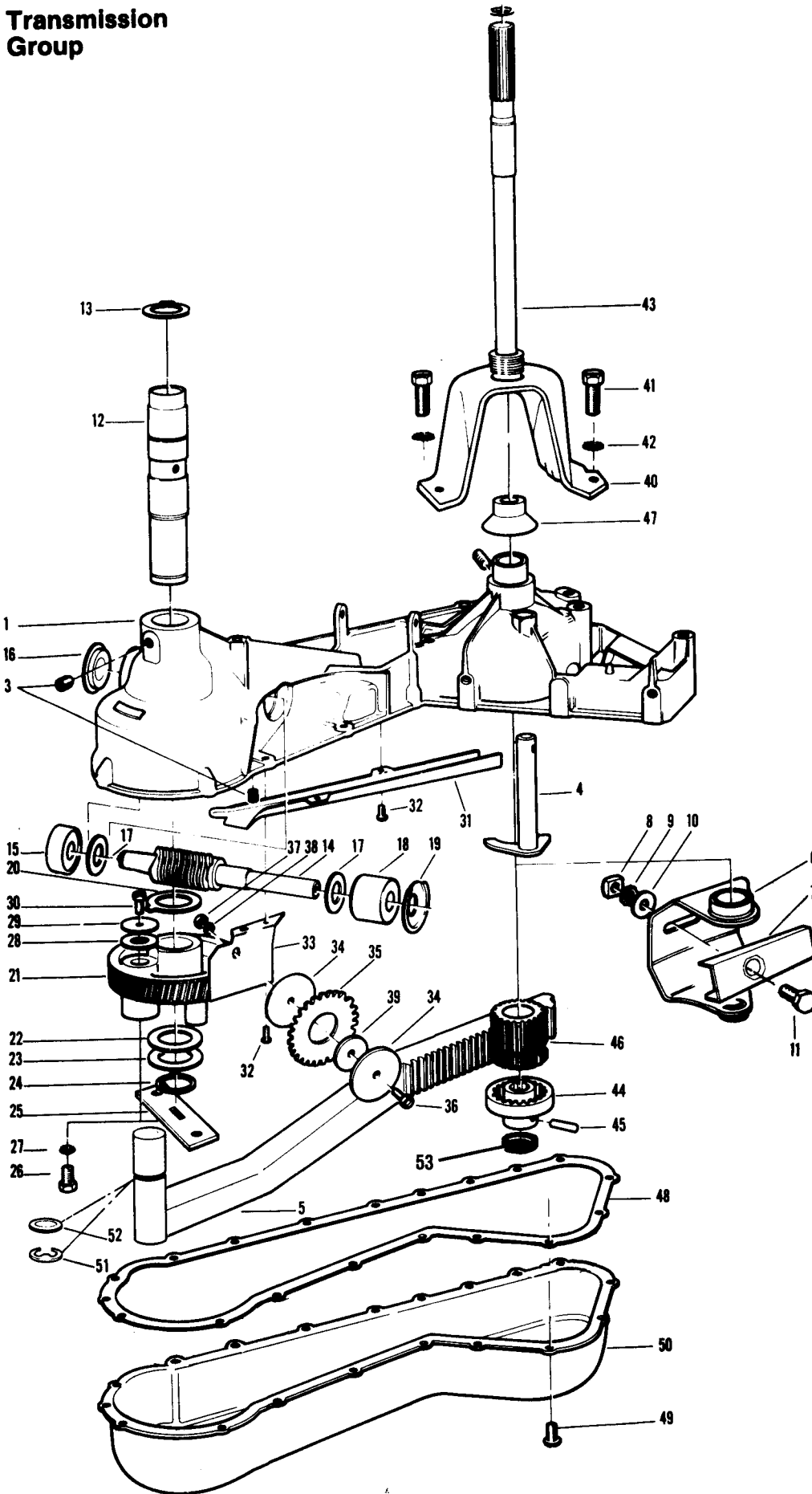
Base Group



**Tub
Group**



Transmission Group



Trouble Shooting Chart

Service Problem	Diagnosis	Solution
Lower roll slipping	Broken drive coupling. Defective drive gear. Rubber loose on shaft.	Replace coupling. Replace drive gear. Replace lower roll.
Upper roll slipping	Glazed roll due to excessive amount of detergent. Journal Bearings Worn Rubber loose on shaft.	Clean roll with clear hot water and roughen surface with coarse sandpaper. Advise customer to wash rolls after each washing with cold, clear water. Replace Journal Bearings Replace upper roll.
Loss of wringer roll pressure	Worn bearings. Broken or weak pressure spring. Threads on pressure screw nut stripped or seized.	Replace bearings. Replace pressure spring. Replace screw.
Flume not operating	Accumulation of foreign matter around flume bracket. Bent flume spring. Loose flume bolt.	Lift rolls out of wringer and clean foreign matter from bracket. Replace flume spring. Tighten or replace.
Wringer head sticking or binding on wringer post	Burr on wringer post / or post out of round.	Remove wringer and file off burrs. Then polish post with fine emery cloth. Replace post.
Locked or seized transmission	Check for oil. Check adjustment of worm and worm gear.	Add oil if necessary. Loosen two set screws on the eccentric shaft and follow instructions under "Transmission Seizing"
Pump Inoperative	Check that rubber tire is contacting driver. Pump clogged by foreign matter. Lint screen clogged.	Hinge pin Item 38, could be binding, needs lubrication. Clean pump and if necessary replace pump. Remove agitator and clean screen. Instruct customer to remove agitator after every wash and clean.
Agitator rubs on bottom of tub or too much clearance	Flat on drive ring. Agitator distorted - not flat on bottom. Agitator not pushed down.	Replace drive ring. Replace agitator. Push down firmly over rubber retainer.

Trouble Shooting Chart

Service Problem	Diagnosis	Solution
Motor heats	Overloading of machine	Instruct customer how to use. Do not overload above water line.
	Tight transmission.	Adjust
	Low voltage .	Have line checked by local Utility Co.
*Warning of low voltage:	Dimming of lights.	
	Motor slow to get out of starting winding.	
Motor will not start.	Bad receptacle.	See if another appliance will operate from the receptacle.
	Bad plug on cord.	Replace plug.
	Broken motor cord.	Replace cord.
	Motor cord loose at terminal.	Repair or replace cord.
	Motor burned out.	Replace motor.
Pressure screw will not turn.	Frozen pressure screw.	Apply a small amount of oxide solvent to the pressure screw. Instruct customer to use a small amount of petroleum jelly to the threads every three months.
Tub leaks water.	Defective underwater seal.	Replace seal.
	Centre post not down tight.	Tighten centre post and replace underwater seal.
	Check two mounting bolts for stand pipe.	Replace rubber washers.
	Drain hose improperly fitted.	Insert retainer into hose properly.
		Replace inlet hose and retainer if damaged.
Oil leaking from transmission.	Defective gasket or gasket surfaces.	Replace gasket and examine gasket faces for cracks or dents.
	Oil leaking past worm bearing.	Remove cover plate, wipe bearing clean, and spread gasket "goo" on inner edge, then replace cover.

Trouble Shooting Chart

Service Problem	Diagnosis	Solution
Nuisance tripping on Instinctive Wringer	Wringer out of adjustment.	Readjust wringer.
	Wringer pulling heavy objects out of tub.	Instruct customer to assist heavy objects out of tub, such as blankets, sheets and heavy towels.
Wringer will not go into gear.	Motor not running.	Be sure that the motor is running before attempting to engage wringer gears.
	Excessive pressure on rolls or rolls jammed with a heavy object.	Reduce pressure on rolls by pressing release bars and/or turning pressure knob counterclockwise.
Agitator sticking.	Seized on spline or rubber retainer.	Pour hot water over centre of agitator and shaft. Remove agitator and clean splines and retainer ring.
		Apply a small amount of petroleum jelly on both. Instruct customer to do this every 3 months.
Water deflected to wrong side of wringer.	Flume stuck	Loosen flume and replace flume spring, if broken.
Wringer jumping.	Misalignment of lower roll due to excessive wear on lower journal bearings.	Replace lower journal bearings and check upper journal bearings.
	Drive shaft too long.	Replace drive shaft.