SERVICE MANUAL

for

RCA Whirlpool

Automatic Washers

Beginning with 1966 Models.

Whirlpool

CORPORATION

Benton Harbor, Michigan

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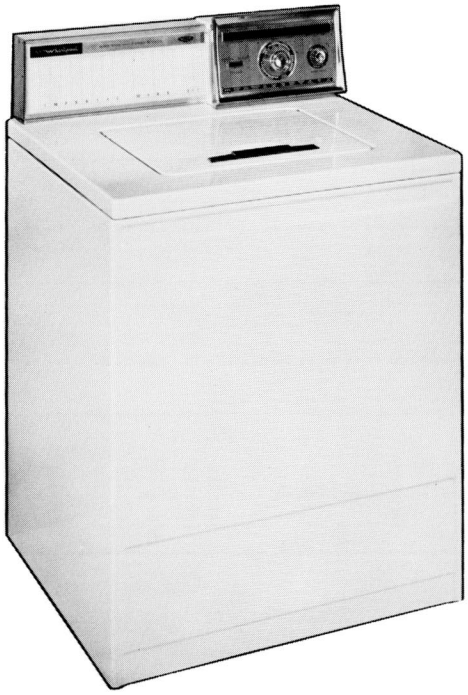
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SECTION I

MODEL SPECIFICATIONS

A. 1966 MODELS



LPA - 9920 (Non-Suds)
LPA - 9925 (Suds)

FEATURES

1. Fluorescent lighted console (timer dial controlled).
2. Infinite water level control may be adjusted from Hi (17 gallons or 11 inches) to Lo (9 1/2 gallons or 6 inches).
3. Push button mechanical timer. Controls 10 cycles (plus manual and low speed agitation) three wash temperatures and two rinse temperatures automatically.
4. Spin-stop lid switch.
5. Self-cleaning Diaphragm lint filter.
6. Surgilator agitator with large chrome cap.
7. Three-speed, 1/2 h.p. motor drives a gear case that provides agitation speeds of 68 s.p.m., 45 s.p.m., and 33 s.p.m., and a basket drive assembly to provide spin speeds of 500 r.p.m. and 330 r.p.m.
8. Manifold and trap drain assembly.
9. Uni-directional pump assembly (1 stage).
10. Time proven two-way valve (suds model only).
11. Rinse conditioner and bleach dispenser (with snap-in bezel).
12. Two solenoid non-thermostatic water inlet valve.

OTHER SPECIFICATIONS

a. Dimensions:

(1) Width - 29 inches.
(2) Depth - 25 1/2 inches.
(3) Top Height - 36 inches.
(4) Overall Height - 43 3/4 inches.

b. Hinged porcelain top and lid.

c. Painted cabinet finish (colored or porcelain cabinet optional).

d. Operating instructions on underside of lid.

e. Factory installed self-leveling legs at rear.

f. Two adjustable leveling feet in front.

g. White porcelain basket.

1966 MODEL FEATURES AND SPECIFICATIONS

NON-SUDS	SUDS	WIDTH	DEPTH	OVERALL HEIGHT	TIMER	NO. OF CYCLES	WASH WATER TEMP.	RINSE WATER TEMP.	WATER LEVEL CONTROL	NO. OF MOTOR SPEEDS[1]	WATER INLET VALVE[2]	DISPENSERS	PORCELAIN TOP AND LID
LPA4500	4505	29"	25 1/2"	43.2"	Rotary	3	3	2	1	1	2		X
LPA4540	4545	29"	25 1/2"	43.2"	Rotary	3	3	2	2	1	2		X
LPA4560	4565	29"	25 1/2"	43.2"	Rotary	3	3	2	3	1	2		X
LPA4600	4605	29"	25 1/2"	43.2"	Rotary	3	3	2	2	2	2		X
LPA4640	4645	29"	25 1/2"	43.2"	Rotary	3	3	2	3	2	2		X
LPA4660	4665	29"	25 1/2"	43.2"	Rotary	3	3	2	3	2	2		X
LPA5500	5505	29"	25 1/2"	43.2"	Rotary	3	3	2	2	2	2		X
LPA5540	5545	29"	25 1/2"	43.2"	Rotary	3	3	2	3	2	2		X
LPA5560	5565	29"	25 1/2"	43.2"	Rotary	3	3	2	3	2	2		X
LPX5800		29"	25 1/2"	43.2"	Rotary	3	3	2	Infinite	2	2		X
LPA5600	5605	29"	25 1/2"	43.2"	Rotary	3	3	2	2	2	2		X
LPA5640	5645	29"	25 1/2"	43.2"	Rotary	4	3	2	3	2	2		X
LPA5660	5665	29"	25 1/2"	43.2"	Rotary	4	3	2	3	2	2		X
LPA7800	7805	29"	25 1/2"	43.4"	Rotary	4	3	2	3	2	2	Cent. Rinse	X
LPA7840	7845	29"	25 1/2"	43.4"	Rotary	5	*3	*2	3	2	2	Cent. Rinse	X
LPA7900	7905	29"	25 1/2"	43.4"	Rotary	5	3	2	Infinite	2	2	Cent. Rinse	X
LPA8810	8815	29"	25 1/2"	43.4"	Rotary	3	*3	*2	3	2	2		X
LPA8820	8825	29"	25 1/2"	43.4"	Rotary	3	3	2	Infinite	2	2		X
LPA8830	8835	29"	25 1/2"	43.4"	Rotary	3	3	2	Infinite	2	2		X
LPA8840	8845	29"	25 1/2"	43.4"	Rotary	3	*3	*2	3	2	2		X
LPA8850	8855	29"	25 1/2"	43.4"	Rotary	3	*3	*2	3	2	2		X
LPA8860	8865	29"	25 1/2"	43.4"	Rotary	3	3	2	Infinite	2	2		X
LPA8900	8905	29"	25 1/2"	43.4"	Rotary	5	*3	*2	Infinite	2	2	Bleach and Cent. Rinse	X
LPA9920	9925	29"	25 1/2"	44.0"	Pushbutton	10	3	2	Infinite	3	2	Bleach and Rinse	X
LPB3100		24"	25 1/2"	43.2"	Rotary	1	Manual		1	1	1		
LPB4100		24"	25 1/2"	43.2"	Rotary	3	Manual		3	1	1		X
LPB4500		24"	25 1/2"	43.2"	Rotary	3	3	2	1	1	2		X
LPB4580		24"	25 1/2"	43.2"	Rotary	3	3	2	3	1	2		X
LPB4600		24"	25 1/2"	43.2"	Rotary	3	3	2	2	2	2		X
LPB5500		24"	25 1/2"	43.2"	Rotary	3	3	2	2	2	2		X
LPB5580		24"	25 1/2"	43.2"	Rotary	3	3	2	3	2	2		X
LPB6150		24"	25 1/2"	43.4"	Rotary	3	Manual		3	1	1		X
LPB6650		24"	25 1/2"	43.4"	Rotary	3	Manual		3	2	1		X
LPB6750		24"	25 1/2"	43.4"	Rotary	4	3	2	3	2	2		X
LPB7900		24"	25 1/2"	43.4"	Rotary	5	*3	*2	Infinite	2	2		X

*Pushbutton

1. All motors are 1/2 HP.
2. Refers to number of solenoids.

RCA Whirlpool LAUNDRY PRODUCTS

1. Model Number Explanation

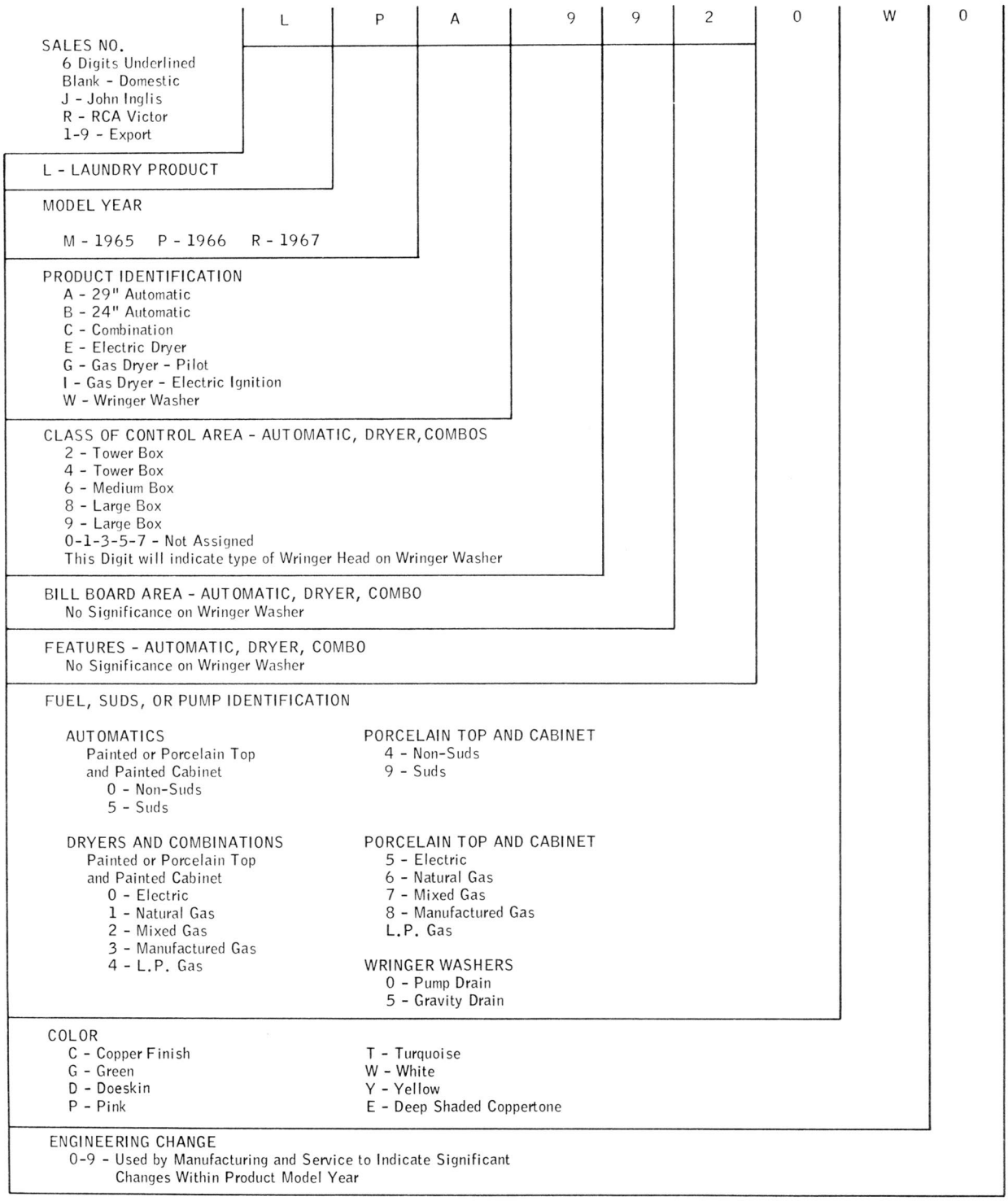
The following sales and model number procedure is being used with all laundry products. The sales number incorporates the use of six (6) digits. The complete manufacturer's model number constitutes the use of all nine (9) digits. Any reference concerning parts, etc., must include the complete model number so that accurate evaluations may be made.

A typical model number follows:

LPA9920W0

(Domestic, 1966, Automatic, Mark XII, non-suds, large box console control area, painted cabinet porcelain top, white in color as released.)

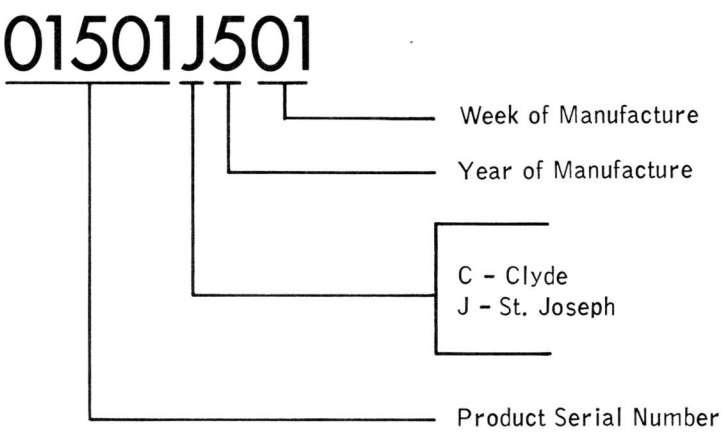
A complete explanation of the use of each digit of the new model number system follows:



2. Serial Number Explanation

Beginning the week of December 31, 1962, a new nine (9) digit serial number was put into effect. This new system not only keys the week but also the year of manufacture.

A representative example and explanation follows:



MANUFACTURING DATES OF CODED SERIAL NUMBERS

CODE NUMBER	MANUFACTURING DATES
501	December 28, 1964 - January 3, 1965
502	January 4, 1965 - January 10, 1965
503	January 11, 1965 - January 17, 1965
504	January 18, 1965 - January 24, 1965
505	January 25, 1965 - January 31, 1965
506	February 1, 1965 - February 7, 1965
507	February 8, 1965 - February 14, 1965
508	February 15, 1965 - February 21, 1965
509	February 22, 1965 - February 28, 1965
510	March 1, 1965 - March 7, 1965
511	March 8, 1965 - March 14, 1965
512	March 15, 1965 - March 21, 1965
513	March 22, 1965 - March 28, 1965
514	March 29, 1965 - April 4, 1965
515	April 5, 1965 - April 11, 1965
516	April 12, 1965 - April 18, 1965
517	April 19, 1965 - April 25, 1965
518	April 26, 1965 - May 2, 1965
519	May 3, 1965 - May 9, 1965
520	May 10, 1965 - May 16, 1965
521	May 17, 1965 - May 23, 1965
522	May 24, 1965 - May 30, 1965
523	May 31, 1965 - June 6, 1965
524	June 7, 1965 - June 13, 1965
525	June 14,1965 - June 20, 1965
526	June 21, 1965 - June 27, 1965
527	June 28, 1965 - July 4, 1965
528	July 5, 1965 - July 11, 1965
529	July 12, 1965 - July 18, 1965
530	July 19, 1965 - July 25, 1965
531	July 26, 1965 - August 1, 1965
532	August 2, 1965 - August 8, 1965
533	August 9, 1965 - August 15, 1965
534	August 16, 1965 - August 22, 1965
535	August 23, 1965 - August 29, 1965
536	August 30, 1965 - September 5, 1965
537	September 6, 1965 - September 12, 1965
538	September 13, 1965 - September 19, 1965
539	September 20, 1965 - September 26, 1965
540	September 27, 1965 - October 3, 1965
541	October 4, 1965 - October 10, 1965
542	October 11, 1965 - October 17, 1965
543	October 18, 1965 - October 24, 1965
544	October 25, 1965 - October 31, 1965
545	November 1, 1965 - November 7, 1965
546	November 8, 1965 - November 14, 1965
547	November 15, 1965 - November 21, 1965
548	November 22, 1965 - November 28, 1965
549	November 29, 1965 - December 5, 1965
550	December 6, 1965 - December 12, 1965
551	December 13, 1965 - December 19, 1965
552	December 20, 1965 - December 26, 1965
601	December 27, 1965 - January 2, 1966

B. 1967 MODELS



LRA-9920 (Non-Suds)
LRA-9925 (Suds)

FEATURES

1. Fluorescent lighted console (timer dial controlled).
2. Infinite water level control may be adjusted from Hi (17 gallons or 11 inches) to Lo (9 1/2 gallons or 6 inches), plus a handwashable setting of 7 gallons.
3. Rotary timer.
4. 5-Pushbutton speed control switch.
5. 5-Pushbutton water temperature control.
6. Spin-stop lid switch.
7. Self-cleaning Magic Clean lint filter.
8. Surgilator agitator with large chrome cap.
9. Three-speed, 1/2 h.p. motor drives a gear case that provides agitation speeds of 68 s.p.m., 45 s.p.m., and 33 s.p.m., and a basket drive assembly to provide spin speeds of 500 r.p.m. and 330 r.p.m.
10. Manifold and trap drain assembly.
11. Uni-directional pump assembly (1 stage).
12. Time proven two-way valve (suds model only).
13. Rinse conditioner and bleach dispenser (with snap-in bezel).
14. Two solenoid non-thermostatic water inlet valve.

OTHER SPECIFICATIONS

a. Dimensions:

(1) Width - 29 inches.
(2) Depth - 25 1/2 inches.
(3) Top Height - 36 inches.
(4) Overall Height - 44 inches.

b. Hinged porcelain top and lid.

c. Painted cabinet finish (colored cabinet optional).

d. Operating instructions on underside of lid.

e. Factory installed self-leveling legs at rear.

f. Two adjustable leveling feet in front.

g. White porcelain basket.

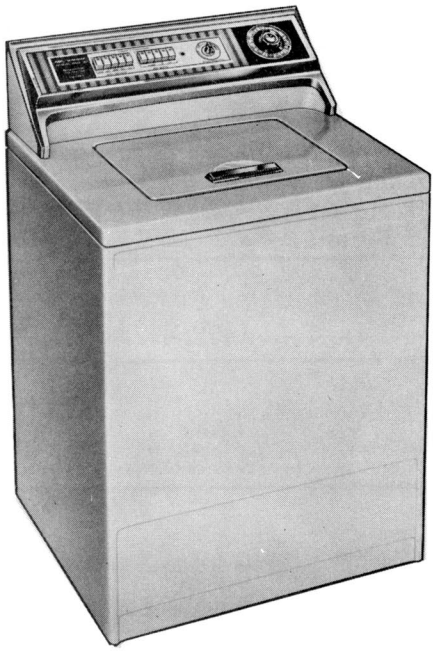
1967 MODEL FEATURES AND SPECIFICATIONS

NON-SUDS	SUDS	WIDTH	DEPTH	OVERALL HEIGHT	TIMER	NO. OF CYCLES	WASH WATER TEMP	RINSE WATER TEMP.	WATER LEVEL CONTROL	NO. OF MOTOR SPEEDS	WATER INLET VALVE[1]	DISPENSERS	PORCELAIN TOP AND LID
LRA5400	5405	29"	25 1/2"	43"	Rotary	3	3	2	1	1	3		Yes
LRA5460	5465	29"	25 1/2"	43"	Rotary	4	3	2	2	1	3		Yes
LRA5570	5575	29"	25 1/2"	43.2"	Rotary	3	3	2	3	2	3		Yes
LRA5590	5595	29"	25 1/2"	43.2"	Rotary	4	3	2	3	2	3		Yes
LRA6700	6705	29"	25 1/2"	43"	Rotary	4	3	2	2	2	3		Yes
LRA6740	6745	29"	25 1/2"	43"	Rotary	5	3	2	3	2	3	Cent. Rinse	Yes
LRA6760	6765	29"	25 1/2"	43"	Rotary	5	3	2	3	2	3	Cent. Rinse	Yes
LRA6800[2]		29"	25 1/2"	43"	Rotary	4	3	2	Infinite	2	3		Yes
LRA6900[3]	6905	29"	25 1/2"	43"	Rotary	4	3	2	Infinite	2	4		Yes
LRA7800	7805	29"	25 1/2"	43"	Rotary	5	3	2	3	2	3	Cent. Rinse	Yes
LRA7840	7845	29"	25 1/2"	43"	Rotary	5	*3	*2	Infinite	2	3	Bleach and Cent. Rinse	Yes
LRA8900	8905	29"	25 1/2"	43"	Rotary	5	*3	*2	Infinite	2	3	Bleach and Cent. Rinse	Yes
LRA9920	9925	29"	25 1/2"	44"	Rotary	5	*3	*2	Infinite	3	3	Bleach & Rinse	Yes

*Pushbutton

1. Refers to number of solenoids.
2. Large capacity model.
3. Water softener model.

1968 MODELS



LSA 9920 (NON-SUDS)
LSA 9925 (SUDS)

FEATURES

1. fluorescent lighted console (timer dial controlled).
   a. Front access for replacement.
2. Infinite water level control may be adjusted from Hi (17 gallons or 11 inches) to Lo (9 1/2 gallons or 6 inches), plus a handwashable setting of 7 gallons.
3. Rotary timer.
4. 5-Pushbutton speed control switch.
5. 5-Pushbutton water temperature control.
6. Spin-stop lid switch.
7. Self-cleaning Magic Clean lint filter.
8. Surgilator agitator with large chrome cap.
9. Three-speed, 1/2 H.P. motor drives a gear case that provides agitation speeds of 68 s.p.m., 45 s.p.m., and 33 s.p.m., and a basket drive assembly to provide spin speeds of 500 r.p.m. and 330 r.p.m.
10. Manifold and trap drain assembly.
11. Uni-directional pump assembly (1 stage).
12. Time proven two-way valve (suds model only).
13. Rinse conditioner and bleach dispenser (with snap-in bezel).
14. Two solenoid non-thermostatic water inlet valve.

OTHER SPECIFICATIONS

a. Dimensions:

   (1) Width - 29 inches.
   (2) Depth - 25 1/2 inches.
   (3) Top Height - 36 inches.
   (4) Overall Height - 44 inches.

b. Hinged porcelain top and lid.

c. Painted cabinet finish (colored cabinet optional).

d. Operating instructions on underside of lid.

e. Factory installed self-leveling legs at rear.

f. Two adjustable leveling feet in front.

g. White porcelain basket.

1968 MODEL FEATURES AND SPECIFICATIONS

SALES NUMBER NON-SUDS	SUDS	WIDTH	DEPTH	OVERALL HEIGHT	FILTER	NO. OF CYCLES	WASH WATER TEMP.	RINSE WATER TEMP.	WATER LEVEL CONTROL	NO. OF MOTOR SPEEDS	WATER INLET VALVE[1]	DISPENSER	PORCELAIN TOP AND LID
LSA3340	3345	29"	25-1/2"	43.2"	Brush	2			1	2	1	None	Paint
LSA4500	4505	29"	25-1/2"	43.2"	Brush	3	3	2	1	1	2	None	Yes
LSA4540	4545	29"	25-1/2"	43.2"	Brush	3	3	2	2	1	2	None	Yes
LSA5400	5405	29"	25-1/2"	43.0"	Brush	3	3	2	2	1	2	None	Yes
LSA5460	5465	29"	25-1/2"	43.0"	Brush	4	3	2	2	1	2	None	Yes
LSA5500	5505	29"	25-1/2"	43.2"	Brush	3	3	2	2	2	2	None	Yes
LSA5600	5605	29"	25-1/2"	43"	Brush	3	3	2	2	2	2	None	Yes
LSA5640	5645	29"	25-1/2"	43"	Brush	3	3	2	3	2	2	None	Yes
LSA5660	5665	29"	25-1/2"	43"	Brush	3	3	2	3	2	2	None	Yes
LSA6700	6705	29"	25-1/2"	43"	Diaphragm	4	3	2	2	2	2	None	Yes
LSA6740	6745	29"	25-1/2"	43"	Diaphragm	5	3	2	3	2	2	Agt. Rinse	Yes
LSA6760	6765	29"	25-1/2"	43"	Diaphragm	5	3	2	3	2	2	Agt. Rinse	Yes
LSA6800[2]	6805	29"	25-1/2"	43"	Diaphragm	4	3	2	Infinite	2	2	None	Yes
LSA6860[2]	6865	29"	25-1/2"	43"	Diaphragm	5	3	2	Infinite	2	2	None	Yes
LSA6900[3]	6905	29"	25-1/2"	43"	Diaphragm	4	3	2	Infinite	2	3	None	Yes
LSA7800	7805	29"	25-1/2"	43"	Diaphragm	5	3	2	3	2	2	Agt. R. - Man. B.	Yes
LSA7840	7845	29"	25-1/2"	43"	Diaphragm	5	*3	*2	Infinite	2	2	Bleach & Agt. R.	Yes
LSA8800	8805	29"	25-1/2"	43"	Diaphragm	5	3	2	Infinite	2	2	Bleach-Rinse	Yes
LSA8900	8905	29"	25-1/2"	43"	Diaphragm	5	*3	*2	Infinite	2	2	Bleach-Rinse	Yes
LSA9900	9905	29"	25-1/2"	43"	Diaphragm	5	*3	*2	Increment	2	2	Bleach-Rinse	Yes
LSA9920	9925	29"	25-1/2"	44"	Diaphragm	5	*3	*2	Infinite	3	2	Bleach-Rinse	Yes
LSB3100		24"	25-1/2"	43.2"	Agitator	2			1	1	1	None	Paint
LSB4150		24"	25-1/2"	43"	Brush	3			2	1	1	None	Yes
LSB4500		24"	25-1/2"	43.2"	Brush	3	3	2	1	1	2	None	Yes
LSB4580		24"	25-1/2"	43.2"	Brush	3	3	2	3	1	2	None	Yes
LSB4640		24"	25-1/2"	43.2"	Brush	3	3	2	3	2	2	None	Yes
LSB4660		24"	25-1/2"	43.2"	Brush	3	3	2	3	2	2	None	Yes
LSB5150		24"	25-1/2"	43"	Brush	3	None	None	3	1	1	None	Yes
LSB5600		24"	25-1/2"	43"	Brush	3	3	2	2	2	2	None	Yes
LSB7750		24"	25-1/2"	43"	Brush	3	3	2	3	2	2	None	Yes
LSB7850		24"	25-1/2"	43"	Brush	4	3	2	3	2	2	Agitator Rinse	Yes

*Pushbutton

1. Refers to number of solenoids.
2. Large capacity model.
3. Water softener model.

SECTION II

PRE-DELIVERY AND INSTALLATION

A. PRE-DELIVERY REQUIREMENTS

(NOTE: All procedures must conform with national or Local Codes and Ordinances.)

1. Electrical

a. A nominal 120-volt (minimum 100-volts at the power cord), 15 or 20 ampere fused electrical supply is required.

b. Cycle frequency must be as indicated on the name plate or main motor rating plate.

c. It is recommended that a separate circuit, serving only the automatic washer, be provided. THE USE OF AN EXTENSION CORD IS NOT RECOMMENDED.

d. All automatic washers are produced with a three-pronged power supply cord for grounding the washer. When the wall receptacle is a grounded three-pronged outlet, just plug in the machine power cord. When there is no mating receptacle, the receptacle should be changed to a three-pronged receptacle, grounded in accordance with the local electrical codes.

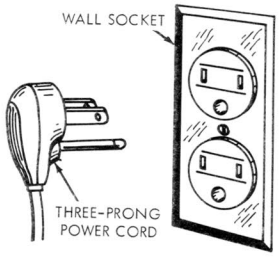


FIGURE 1

DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE THE POWER SUPPLY CORD GROUND PRONG.

e. All wiring which will be serving the machine should be inspected to be sure that it is adequate and safe.

f. Any additional wiring must be done to the specifications of governing codes and ordinances.

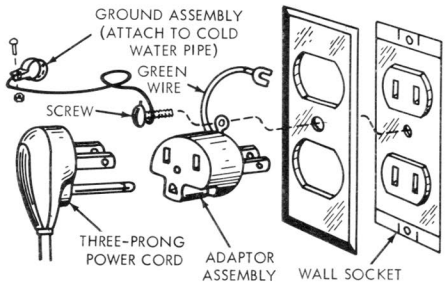


FIGURE 2

g. If changing to and properly grounding the wall receptacle is impossible, and where local codes permit, a temporary adaptor may be plugged into the two-prong receptacle to mate with the three-pronged power supply cord. This, however, is not recommended. If this is done, you must connect the ground lug on the adaptor plug to the wall socket cover plate screw. When ground lug cannot be used, the green wire can be connected to the wall socket cover plate screw. Also, when an adaptor is used, you must connect one end of a ground wire to a grounded cold water pipe and the other end to one of the screws in the rear panel of the washer or to the screw in the wall socket cover plate.

2. Plumbing

WATER SUPPLY

a. Water pressure - 10 pounds minimum and 100 pounds maximum. Pressure in excess of 100 pounds will require a pressure reducing valve installed in the initial supply line.

b. Pressure differentials between the hot and cold water supply lines must be as small as possible. Too great of a differential will cause a variation of mixed water temperatures from the inlet mixing valves. This condition may usually be corrected by installing a washer with a hole of suitable size in the inlet hose of the supply line furnishing the greater pressure.

c. An adequate hot water supply is vital.

Gas Water Heater

1. Minimum recommended size - 30-gallon quick recovery heater.

2. A 20-gallon quick recovery tank will permit two or three loads if the suds return system is used. However, most 20-gallon tanks will not provide sufficient hot water to permit continuous washing loads - loads should be staggered to allow tank recovery.

Electric Water Heater

1. Recommended size - 80-gallon capacity electric tank.

2. Minimum size - 50 gallons, quick recovery unit.

d. Individual hot and cold water supply lines equipped with standard 1/2-inch faucets must be available near the machine location for all washers equipped with a double port mixing valve.

e. For models equipped with a single port inlet valve, the supply lines should terminate in a Y type hose arrangement, plumbing connection "T" or in a swing faucet. Shut-off valves must be provided to permit regulation of water temperature (Figure 4). (NOTE: Be sure this type of connection is permitted by the local plumbing code.)

f. It is recommended that both hot and cold water supply lines be provided with risers. These short lengths of capped pipe rise vertically from the supply line to provide a cushion of trapped air to absorb the surge of water that occurs when the inlet valves close suddenly. This prevents water hammer and possible damage to the inlet valve.

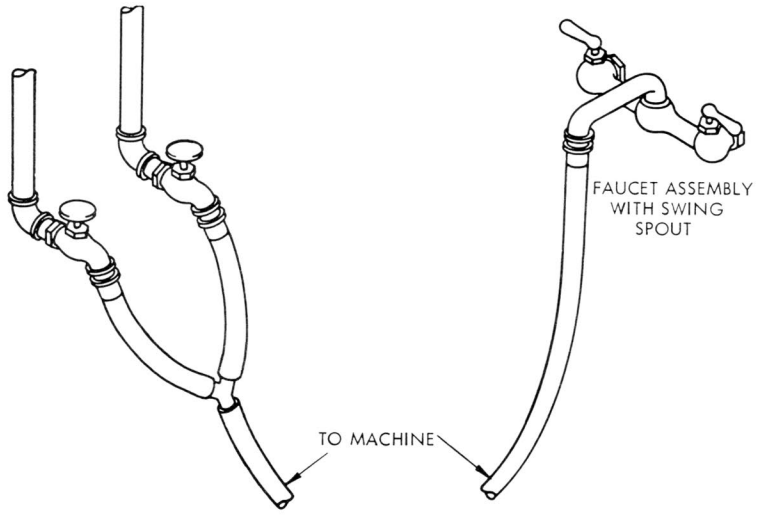


FIGURE 4

DRAIN

Suds-Miser Models — a laundry tub of at least twenty (20) gallons must be provided. It may be a double compartment or a single tub with a special standpipe assembly. Machine should be located at either side of the tubs, as shown in Figure 3.

Non-Suds Miser Models — a laundry tub of twenty (20) gallon capacity or a standpipe, with a minimum diameter of two inches, to the drain, must be provided.

NOTE: ANY SUITABLE TRAPPED DRAIN HAVING A MINIMUM CARRY-AWAY CAPACITY OF FOURTEEN (14) GALLONS PER MINUTE WILL MEET THE REQUIREMENTS OF EITHER THE SUDS-MISER OR NON-SUDS MISER MACHINE.

Under no circumstances may the open end of the discharge hose be lower than the normal water level of the machine. If it is necessary to use a floor drain for the disposal of discharge water, a suitable siphon break must be installed in the discharge hose.

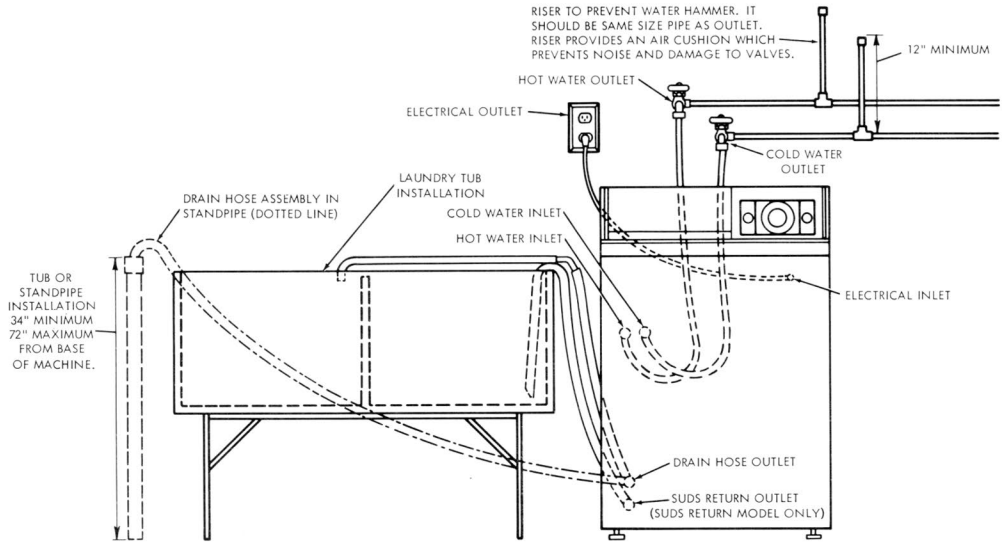


FIGURE 3

B. INSTALLATION PROCEDURE

1. Remove the literature and miscellaneous parts from the machine basket. Now lay the washer on its back using two packing carton corner supports for protection. (DO NOT LAY WASHER ON ITS SIDE OR FRONT, AS DAMAGE TO CABINET MAY RESULT).

2. Slide right hand rear foot down until the pan is aligned with horizontal slot in cage. Turn right foot clockwise 1/4 turn, then pull foot down as far as it will go and move leveling link bar inside channel to left. Follow Steps #5A, #5B, and #5C below. Now, position left hand rear foot using same procedure as right foot.

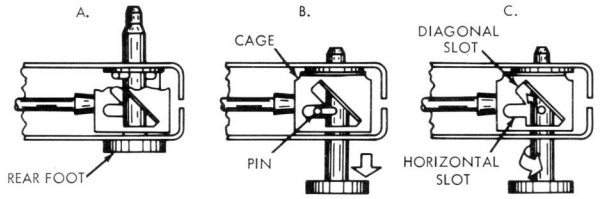


FIGURE 5

3. Remove the foam plastic block between the base plate and cabinet from the left front corner by pushing towards the top and then turning to remove. The block can be discarded.

4. Turn a lock nut well down onto each front leveling foot, (about 1/2" from rubber foot). Screw the feet into the front corners of the machine (on porcelain machines it is necessary to place flat washers, found in the miscellaneous parts bag, over each nut).

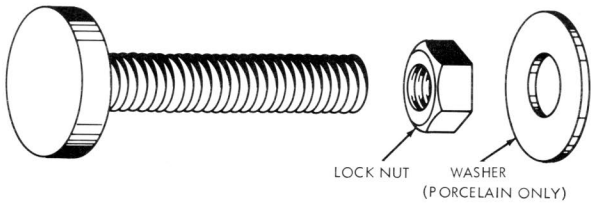


FIGURE 6

5. Now set the machine up and remove the rear panel. (See Figure 7). Remove the shipping block(s) from inside the rear panel. These blocks and bolts should be saved for use if the machine is moved to a different residence. On 29" models only, push the baseplate forward and remove the foam plastic block in the left hand corner.

6. Suds Return Models — Remove the colored stoppers (if present) from the two-way valve outlets. Connect the hoses to the two-way valve outlets or plastic connectors using the furnished hose clamps.

Insert the plastic hose connectors in the discharge hoses and in the suds return hoses (See Figure 7). The angle connector should be positioned at the edge of the tub as shown in Figure 4. The hoses may be cut to fit the installation to avoid stretching or kinking. Be sure that the suds return gooseneck hose is positioned so that the end of it remains in the bottom of the tub. Also, be sure that the end of the discharge hose is secured to the drain pipe or properly fastened in the tub.

Non-Suds Return Models — Snap connector into place in cabinet (See Figure 7). Fasten the drain hose to the elbow connector using the furnished hose clamp. The drain hose may be cut to fit the installation to avoid stretching or kinking. The elbow connector may be rotated to provide the best drain hose routing. (NOTE: BE SURE THAT THE INSIDE HOSE IS NOT TWISTED AFTER DRAIN HOSE IS IN FINAL POSITION. LOOSEN CLAMP AND ROTATE INSIDE HOSE IF NECESSARY.)

NOTE: BE SURE THAT THE OPEN END OF THE DRAIN HOSE IS ABOVE THE NORMAL OPERATING WATER LEVEL OF THE MACHINE TO PREVENT SIPHONING. UNDER NO CIRCUMSTANCES MAY THE DRAIN HOSE BE CONNECTED DIRECTLY TO THE DRAIN UNLESS A SUITABLE SIPHON BREAK IS PROVIDED IN ACCORDANCE WITH THE LOCAL PLUMBING CODE SEE FIGURE 3.

7. Connect the furnished hoses between the inlet valve and the faucets on the supply lines. Be sure that the hose from the hot water supply is connected to the hot water side of the inlet valve. USE SCREEN WASHER IN THE ENDS OF THE HOSES CONNECTED TO THE FAUCETS AND A HOSE WASHER IN THE ENDS OF THE HOSES CONNECTED TO THE INLET VALVE. CAUTION: DO NOT DEFORM THE SCREEN WASHER.

8. Connect one end of the ground wire, found in the miscellaneous parts bag, to the receptacle cover plate screw. Connect the other end to the ground strap, found in the miscellaneous parts bag, and then fasten the strap to a cold water pipe. Be sure the strap breaks any coating or oxidation on the pipe. (See Figure 2).

9. Move the machine to its permanent location. Fill the washer with water up to the first row of holes in the basket. Level it from front to rear and from side to side by adjusting the front leveling feet. Tighten the lock nuts securely against the machine bottom after adjusting.

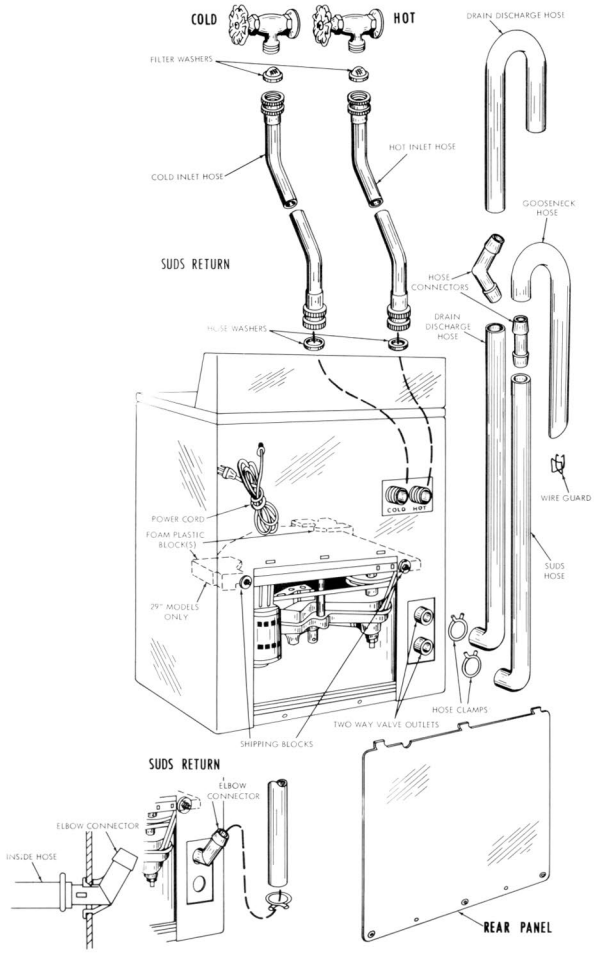


FIGURE 7

C. CUSTOMER INSTRUCTION

After the washer is properly installed:

1. Check for proper operation.

2. Instruct customer while actually washing a load of clothes.

3. Review instructions in the owner's manual and explain them to the customer.

4. As the machine is operating, explain to the customer the operating sounds of the machine in the various portions of the cycle.

D. MOVING PREPARATION PROCEDURE

To disconnect and prepare a customer's automatic washer for shipment, the instructions listed below should be carefully followed.

1. Close hot and cold water supply shut-off valves and disconnect water inlet hoses.

2. Remove both hoses from the mixing valve so that inlets are open and all water can run out of inlet valve. Energize each valve solenoid in turn or simultaneously, until no more water comes out of the valve inlets. Lay drain hoses on the floor or in a low container to allow all water to drain out of pump. This will remove water from the machine and prevent damage from freezing.

3. Remove the power cord from the wall outlets and tape to back of the machine.

4, Move automatic away from wall and remove the following:

   a. Discharge hoses

   b. Inlet hoses

   c. Ground wire and clamp

   Wrap parts and place in basket of washer. Tape down lid to top in 2 or 3 places.

5. Remove rear panel and install wood shipping block inside rear panel and tighten holding bolt. This will prevent the inner mechanism from hitting cabinet interior.

6. Replace rear panel. Machine is now prepared for moving.

The moving company will pad the automatic washer to protect exterior finish during shipment.

E. PREVENTIVE MAINTENANCE

RCA WHIRLPOOL Automatic Washers are designed and built to rigid specifications which produce a high quality machine requiring a minimum of service. Preventive maintenance will even further reduce the amount of service required.

When a service call is made on an automatic washer, a check of the following items may prevent callbacks.

Run a skip cycle check using the following procedure:

1. Start washer in the wash fill cycle, noting timer dial alignment and checking fill hoses for leaks.
2. Check mixing valve coils and temperature selector switch by selecting various temperatures during the fill cycle.
3. Allow machine to fill and check water level.
4. Allow machine to advance into agitation and check for recirculating flow, filter action, rattles and squeaks.
5. Manually advance timer into pumpout and check for complete pumpout, kinked drain hoses and leaking drain hoses.
6. Manually advance timer to spray rinses checking for spray rinsing and spin.
7. In spin cycle, open lid to check for operation of the lid switch, also, listen for rattles and squeaks.
8. If the machine is equipped with the suds miser, check for operation of the two-way valve.

In addition to the skip cycle check, the following items should also be checked:

1. Light Bulbs - check for operation.
2. Ground Wire - maker certain machine is grounded.
3. Drive Belt - check for wear and tension.
4. Clutch - check for proper clearance.
5. If machine is equipped with rinse and bleach dispensers, check them for clogging, leaks and operation.
6. Pump - check for leaks and add oil if required.

SECTION III

COMPONENT DESCRIPTION AND SERVICE PROCEDURE

A. ELECTRICAL SYSTEM

1. Timers

Timers used on automatic washers are similar in basic principal of operation and design. They are somewhat different in appearance due to different sources of manufacture. There are also differences in complexity due to the variations in functions and features of the various models.

All automatic washer timers are driven by a synchronous-type motor, similar to those in electric clocks. A small pinion drives a gear in the escapement, (Figure A-1).

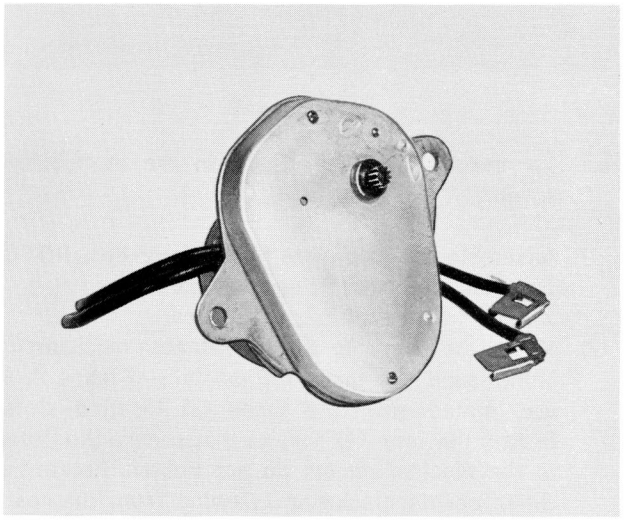


FIGURE A-1

The timer and push-button assembly used on some model automatic washers consists of the machine timer as well as a push-button and stop-pin device, (Figure A-2).

All cycle variables, such as wash and rinse water temperatures, agitation and spin speeds, are preset in the timer when the desired cycle variation is chosen. Auxiliary switches are mounted to the push-button assembly. These switches are used in conjunction with the timer to perform certain functions.

The CCA Assembly (Figure A-2) utilizes anchored actuating wires extending through the push-button slide and through a pin at the lower end. When a button is depressed, the wire pushes the pin against the stop plate.

When rotating the stop plate, the pin will drop into a hole in the stop plate designating the start of that predetermined cycle. NOTE: The timer shaft assembly must be pulled outward while rotating manually and pushed in to operate machine when the cycle has been selected.

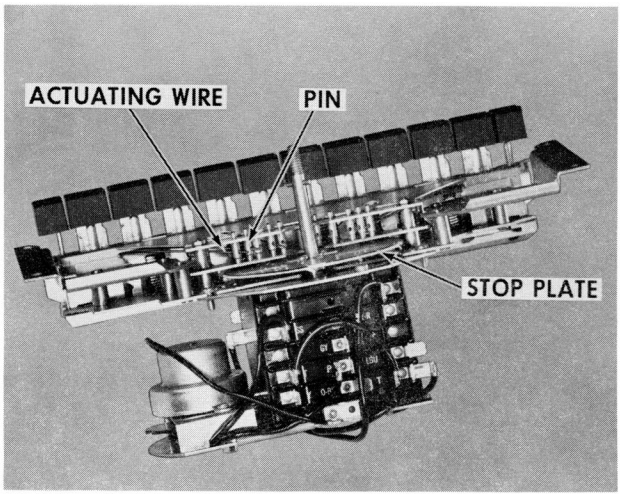


FIGURE A-2

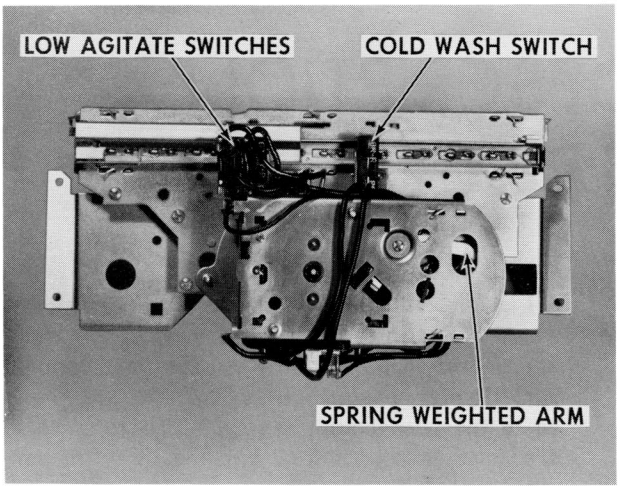


FIGURE A-3

The rear view of the CCA Assembly (Figure A-3) points out the auxiliary switch locations as well as bracketry and timer structure.

a. To check the timer refer to the wiring diagram. If the timer is faulty it must be replaced as timers are not repairable in the field. However, if only the timer motor is defective, it should be replaced, separately.

b. To remove the timer:

Generally, timers used on RCA WHIRLPOOL Automatic Washers are serviceable from the front of the console.

1) Unscrew the control knob and remove the pointer.

2) Remove other control knobs.

3) Remove screws securing escutcheon to console (located at each end of bezel).

4) Remove screws securing control panel to console or escutcheon.

5) Remove timer and push-button assembly.

6) Disconnect wiring harness terminals from timer.

7) Remove four (4) screws securing the timer to the push-button assembly.

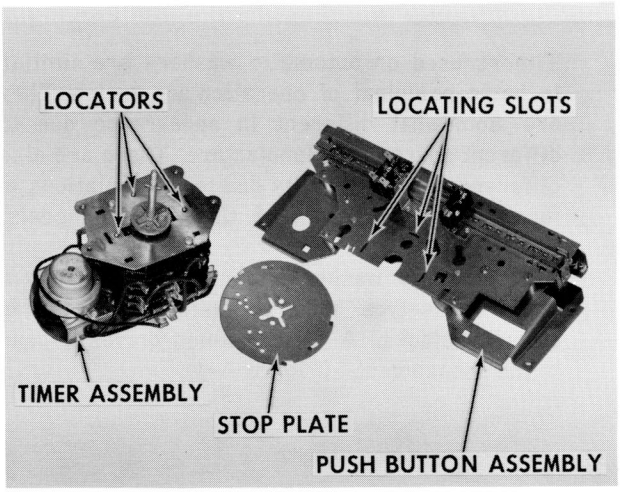


FIGURE A-4

c. To synchronize the timer to the push-button assembly:

1) Assemble the stop plate to the timer hub. NOTE: The stop plate will fit one way only.

2) Mount the timer to the push-button mechanism, being sure the three (3) locators (Figure A-4) are mated with the three (3) locating slots. Install the four (4) screws that secure the timer to the mechanism but do not tighten. Rotate the timer counterclockwise (viewing from the rear) as far as possible and tighten one (1) mounting screw.

3) Depress button #2 of push-button mechanism and rotate timer shaft to the cycle #2 starting point with the knob pulled out. The point of the stop pawl as viewed through the inspection hole in back plate must fit the gear tooth which is visible (Figure A-5).

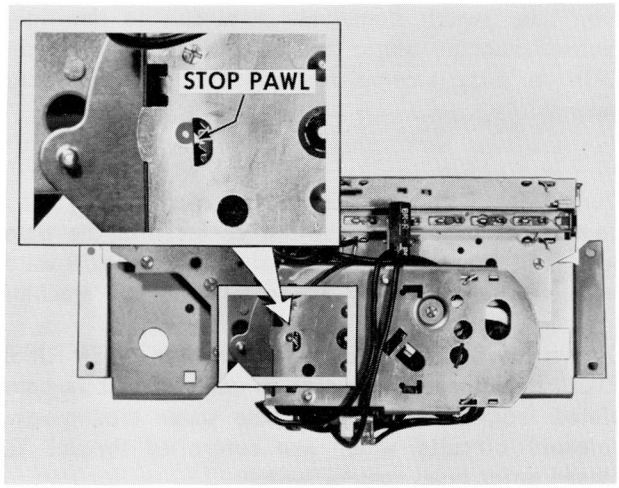


FIGURE A-5

4) If necessary, readjust by rotating timer slightly with respect to push-button mechanism and recheck by slowly rotating timer knob to cycle #2 starting point.

5) To verify adjustment, depress button #8 and recheck as above.

6) Firmly tighten all four screws which hold the timer in place on the push-button mechanism.

7) Assemble to console control center.

d. To remove the defective timer motor:

1) Remove timer assembly from machine console.

2) Remove timer motor leads and hex head screws which hold motor in place and carefully slide motor out of slot provided for removal.

3) With a small screwdriver, hold spring weighted arm back so that replacement motor can be positioned on timer, (Figure A-3).

4) Replace timer motor mounting screws and electrical leads.

5) Reassemble in console control center.

e. Auxiliary timer switches are mounted as illustrated in Figure A-6. When certain cycles are selected a prong on the back side of the push-button depresses the leaf spring, causing the switch to be actuated.

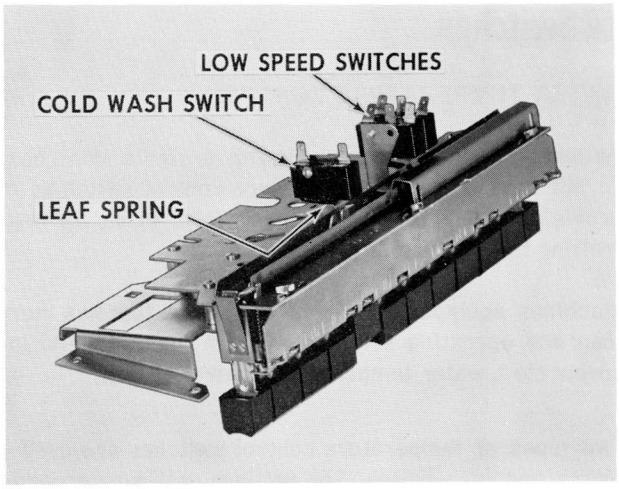


FIGURE A-6

f. To position the timer pointer to the timer dial: See Figure A-7.

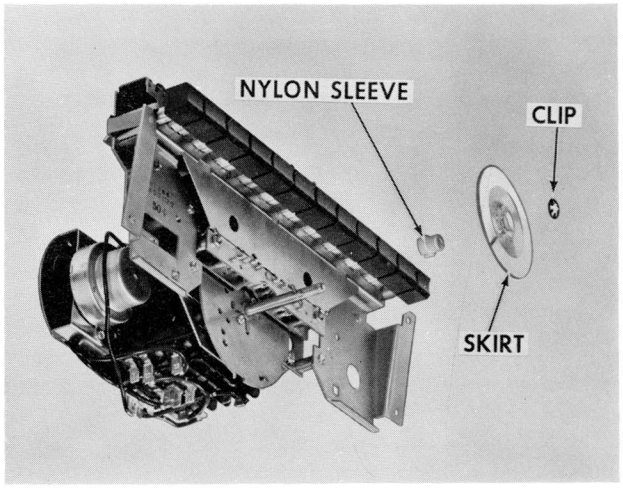


FIGURE A-7

1) Slip small nylon sleeve with shoulder ring over threaded D shaft, the sleeve engaging with the pin in the shaft.

2) Fit the pointer or skirt over the nylon sleeve with the pointer in the position desired. The inside diameter of the pointer or skirt has several splines which grip the sleeve and secure it in position.

3) Fit the metal clip over the threaded shaft so it rests against the pointer or skirt.

4) Screw the timer knob only until it contacts the pointer or skirt. Normal rotation will tighten the assembly.

2. Switches

WATER TEMPERATURE CONTROL

Automatic washers equipped with a single inlet hose do not have a water temperature control switch as no provision is made in the water inlet valve for controlling the mixture of the water.

Machines equipped with a mixing valve that has more than one operating solenoid will (in most models) incorporate a water temperature control switch.

Two types of temperature control switches are used - rotary and push-button. The settings will vary according to models from three selections of HOT, WARM, and COLD to a combination of five selections for both the wash and rinse temperature. Consult the wiring diagrams at the back of this service manual or the diagram label on the machine for types used on specific models.

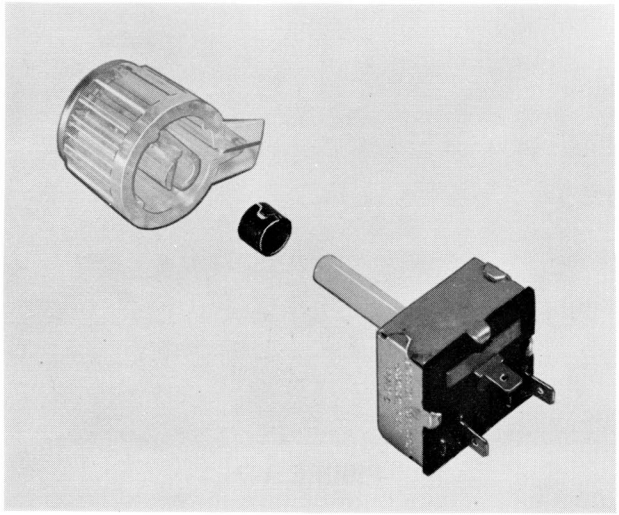


FIGURE A-8

Checking switches - switches are checked by placing a continuity testing lamp in series with the switch. If the switch is defective it must be replaced.

a. Removal of water temperature control switch (Rotary or Push-Button):

1) Remove the bezel and control panel.

2) Remove the screws securing the switch to the control panel.

3) Disconnect the harness terminals.

WATER LEVEL CONTROL

The main function of the water level control is to control the amount of water that enters the tub. As soon as the correct water level is reached in the tub, this switch completes a circuit to the timer motor, machine motor and agitator solenoid. During SPIN periods, it completes a circuit to the extractor solenoid.

During the FILL portion of the cycle, a circuit is completed through the switch contacts of the water level switch to the water control solenoids on the water inlet valve, permitting water to enter the machine.

During the first two minute increment of DEEP RINSE FILL, only the timer motor by-pass circuit is completed from the timer plus the water mixing valve solenoid circuits which are controlled through the closed water level control switch.

This means that the machine will not agitate if the water level switch is satisfied in less than two minutes. If this occurs the machine will pause until the timer completes the two minute interval and advances.

If the machine does not fill within the two minute period, the timer will advance to the next increment — opening the timer motor by-pass circuit and presetting the agitator solenoid and motor circuits. When the water level control switch is satisfied, the machine will begin to agitate.

The pressure type of water level control is a single-pole, double-throw switch activated by a diaphragm. A 3/16 inch transparent tube connects this switch to the tub by means of a reducer coupling and an elbow hose, Figure A-9.

As the tub fills with water, an air pocket is formed in the plastic tube. As the water rises in the tub, the air pressure in the tube increases until it is sufficient to cause the diaphragm to actuate the switch contacts; thus, opening the circuit to the water control switches and stopping the flow of water into the tub. As the water drains out of the tub, the air pressure in the tube decreases gradually allowing the diaphragm to reset the switch contacts.

Four styles of pressure switches are used — Single-Level, Two-Level, Three-Level and the Infinite-Level Switch.

The Single-Level Pressure Switch, is calibrated to 11 inches plus or minus 1/2 inch of water in the tub, Figure A-9. Although it is equipped with an adjustment screw, this screw should not be changed in the field since it is pre-set at the factory and sealed. A very slight adjustment will increase or decrease the water level in the tub quite noticeably and is, therefore, not recommended.

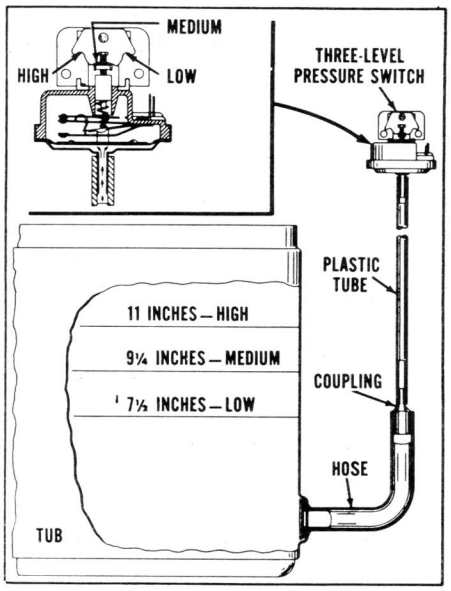


FIGURE A-9

The Three-Level Pressure Switch, Figure A-10, is the same as the single-level switch except that it has three positions which are actuated by a slide lever and crank. The various water levels for LOW, MEDIUM and HIGH settings are shown in Figure A-9 .

The Infinite-Level Pressure Switch, Figure A-11, is very similar to the single-level and three-level pressure switches except that it has a crank or control segment that will allow an infinite number of settings between the minimum LOW position and the maximum HIGH position.

On 29-inch machines, when the selector knob is set on LOW about 11 gallons of water will enter the tub at a level of about 7 inches. When set at HIGH the tub will fill to about 11 inches or approximately 17 gallons of water. By setting the selector knob at any position between LOW and HIGH, the amount of water entering the tub will vary between 11 to 17 gallons, depending on the setting.

This switch also has a RESET position so that the user can add additional water if the first setting did not supply the desired water level. To do this the operator merely turns the selector knob to the RESET position; then to any higher position than the original setting.

FIXED RESET PRESSURE SWITCH

This water level control is used on Mark XII Models. It has an infinite water level adjustment and is similar

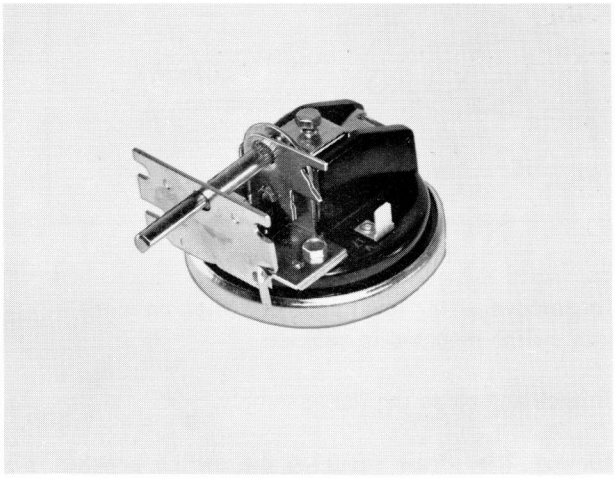


FIGURE A-10

to the control used on other models. The basic differences is that the switch will always reset from V-T contacts to V-P contacts at a predetermined level of approximately nine (9) gallons of water. This change provides for increased efficiency of the cool down period of the Wash 'N Wear cycle.

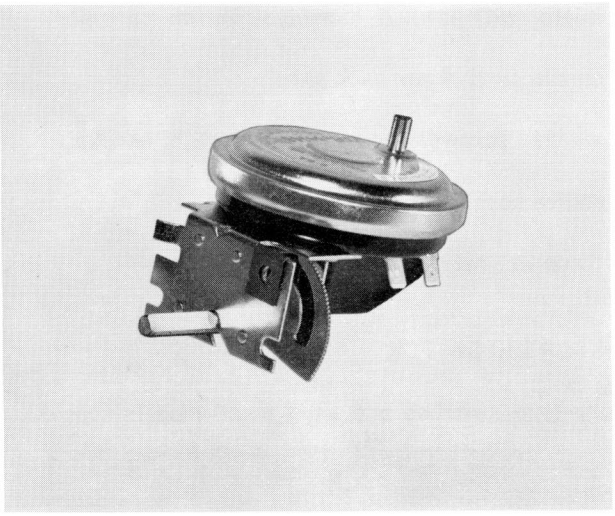


FIGURE A-11

LOW WATER LEVEL PRESSURE SWITCH

Beginning with the 1967 line, some Models are equipped with a low, single level pressure switch which is used in conjunction with the fixed reset pressure switch. This system provides a seven gallon water fill and is used in the hand washable cycle. These pressure switches are interconnected as shown in figure A-11-1. Note: Be certain that the pressure switch tubing is routed to prevent kinking. The tubing between the pressure switches should be routed around the timer as illustrated in figure A-11-1.

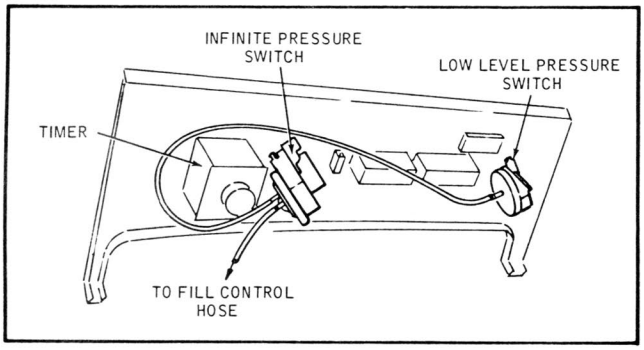


FIGURE A-11-1

a. To remove water level control switch on models with switch mounted to cabinet:

1) Unlatch and raise the top assembly.

2) Remove the screw securing the switch bracket to the cabinet.

3) Remove the pressure hose from the switch housing.

4) Disconnect the harness terminals.

b. To remove the water level control switch on models with switch mounted in the console:

1) Remove control box back panel.

2) Remove screws securing the switch bracket.

3) Remove hose from switch housing.

4) Disconnect harness wires.

SPIN-STOP LID SWITCH

Mercury-type switches are used on all models specified with a spin-stop switch, Figure A-12. The switch is mounted by a bracket to the right lid hinge. Electrically, it is connected in series between the spin solenoid and the timer.

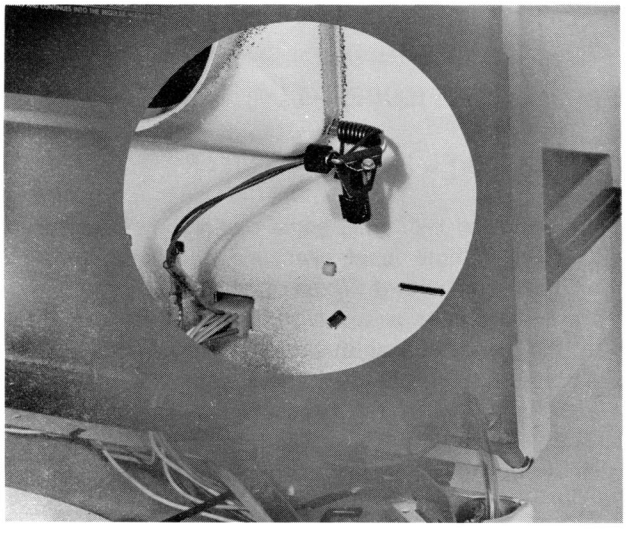


FIGURE A-12

To remove the Spin Stop Switch:

1) Unlatch and raise the top assembly.

2) Remove the mercury switch capsule from the retainer on the bracket.

3) Disconnect terminals from the harness connectors.

SPEED CONTROL SWITCH

Beginning with 1967 Models a speed control switch has been added to some Models to provide the consumer with a greater flexibility of operation. Figure A-12-1 illustrates the electrical function of the speed control switch.

SPEED CONTROL SWITCH

AGITATE	SWITCH FUNCTION
HIGH	BU-O TO BU
MEDIUM	BU-O TO OR
LOW	BU-O TO GY-P
SPIN	
HIGH	R-W TO BU
LOW	R-W TO OR

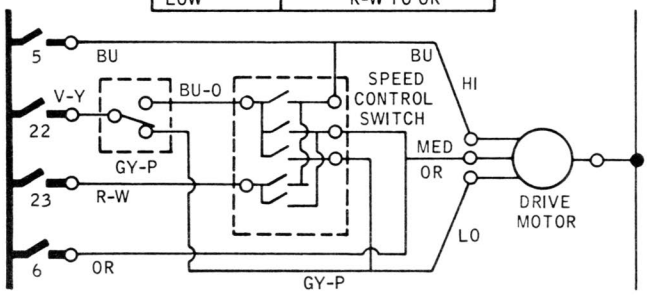


FIGURE A-12-1

3. Control Solenoids

A solenoid is a device used as means for converting electrical energy into mechanical motion. It consists of a coil of enamel-coated wire wrapped around a non-metallic bobbin and supported by a laminated iron field or a steel frame of some type, Figure A-13. Some solenoids have a metal core in one end of the bobbin and some have metal bushings in each end with a space in between them. The particular application for which a solenoid is designed accounts for these variances.

When electric current flows through a coil of wire, a magnetic field is produced in the center of the coil. Therefore, when a solenoid is energized it acts like a magnet, positioned so as to attract a pre-designated metal object. Some solenoids are equipped with a free moving armature or plunger which is so assembled

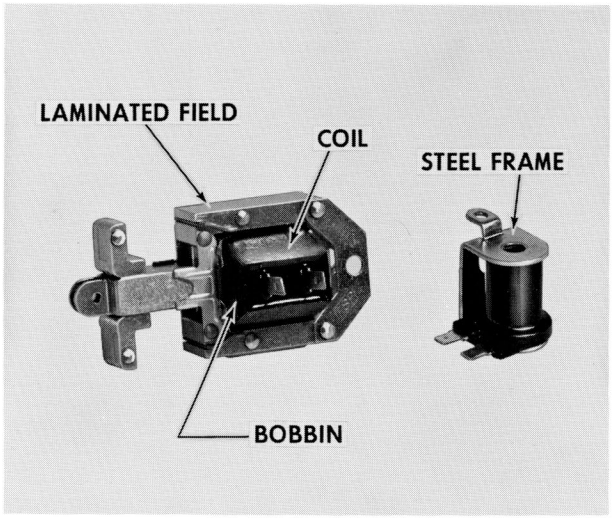


FIGURE A-13

that it can be easily moved in and out of the center of the coil. When the solenoid is energized this plunger is pulled into the center of the coil by the magnetic attraction. When electrical current stops flowing through the coil, the magnetic force ceases and the plunger moves back to its original position by gravity or by spring-action. Other solenoids are equipped with a stationary core which pulls a metal leaf or plate against the end of the solenoid when electric current flows through the coil. There are several different types of solenoids used on automatic washers. These will be covered in more detail in the following paragraphs.

Checking Solenoids:

Solenoids, like switches, are checked by placing a continuity testing lamp in series with the subject solenoid. Defective solenoids must be replaced.

WATER CONTROL SOLENOIDS

A sealed-type solenoid, Figure A-14, is secured to a nylon valve body by screws. The solenoid coil is completely sealed in a can-like container to further protect the wire from the corrosive effects of water and detergents. The spade terminals are mounted on the outer end of this solenoid.

A single-port inlet valve requires only one solenoid which acts as a means of permitting either cold or hot water or both to enter the valve when energized. All double-port mixing valves require the use of two solenoids — one to permit hot water to enter the valve and the other to permit both hot and cold water to enter.

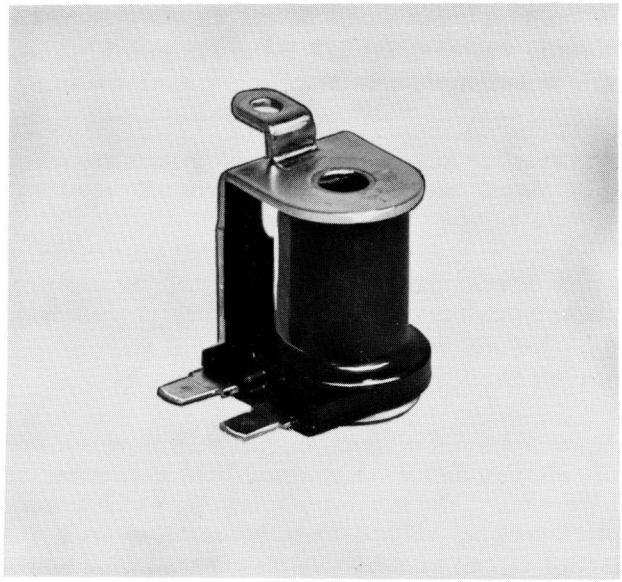


FIGURE A-14

To remove a water inlet valve solenoid:

1) Remove the valve from the machine.

2) Remove the two (2) screws which secure the coil housing to the armature guide bracket.

3) Slip the coil off the guide.

AGITATOR AND EXTRACTOR CONTROL SOLENOIDS

The Agitator and Extractor Control Solenoids are identical and are mounted parallel in a vertical position in the same bracket.

The function of the Agitator Control Solenoid is to raise a plunger which moves the agitator cam bar in such a manner as to engage the agitator and change the direction of the flow of water through the pump.

The Extractor Control Solenoid raises a plunger which moves the extractor cam bar in such a manner as to cause the basket drive disc to come into contact with the basket drive pulley, thus causing the basket to spin.

The control magnet assembly (wigwag) is mounted on the gear sector shaft so that it turns back and forth whenever the machine motor is running, Figure A-15.

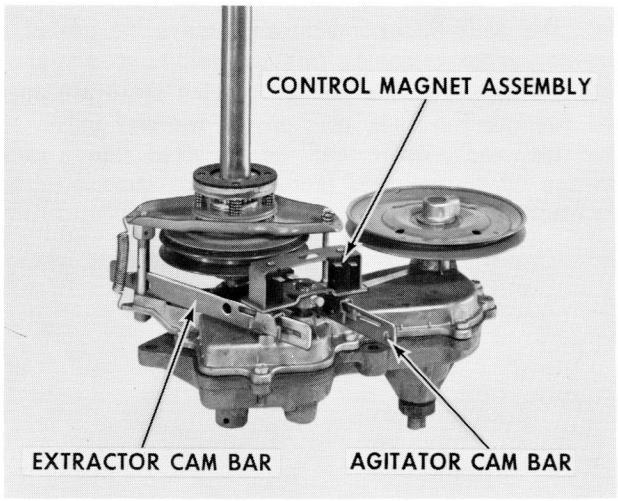


FIGURE A-15

When either of these solenoids is energized, its plunger, which is anchored at the bottom to one of the cam bars, is pulled up quickly by magnetic force against the bottom of the steel core mounted in the top of the solenoid coil and held there until the circuit to the solenoid is broken. The plunger then drops down by gravity and moves the cam bar in the opposite direction.

The assemblies are rigid frame construction with non-replaceable, nylon-sealed solenoid coils. The new design and material changes improve operation and extend life expectancy of the component.

Molded removable plastic liners fit in the cam bar plunger guides and eliminate the characteristic clicking sound often detectable during machine operation when the former design is used. Coil plungers and plastic cam bar guides SHOULD NOT be lubricated. New assemblies are interchangeable with old when replaced as complete units along with cam bar plungers and guides.

To remove the control magnet from the gear case.

This can be accomplished through the rear service panel area of the cabinet.

1) Remove the harness leads from both coils.

2) Remove the taper screw holding the control magnet to the gear sector shaft.

3) Lift the control magnet off of the plungers.

TWO-WAY VALVE SOLENOID

Only the Suds-Miser machines require the use of a two-way valve solenoid. This solenoid is used to provide an automatic method for closing the drain port and opening the suds port on the two-way valve, so that the wash water can be directed into a suds storage tub or returned from the suds storage tub to the machine for reuse.

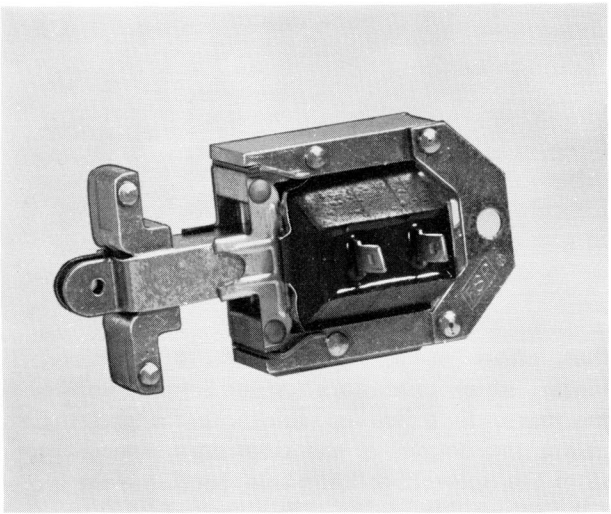


FIGURE A-16

To operate the two-way valve assembly a Heavy Duty "T" Solenoid is used, Figure A-16. This is an armature type solenoid with the armature made of laminated steel in the shape of a "T". The solenoid coil is also supported by a laminated steel field. The particular design of this solenoid provides a very efficient magnetic circuit to give good holding force for more than the required time to drain the tub or return the wash water to the machine and helps to eliminate residual magnetism when the solenoid is de-energized.

The bottom end of this solenoid pivots on the two-way valve body, while the top of the armature is anchored to the valve operating lever which is spring-loaded. When the solenoid is de-energized this spring-load lever quickly pulls the armature out of the center of the solenoid coil, closing the suds port and opening the drain port of the valve.

To remove two-way valve solenoid:

1) Remove the two-way valve from the machine.

2) Remove the cotter pin securing the lever to the armature.

3) Remove the tinnerman clip and rivet holding the solenoid to the housing.

4. Motor

The machine motor used on all standard domestic automatic washers is a 1/2 H.P., 115 volt, 60-cycle, single extension shaft motor.

Both capacitor and split phase type motors are used. These motors utilize a centrifugal switch, start and running windings.

Starting these motors is accomplished by applying voltage through a parallel circuit momentarily to both the starting and the running windings.

The purpose of the starting winding is to give maximum starting torque during the critical start up period of the motor. The starting windings draw high amperage, therefore, voltage must be removed from the starting circuit as quickly as the motor reaches starting speed which, under normal operating conditions, takes place within 2-3 seconds.

To accomplish this, a switch is used that is actuated by the centrifugal forces of the spinning rotor in the motor, called the centrifugal switch. When the motor reaches a speed of approximately 1,100 R.P.M., the centrifugal switch "A" (Figure A-17) opens removing voltage to the start windings and the motor continues to operate at designed motor speed on the running winding only.

In addition, each motor is equipped with an automatic reset thermo overload protector. This protector may be either built in or mounted externally on the motor housing. The built-in protector cannot be replaced. The external mounted protector, however, is a replaceable item.

When a starting capacitor, located under a metal shield on the side of the motor, is used, it is always wired in series with the starting winding and is used to provide maximum starting efficiency.

A split phase motor with comparable operating characteristics is provided with a heavier starting winding than a capacitor start motor and is equally efficient when specified line voltages are maintained to the appliance.

Motors which provide alternate speed selections are built with additional contacts in the centrifugal switch and running windings to provide design speed desired.

Machines with only one operating cycle are equipped with a single-speed motor that has the standard running speed of 1725 R.P.M. This single-speed motor is equipped with two standard terminal connections (Figure A-17)

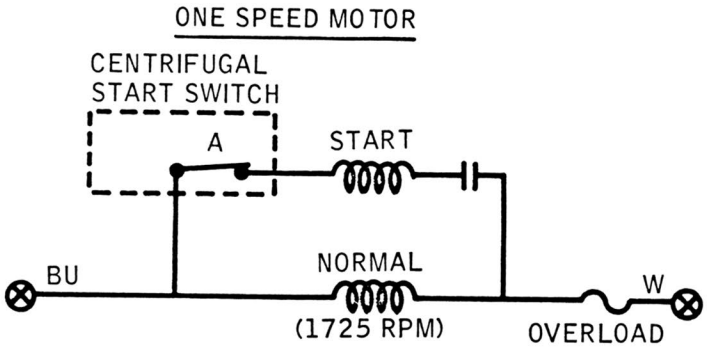


FIGURE A-17

Some automatic washers with two separate operating cycles are equipped with two-speed motors. Two-speed motors are equipped with three terminals for connecting the harness leads. (Figure A-18)

These motors are designed with a start winding, two sets of running windings and a double-pole, single-throw centrifugal switch. When the normal action cycle (1,725 R.P.M.) is selected, voltage is applied to terminal BU & W and the motor operates the same as a single speed motor previously described.

When the gentle action cycle (1,140 R.P.M) is selected, voltage is applied to motor terminal through the timer contacts OR. With voltage applied to terminal OR, the motor starts the same as a single-speed with current applied to the start and normal speed windings.

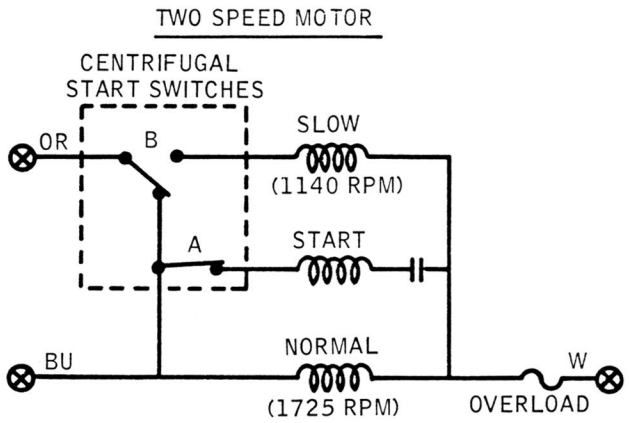


FIGURE A-18

When centrifugal switching takes place (1,100 R.P.M.) the centrifugal switch contacts "A" open and "B" closes to the slow speed motor winding. The switch action opens the circuit to the start and normal speed windings and completes a circuit to the slow (1,140 R.P.M.) speed windings for continued operation.

The three-speed motors are designed identically to the two-speed motors with the exception of an additional running winding (extra low speed 840 R.P.M.) and a three-pole, single-throw centrifugal switch (Figure A-19). Three-speed motors are equipped with four terminals for connecting the harness leads.

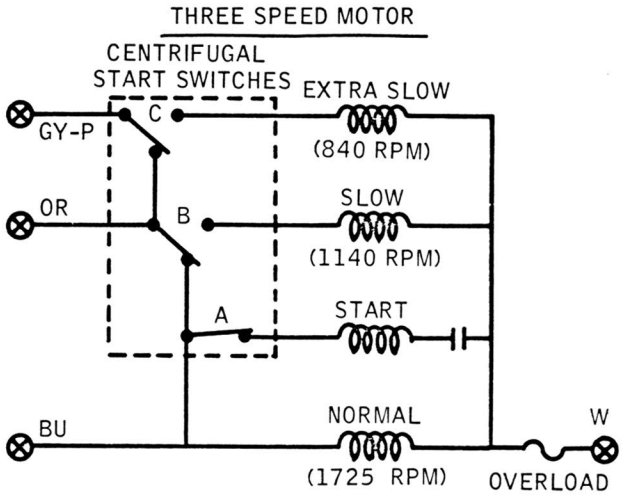


FIGURE A-19

When extra low speed is selected, voltage is applied to motor terminal through the GY-P timer. With voltage applied to terminal GY-P the motor starts the same as a single-speed motor with current through both the start and normal speed windings.

When the centrifugal switches are actuated, (1,100 R.P.M.) contact "C" closes the circuit to the extra slow speed windings and opens the circuit to the start and normal speed windings. The motor then continues operation through the running windings selected.

The wattage load draw of the motor is higher during low speed operation than during high speed operation and the motor does not develop as much power to free a stiff gear case when in the low-speed winding. It is recommended that a machine equipped with a two-speed or 3-speed motor should always be started for the first time in the NORMAL ACTION cycle. This is especially important if the machine has been in stock for a considerable length of time . Starting the machine for the first time in the GENTLE ACTION cycle may put undue strain on the motor.

All motors are mounted vertically with the shaft end up, and rotate in a clockwise direction looking down on the top of the shaft. A protective shield is installed to protect the capacitor and bottom of the motor in the event of a pump or hose leak.

All machine motors used on automatic washers are guaranteed by the motor manufacturer. Motors which fail on any of these units should be forwarded to the nearest service branch established by the motor manufacturer and located in principal cities throughout the United States. Each motor manufacturer issues a bulletin giving complete and detailed information for handling inoperative motors both within and out-of-warranty, as well as a listing of their authorized service branches.

a. To check motor:

1) See if motor is getting voltage. If there is voltage, the motor must be replaced.

2) Before installing another motor is is important to determine the cause of the original failure. Below is a list of possible reasons:

a. extremely low voltage conditions

b. poor connections

c. foreign matter in bearings or switch mechanism of the motor

d. wattage overload

WATTAGE CHECKING

This is an accurate and convenient method of determining proper automatic washer operation. Covered in the following are the maximum permissible wattages for normal operation at 110-120 volts. Also covered, are methods and procedures for performing a wattage check and some trouble diagnosis hints.

No-Load Motor Wattage

Since single-speed, two-speed and three-speed motors are used in automatic washers, the Wattage Chart does not include "no-load motor wattage". Therefore, before making a wattage check, the "no-load motor wattage" must be determined. This is done by slipping the belt from the motor pulley and taking a wattage reading with only the machine motor in operation.

Factory specifications for the standard capacity automatic washer allow a maximum of 165 watts for single speed motors and 210 watts for two speed motors in the high speed winding. The motors for the large capacity units will average 225 watts.

A typical determination of allowable wattage limits for an automatic washer operating at 120 volts is as follows:

1) Determine the "no-load wattage" of the motor by checking it with the belt off.

2) Rewind the belt on the pulleys and check wattage in accordance with the chart below.

Speed	Load	Std. Capacity Max. Watts	Large Capacity Max. Watts
500-525	None	360	380
Spin with locked basket		800	910
Idle	None	425	490

Proper clutch operation is to be analyzed by comparison of maximum allowable wattage, acceleration time, and spin speed as determined with the use of a tachometer.

1) Should not exceed 630 watts plus motor watts at start of spin.

2) Should drop below a maximum of 410 watts plus motor watts within 20 seconds.

NOTE: Basket speeds can be determined only with the use of a tachometer. Tape the agitator drive lug to the basket center post or stuff a towel under the edge of the agitator so the agitator drive lug will spin at basket speed. Tachometer readings should be made from the drive lug or from the agitator cap. Speed should read no less than 500 R.P.M.

Factors Which May Result In High Wattage.

1) Drive Belt - Too tight.

2) Pump - Impeller shaft tight in bearings. Foreign material in pump housings.

3) Spin Tube - Misaligned with center post bearings or bearings too tight. Misalignment can usually be corrected by loosening the three gear case braces and mounting bolts with the machine standing upright and then re-tightening them. This will allow the assembly to re-align itself in the center post.

Factors Which May Result in Slow Spin Speed.

1) Drive belt bottoming in motor pulley — The outer edge of the belt should ride slightly above the edge of the pulley. If the belt bottoms, replace belt.

2) Loose belt - on large capacity units, retension a used belt to 20 # ± 2. The belt on a standard capacity unit should be retensioned to 18# ± 2. See page 30 for belt adjustment procedure.

3) Oil on Belt — Replace belt.

4) Oil on Clutch Lining — Clean or replace.

5) Improperly adjusted brake yoke — Yoke is to be adjusted so a maximum of 1/16" clearance exists between clutch and basket drive pulley facing.

b. To remove main machine motor:

1) Lay washer on its side or back, whichever is the most practical for the installation.

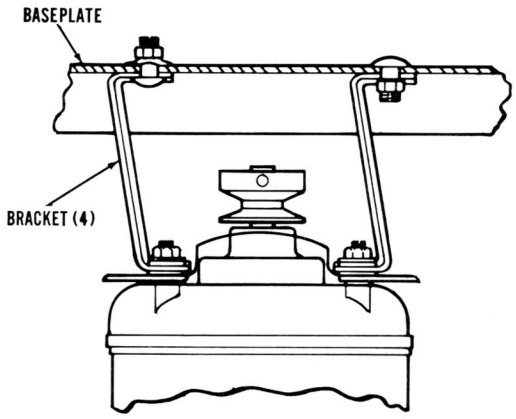


FIGURE A-20

2) Remove belt from motor pulley.

3) Disconnect harness terminals to motor.

4) Remove nuts from both cap screws holding motor and brackets to baseplate. Figure A-20.

5) Remove four (4) nuts holding brackets and grommet assemblies to motor mounting bolts.

c. To install motor:

Reverse procedure above and wire as indicated in Figures A-17, A-18, A-19.

Since 1963 all vendor names have been removed from motors and replaced by a vendor code. This code is as follows:

VENDOR	CODE
Emerson	E113
General Electric	G553
Delco	D397

This code marking is found on the motor bell end.

Note that the motor terminals are coded to match the harness wires.

5. Lights

Some models are equipped with either fluorescent or incandescent lights. Operation of the lights is controlled through the master switch BK-WG in the timer. This switch automatically turns the light off at the end of a cycle.

a. To remove incandescent lamps:

1) Remove the console rear cover.

2) Fold lamp shield back.

3) Push down on bulb and turn to remove.

b. To remove the fluorescent lamp:

1) Remove the console rear panel.

2) Turn the lamp in order to release the contact prongs at each end.

3) Pull gently in an up direction on the lamp.

6. Wiring

The wiring for the automatic washer consists of a power cord, a multi-circuit wiring harness, and wiring leads which are a part of certain electrical components such as lamp sockets and some timer motors.

All harness leads are color coded as a simpler aid in connecting leads to the proper terminals. Refer to the following table.

Terminal Color Code	Harness Lead Color
BK	Black
BR	Brown
BR-R	Brown with Red Tracer
BU	Blue
LBU	Light Blue
BU-R	Blue with Red Tracer
BU-Y	Blue with Yellow Tracer
G-BK	Green with Black Tracer
OR	Orange
O-BK	Orange with Black Tracer
P	Pink
P-G	Pink with Green Tracer
R	Red
T	Tan
V	Violet
W	White
Y	Yellow
Y-G	Yellow with Green Tracer
Y-R	Yellow with Red Tracer
BU-G	Blue with Green Tracer
W-G	White with Green Tracer
GY-P	Gray with Pink Tracer
GY	Gray

Individual terminals of the various types used on the wiring harness are available and can be ordered if required.

Check the parts lists for correct part numbers.

B. WATER SYSTEM

The water system consists of all valves, pumps, filters and hoses which are associated with filling and emptying the tub.

1. Water Inlet Valves

There are two basic types of water inlet valves used on automatic washers. These are: the single-solenoid type shut-off valve and the two-solenoid type mixing valve.

The main valve bodies are made of nylon and come equipped with plastic sealed solenoids.

The valve body has standard garden hose threaded inlets and a 1/2 inch non-threaded outlet. Monel screens are inserted in the inlets to prevent rust particles, and other foreign matter often found in water, from entering the valve.

Water flows through the valves (both hot and cold) is controlled by individual rubber diaphragms. A spring-loaded armature, inserted in a solenoid guide, is secured over each diaphragm on the valve body by a mounting bracket and screws. A solenoid coil is mounted over each guide, which when energized pulls the armature away from the diaphragm, permitting water to flow into the machine. (See Figure B-1)

SINGLE SOLENOID TYPE

The single inlet valve is mainly a shut-off valve for controlling water entering the machine. It requires only one inlet hose which is generally attached to a "Y" hose. The "Y" hose connects to both Hot and Cold faucets which allows adjustment of the water temperature entering the machine.

TWO-SOLENOID TYPE

Water inlet valves equipped with two inlets are called mixing valves because they actually mix the cold water with the hot water, Figure B-2.

On the two-solenoid mixing valve three temperatures of water are available. HOT, WARM and COLD. When the hot water solenoid is energized only hot water is permitted to enter the machine. Energizing of the cold water solenoid permits only cold water to enter the machine. To obtain warm water, both the hot and cold water solenoids are energized.

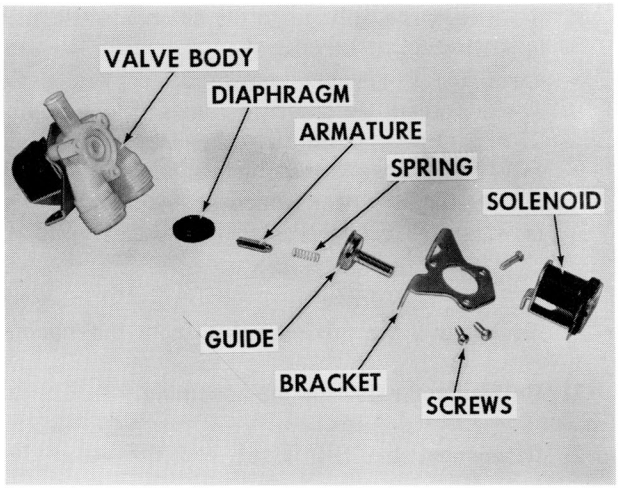


FIGURE B-1

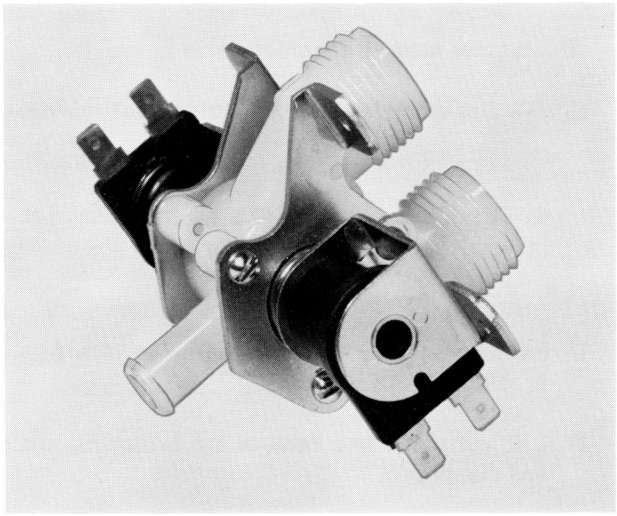


FIGURE B-2

a. To check:

1) Check for clogged strainers in water inlet valve. Also clean or replace any clogged strainers. Valve may have been exposed to freezing temperatures, forming ice that will block passages and may require replacement of diaphragms or even the housing.

   Too great a variation between the water pressure on the hot and cold side of the valve can cause temperature variations when the temperature switch is set on WARM.

2) If the water temperature at the inlet to the valve appears to be hot enough, but it seems to be considerably cooler when entering the tub even though the selector is set on HOT; then check the cold side of the valve to see if there is an abnormal condition which would permit cold water to enter the valve body and mix with hot water.

3) If there is no voltage to the solenoids but water is still passing through the valve, take the valve apart and thoroughly inspect for corrosion that would prevent the solenoid plunger from closing. Dirt particles under the diaphragms or check valves and holes in the diaphragms will also permit water to pass through. Make sure good screens are properly placed in the valve inlets.

b. To remove the mixing valve from the machine:

1) Unlatch and raise the top assembly.

2) Disconnect the fill hoses and the water inlet hose from the valve body.

3) Disconnect the harness terminals from the solenoid coils.

4) Remove screws attaching valve to cabinet.

c. To disassemble the mixing valve (See Figure B-1):

NOTE: Each solenoid has an individual set of internal parts. To replace or clean any of these parts:

1) Remove screws securing the solenoid and guide bracket to the valve body.

2) Lift out guide and remove the armature, spring and diaphragm.

3) Clean or replace any part which appears defective.

2. Two-Way Valves

The two-way valve is used only on machines with a suds return system. The purpose of this valve is to open and close the suds port and drain port in accordance with the particular requirements during the cycle of operation of the automatic washer.

When the solenoid which controls the operation of this valve is energized the suds port is open and the drain port closed. When the solenoid is de-energized the suds port is closed and the drain port is opened, Figure B-3.

The main component parts of the two-way valve are a "T" solenoid, an operating lever, two coil springs, a die cast metal cover, a rubber diaphragm and a die cast metal body.

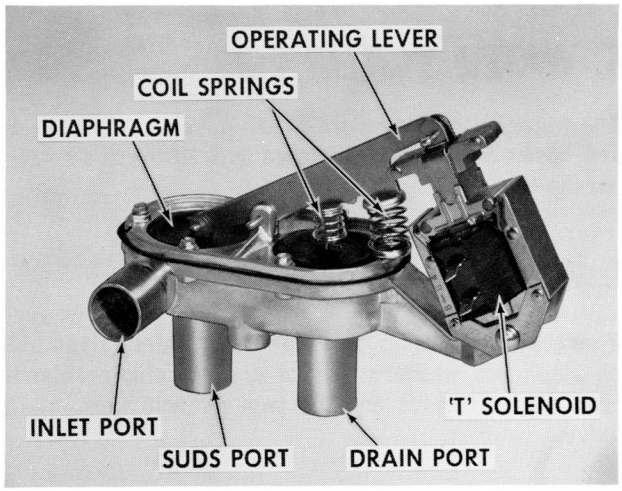


FIGURE B-3

a. To remove for servicing:

1) Remove the rear panel of the machine.

2) Disconnect the three hoses from the valve body.

3) Disconnect the two wiring leads from the valve solenoid.

4) Remove mounting screw and lift out the valve.

b. Checking the valve:

1) See if upper spring is in place.

2) See if upper spring has sufficient tension to close the suds port.

3) Check that the armature travel is sufficient to allow the lever arm to seat the diaphragm at the suds port.

4) Check the seating of the diaphragm. Clean ports thoroughly to remove any foreign particles which may be causing improper seating.

3. Water Pumps

The Uni-Directional Pump, Figure B-4 used on all models, derives its name from the fact that its impeller turns in one direction only, at all times, yet it performs the functions of discharge, recirculation and suds return.

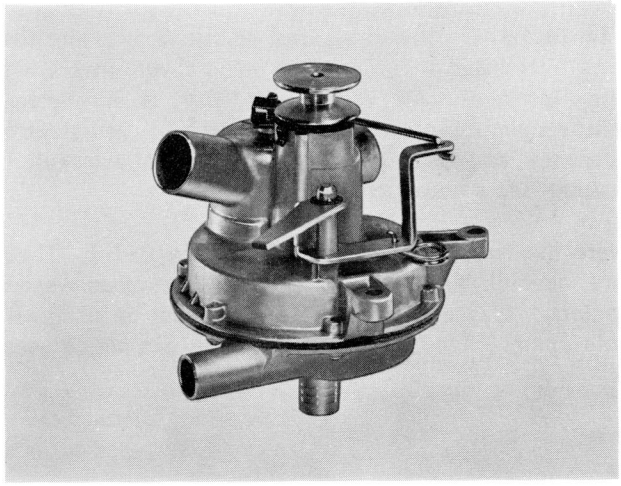


FIGURE B-4

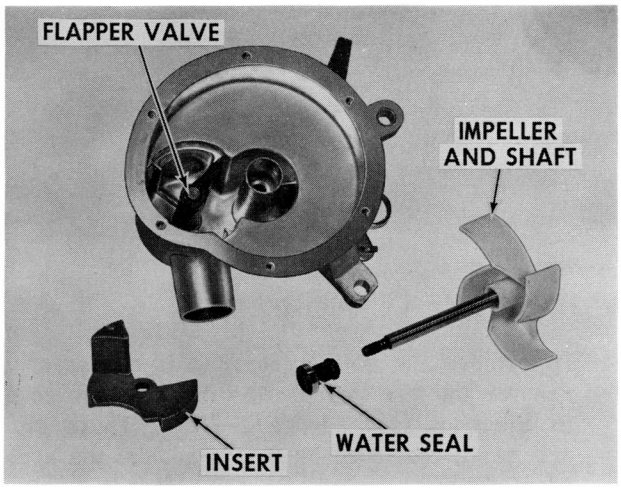


FIGURE B-5

The direction of flow is controlled by the flipping action of a flapper valve, Figure B-5, actuated by the agitator cam bar. An off-center toggle spring holds the valve in either of its two positions. This pump is mounted in a fixed position on the gear case, Figure B-6; thus no additional parts such as compression springs, pivot assembly and mounting brackets are needed. The pump receives it driving power from the main drive belt at all times.

The recirculation section of the pump, see Figure B-7, is used in conjunction with the built-in lint filter. In addition to discharging both the wash and rinse water from the tub and returning the suds water to the

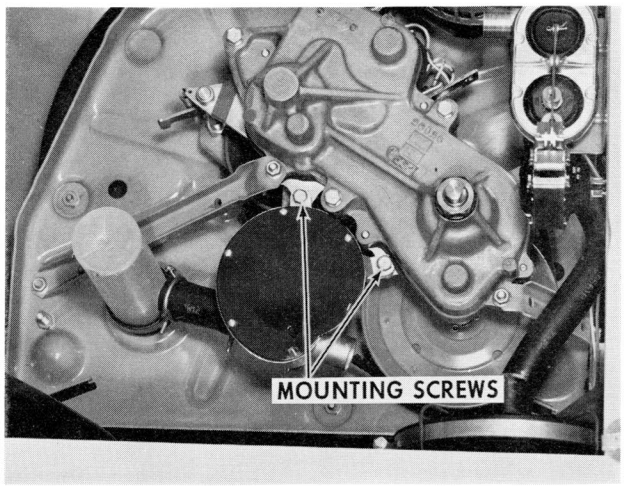


FIGURE B-6

machine, this pump will also recirculate the water from the bottom of the tub to the top of the machine where lint and soil deposits can be filtered out of the water as the clothes are being washed and rinsed.

The additional parts required for this function of recirculation are an impeller, which screws onto the bottom of the same impeller shaft on which the regular pump impeller is mounted, a recirculation pump housing and a gasket.

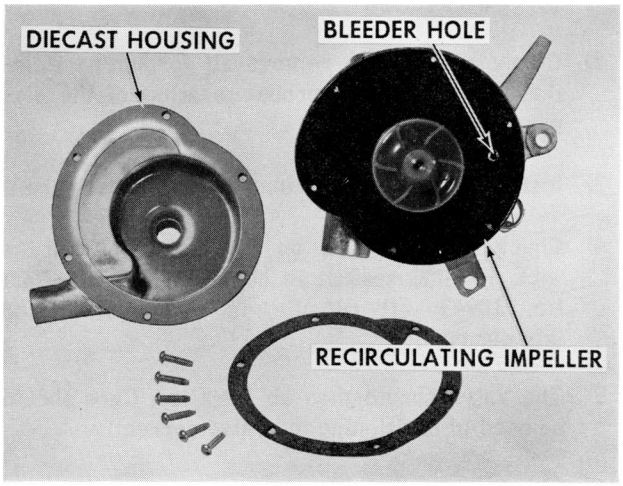


FIGURE B-7

a. Disassembly of the pump:

1) Recirculation pumps:

a. Remove housing and gasket.

b. Unscrew the recirculation impeller before removing the main impeller assembly.

c. Follow steps under non-recirculating pumps.

2) Non-recirculating pumps:

a. Remove the lower cover and gasket.

b. Unscrew the drive pulley from the impeller shaft.

c. Remove impeller and shaft assembly.

d. Remove water seal and carbon washer.

3) Lift the insert out of the pump body.

4) Remove the valve lever from the valve shaft.

5) Remove the valve from the pump body.

6) Dry off the stud clips from the top of the control lever and the toggle spring.

7) Remove all control parts from the top of the valve body.

b. Reassembly of the pump:

1) Inspect all parts carefully. Replace all worn or corroded parts.

2) Clean the valve to remove all foreign particles that might prevent proper seating of the diaphragm.

3) Install a new "O" ring on the valve shaft.

4) Check the felt wick on the pump body. If the wick is dry, soak it in heavy turbine oil. Part No. 10943, oil capsule, is recommended for this purpose.

5) The valve should then be installed. Care should be used in positioning the valve correctly.

6) Place the insert in the proper position.

7) Install the pulley on the impeller shaft with the thick flange down.

8) Press the retaining rings (stud clips) on top of control arm. The rings should be pressed as far as possible without coming in contact with the spring or lever.

PLASTIC PUMP

Figure B-7-1 illustrates the plastic body pump that was introduced in 1966. The body, cover, insert, and impeller are made of asbestos filled polypropylene. The properties of polypropylene make it resistant to bleaches and other laundry aids and also result in quieter pump operation.

Note the two mounting bolts in Figure B-7-1. These are special bolts with a specially designed washer fastened to the bolt- -these bolts must be used with this pump. Previous mounting bolts can not be used.

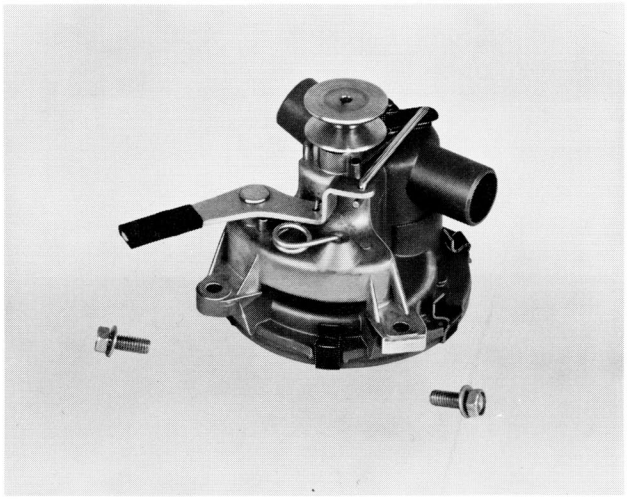


FIGURE B-7-1

a. Disassembly of the plastic pump:

1) To remove the bottom cover it is necessary to remove the six spring clips that hold the cover to the body (see Figure B-7-2). These clips are easily removed by prying against the upper edge with a screwdriver. The gasket is removed by lifting out of the groove in the cover.

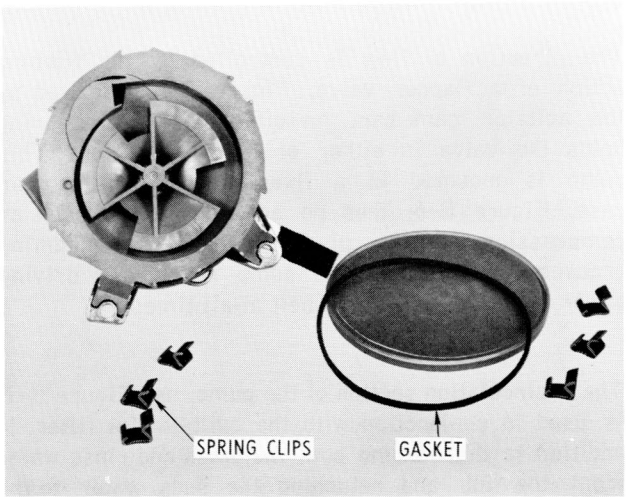


FIGURE B-7-2

2) The impeller and shaft assembly is removed by unthreading the pulley. (see Figure B-7-3). The seal is made of two pieces, one of which has four ridges which fit into grooves in the impeller. The other part of the seal contacts a seal face to form a tight, waterproof seal. The seal face may be removed by prying it out of the body.

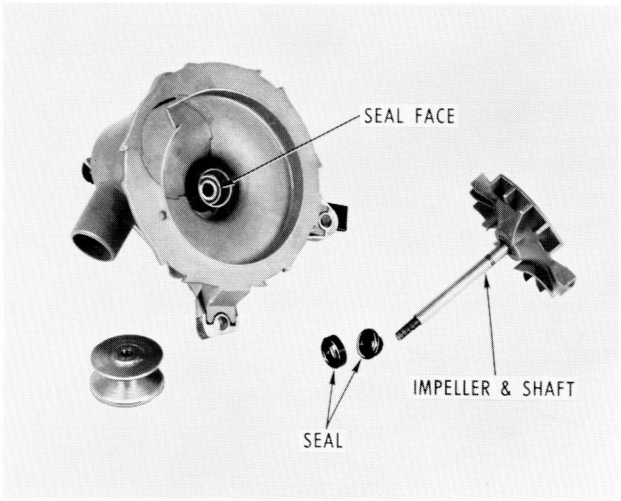


FIGURE B-7-3

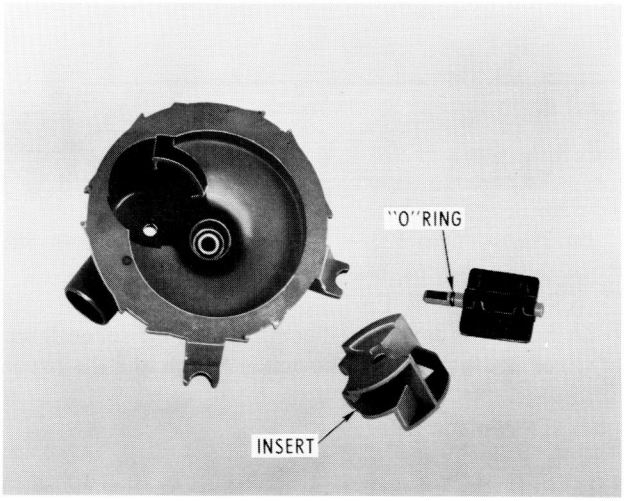


FIGURE B-7-4

3) The insert (see Figure B-7-4) is removed by lifting out of the body. Applying pressure to the top of the flapper valve shaft will facilitate removal. The flapper valve lifts out of the body and the "O" ring can be rolled off the shaft.

4) Figure B-7-5 shows the upper part of the pump disassembled. Two bronze oilite bearings are lubricated from a cavity in the bearing block that is filled with Penmawich. In the event of a bearing failure the entire bearing block can be replaced, eliminating the need for drill presses and other equipment formerly used to replace bearings.

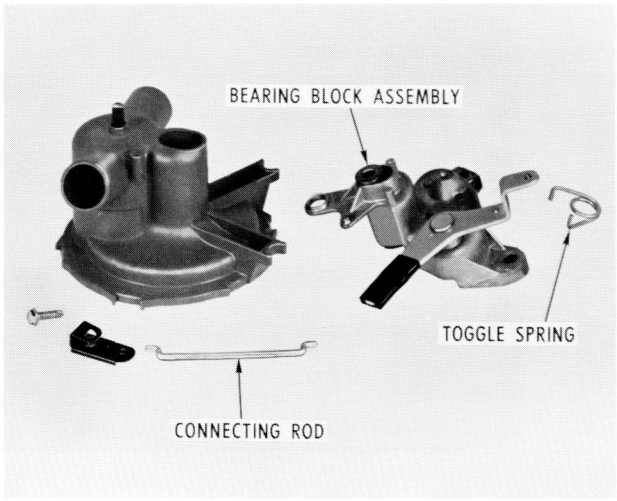


FIGURE B-7-5

5) To remove the bearing block, first remove the screw fastening the block to the body. Remove the valve lever by prying up with a screwdriver while holding the rubber tipped lever in the center position. The connecting rod and toggle spring will fall out of position and the bearing block can be lifted from the housing.

Figure B-7-6 is simply an illustration showing all the parts in the new pump.

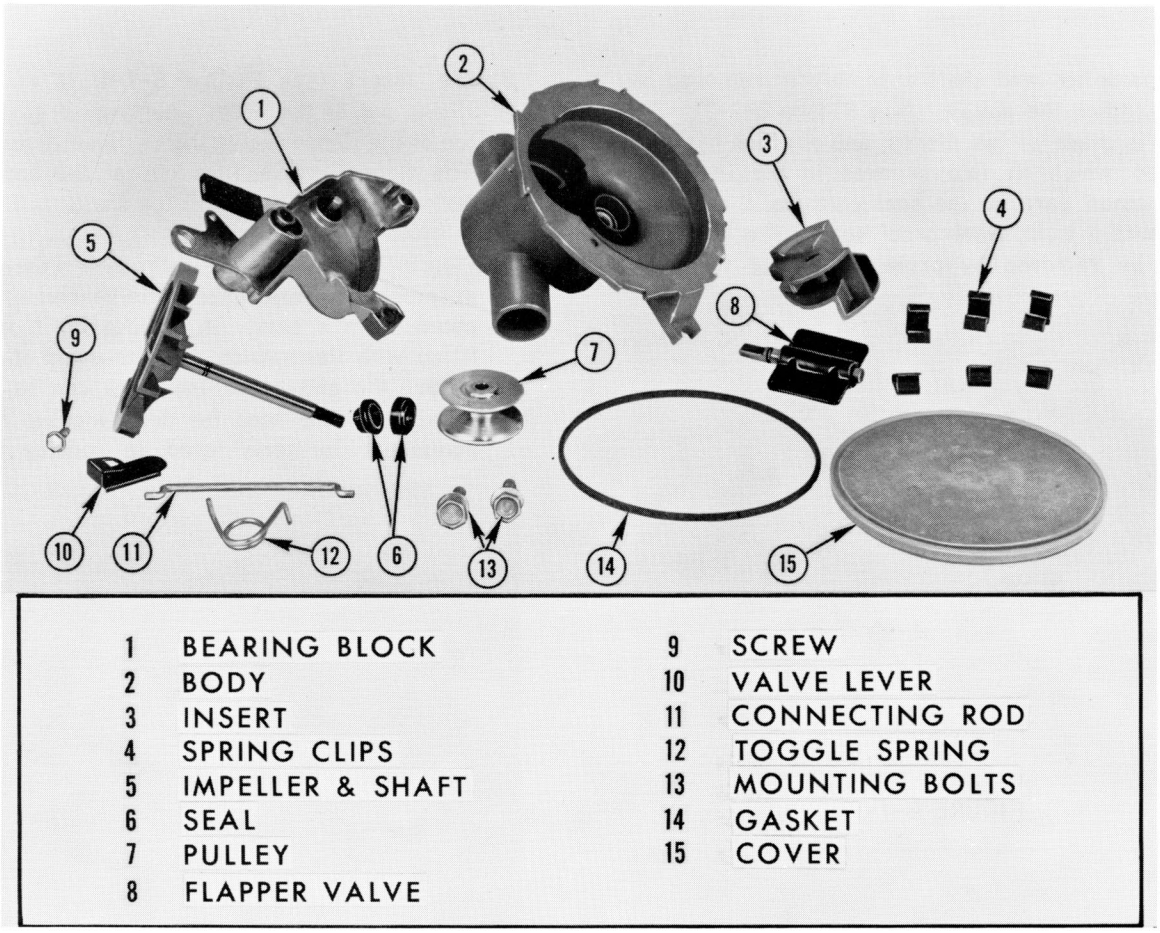


FIGURE B-7-6

4. Filters

A brush-type filter is used on some automatic washers. This is a full time filter which can also be used as a detergent dispenser. The filter housing is attached to the top with the opening for the filter in the lid well.

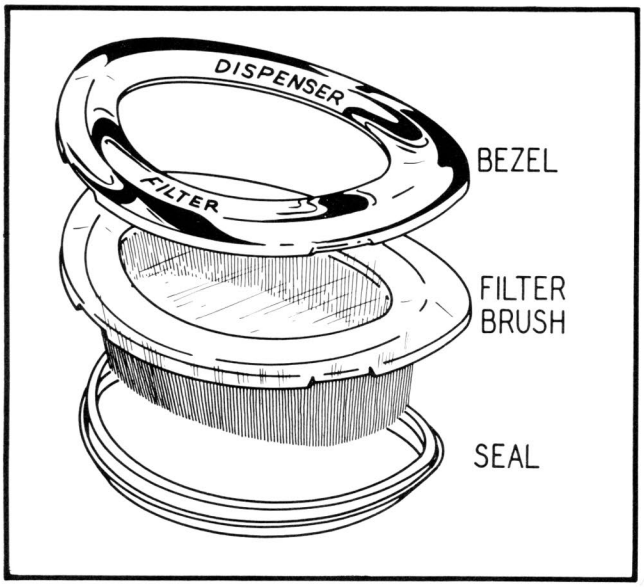


FIGURE B-8

a. To remove filter:

1) The brush filter assembly is separated into three serviceable parts, Figure B-8.

2) Snap off bezel by inserting a small screwdriver or knife between the bezel flange and the brush.

b. To replace filter:

1) Roll the gasket into position on the brush. It should not be cemented.

2) Insert the brush.

3) Install the bezel by crimping the bezel flange over the indentations in the brush handle.

c. Removal of filter housing:

Method No. 1

With filter in place, apply pressure on the housing and push the gasket down through the top.

Method No. 2

1) Remove the filter.

2) Using a screwdriver, carefully dislodge the gasket around the housing.

3) Push the gasket through the top.

Magic Clean Filter - This is a self-cleaning filter that utilizes a maze and diaphragm to perform its function of effectively catching lint and then disposing of the lint.

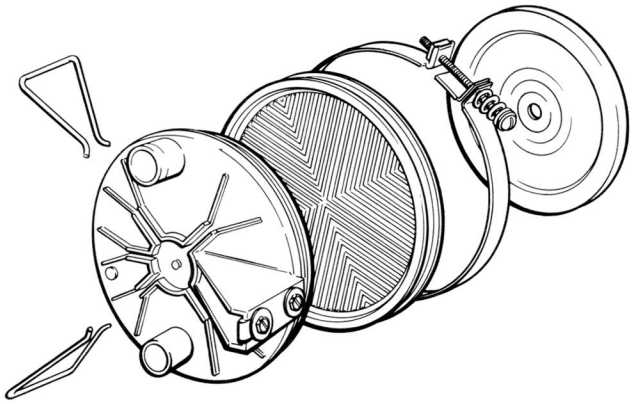


FIGURE B-9

Also incorporated into this filtering system is a plastic bodied flapper check valve which is attached to the tub at the same location as the recirculation drain funnel used on other models. The purpose of the check valve is to allow water to flow from the tub during recirculation and to prevent water from entering the tub during pumpout.

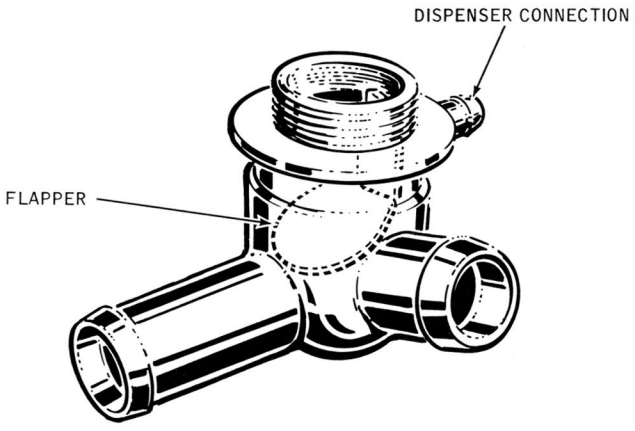


FIGURE B-10

Machines built as suds-miser models use a bracket attached to the back lower cabinet channel rail for mounting the two-way valve.

WATER FLOW

A - Recirculating flow - occurs during wash and rinse agitation. During this part of the cycle the filter light on the console is on and is controlled by timer contacts "Y" (agitation). Water is pumped from the tub, through the side check valve, and enters the bottom of the filter. The water then flows through the maze which catches and retains the lint. Water exits the filter at the top and flows through the drain side of the two-way valve, to the pump, and back to the bottom outlet of the tub.

RECIRCULATING FLOW (SUDS)

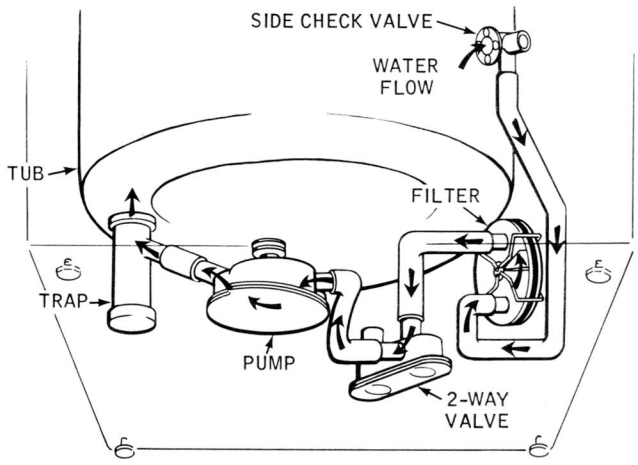


FIGURE B-11

B - Suds Storage - Water flow is from the bottom of the tub to the manifold, through the pump and suds side of the two-way valve and out the suds save discharge hose. Note that the filter is bypassed during this function.

SUDS STORAGE FLOW

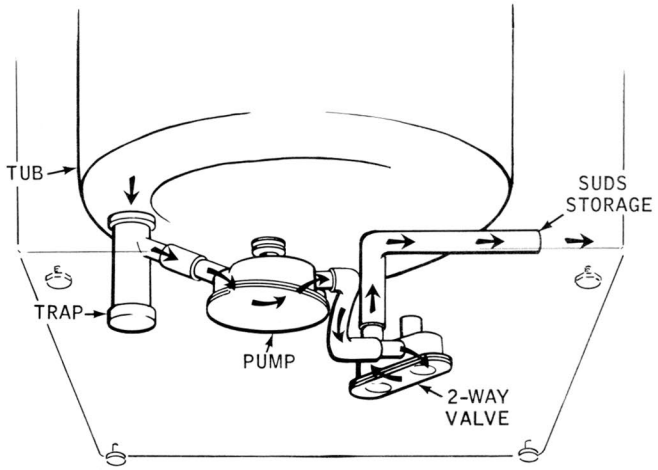


FIGURE B-12

C - Pump out drain (suds models) - during this function lint is removed from the filter. Water flows from the tub through the manifold and pump, through the drain side of the two-way valve and into the top of the filter. The water entering the top of the filter causes the diaphragm to expand, thus freeing the lint so that the lint can be flushed out of the bottom of the filter, through the side check valve, and out the drain discharge hose.

PUMP OUT DRAIN (SUDS)

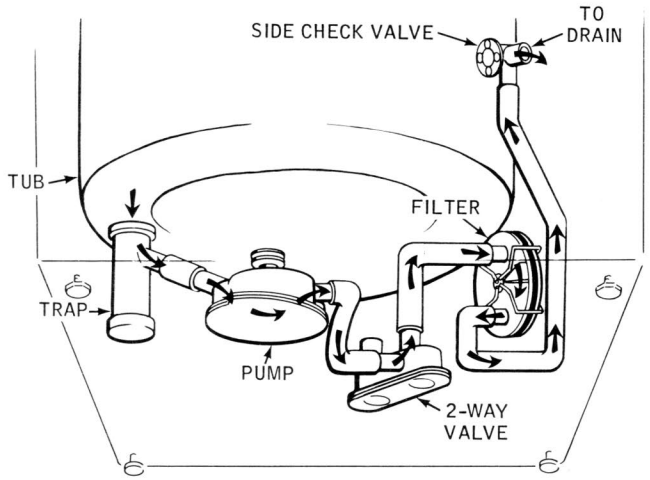


FIGURE B-13

D - Suds Return - suds water is drawn through the suds hose and two-way valve into the pump and discharged into the bottom of the tub. Note that the water flow bypasses the filter during this function.

SUDS RETURN

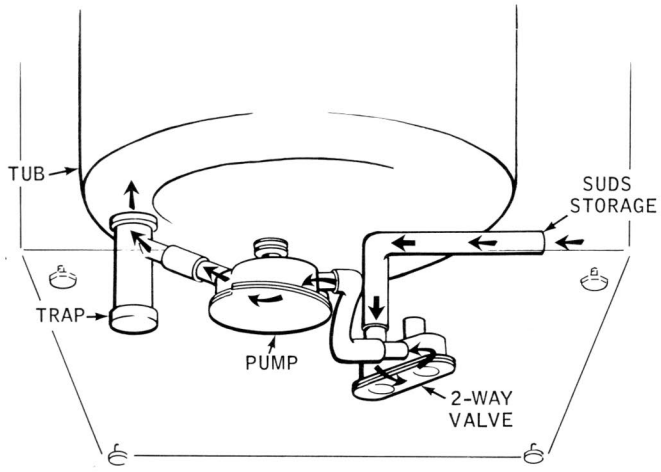


FIGURE B-14

E - Recirculating flow (non-Suds models) is in the same manner as paragraph "A" except that the water flows directly from the top of the filter into the pump since the two-way valve is not used.

RECIRCULATING FLOW (NON - SUDS)

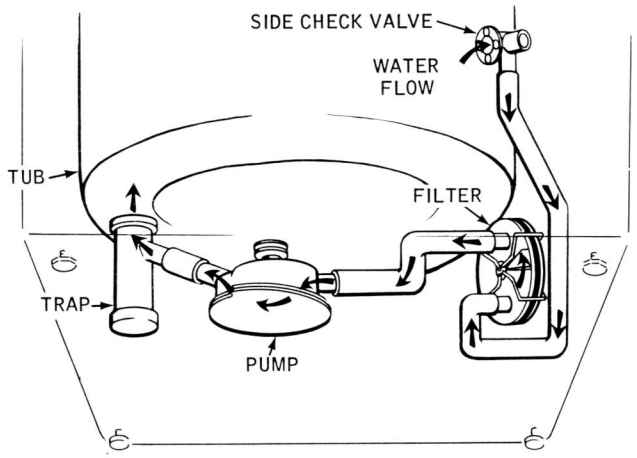


FIGURE B-15

F - Pump out drain (Non-Suds models) is in the same manner as paragraph "C" except that water flows directly from the pump into the top of the filter since the two-way valve is not used.

PUMP OUT DRAIN (NON - SUDS)

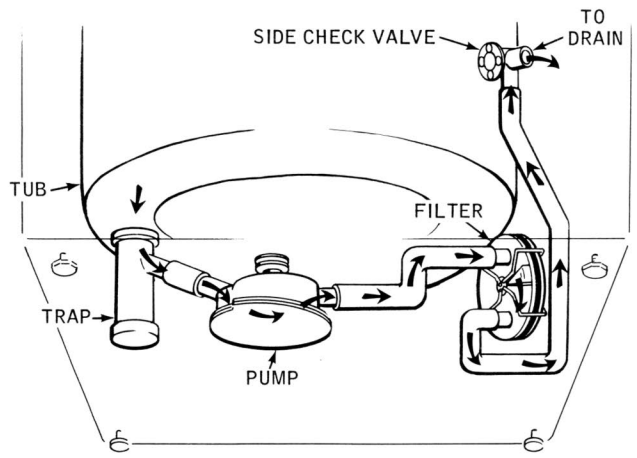


FIGURE B-16

a. To remove filter:

1) Remove the rear panel of the machine.

2) Remove 2 screws securing filter to cabinet rear.

3) Remove 2 hoses from filter. (NOTE: The filter and hoses will have water in them - catch water in a pan or bucket.)

b. To disassemble filter:

1) Remove 4 spring clips holding assembly together.

2) Loosen screw securing ring clamp.

3) Filter may now be separated (see Figure B-9).

c. To reassemble filter:

1) Reverse disassembly procedure.

2) Wipe filter port and inside of hose dry.

3) Apply Goodyear Pliobond to filter port and inside of hose. Allow Pliobond to set for a few minutes before assembling hose and clamp to filter.

5. Hoses

All hoses used on RCA WHIRLPOOL Automatic Washers are especially designed for the specific purpose for which they are used and must meet rigid specifications as set forth by the Whirlpool Corporation. Always insist upon "Factory Specified Parts" — especially hoses.

WATER INLET HOSES

A filter washer is provided for each hose and is to be installed cup side up in the hose end that is to be attached to the faucet. A standard rubber washer is provided for use in the end that attaches to the valve.

A 1/2 inch inside diameter rubber molded hose is used to carry the water from the outlet valve to a water inlet funnel or nozzle, Figure B-17. This nozzle provides an air gap or vacuum break to prevent the wash water from being siphoned back into the water supply.

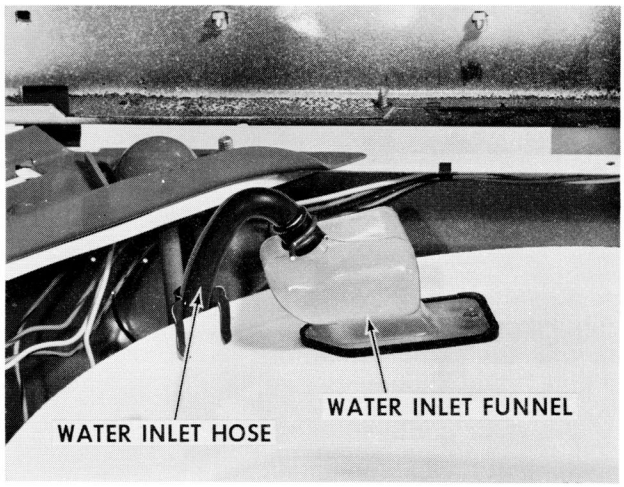


FIGURE B-17

FILL CONTROL HOSE

The fill control hose is secured to the tub by a special internal retaining ring, Figure B-18, that can be removed by use of regular or needle nose pliers.

The reducing connector that couples the fill control hose to the plastic tubing should be tightly secured to the inside of the fill control hose by an application of rubber cement.

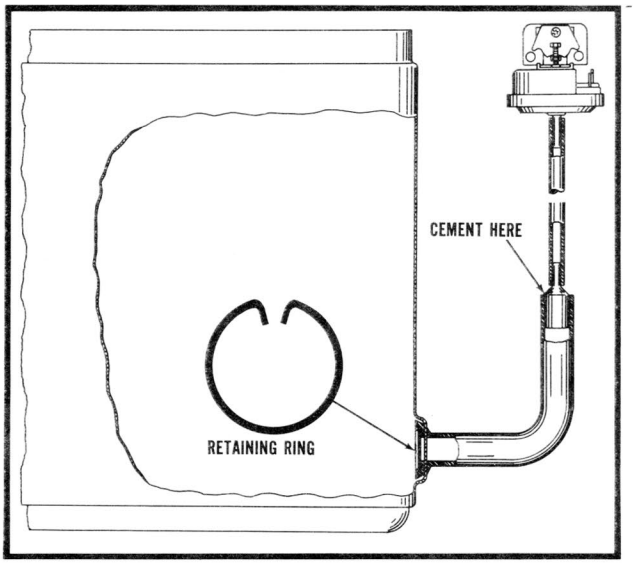


FIGURE B-18

RECIRCULATING HOSES

There are two hoses used to recirculate the water from the outer tub through the recirculating pump and through the filter.

The hose between the tub and the pump is attached to a plastic side outlet assembly which is secured to the tub side by a locking ring.

The other hose runs from the outlet of the recirculating pump to the filter housing. Because the brush filter housing is secured to the top, the recirculating hose must be removed to raise the top for servicing on these models.

PUMP OUTLET HOSE

On machines that do not have a two-way valve the hose runs from the pump outlet to a hole in the rear of the cabinet and is secured to a hose coupling by a "Corbin" hose clamp.

On machines equipped with a two-way valve, the hose runs from the pump outlet to the inlet on the two-way valve.

In all instances the pump outlet hose is secured on both ends by "Corbin" hose clamps.

DRAIN AND SUDS RETURN HOSES

On non-suds machines there is no suds return hose provided. The drain hose comes in two sections with a coupling in between. This provides a means of shortening the drain hose to fit the particular drain being used. The base section slips over the coupling protruding from the rear of the cabinet. It is anchored by means of a "Corbin" hose clamp. Another coupling is then slipped into the opposite end of this hose and the gooseneck section of the drain hose is then slipped on and attached to the opposite end of the coupling.

The suds return hose also comes in two sections. The base section is the same as that used with the gooseneck drain hose while the other section has a much deeper gooseneck which will extend to the bottom of the standard suds storage tub.

The end that is inserted into the tub is beveled and has a hose strainer in it to prevent heavy soil deposits and raveling from being drawn back into the machine.

TUB OUTLET HOSE

The tub outlet hose fits directly under the drain hole in the outer tub. It has a flange 2 3/4 inches in diameter which fits the sump of the base plate assembly.

The tub is then assembled on the base plate and tightened down snugly with four screws. This squeezes the flange of the tub outlet hose sufficiently to provide a tight seal; thus, preventing leaks.

Attached between the tub outlet hose and the pump is the "Manifold and Trap" assembly. This assembly is made of plastic and has a removable cap at the bottom for the cleaning of any foreign objects which may be trapped. The baffle molded in the center reduces the sucking noise made by the pump during operation.

PRESSURE SWITCH HOSE

The hose used with the pressure type water level switch is coupled to a 3/16 inch inside diameter vinyl plastic tube by means of a reduce coupling, Figure B-19. The other end of the coupling has an outside diameter of 27/32 inch at the lower end and 1/8 inch at the upper end. This permits very little water to pass into the plastic tube but does build up sufficient air pressure in this tube to actuate the switch at a pre-established water level.

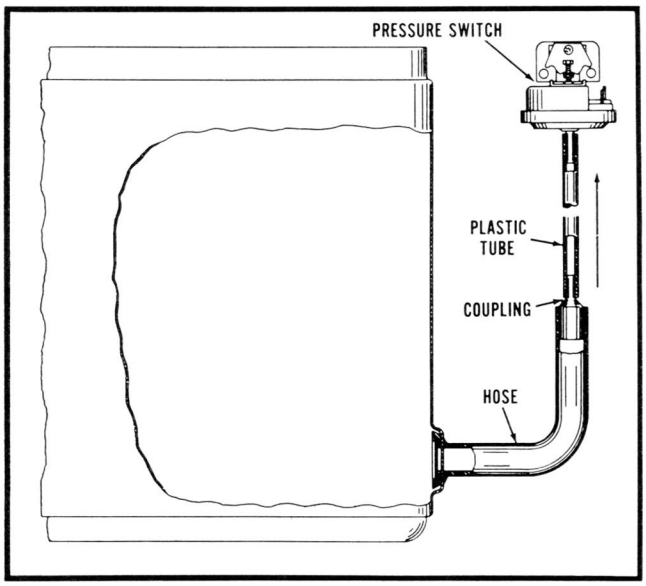


FIGURE B-19

6. Dispensers

(RINSE CONDITIONER AND BLEACH)

ELECTRIC DISPENSERS

The combination rinse conditioner and bleach dispenser is used on the Mark XII Series Automatic Washer. The Imperial Series uses the same assembly, however utilizes only the bleach dispenser.

The rinse conditioner and bleach dispensers are located at the left front corner of the machine under the lid and are single load type dispensers. (Figure B-20) When rinse conditioner or bleach is to be used, pour the measured amount of liquid from a cup into the proper dispenser at the time when clothes are being added to the machine. The dispensers are electrically controlled to add the liquid through the recirculating water system into the wash load at the proper time during the machine cycle. CAUTION: Use only liquid bleach in bleach dispenser. Dilute rinse conditioner before pouring into rinse conditioner dispenser.



FIGURE B-20

A reservoir for holding the liquids is divided into two cavities. Each dispenser is operated by an independent solenoid which raises a plunger type plug, releasing liquid into the recirculating system, Figure B-21.

Bleach is dispensed two increments (or 4 minutes) before the end of the wash period. The rinse conditioner is dispensed during deep rinse fill.

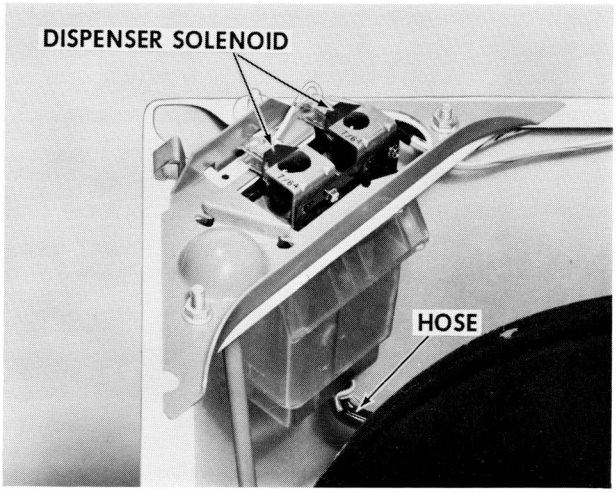


FIGURE B-21

a. To remove dispenser bezel:

Apply downward thumb pressure on the rear rim of the bezel and lift out of the top.

This part may be used interchangeably on all past models by removing the bezel and tray and snapping the new part in place.

b. To replace the dispenser solenoids:

1) Unlatch and raise top assembly.

2) Disconnect harness terminals from coil.

3) Slip coil assembly sideways to release attaching clip from bracket.

c. To replace dispenser stopper assembly:

1) Remove dispenser solenoids. See Figure B-21.

2) Release end of stopper rod from the solenoid armature.

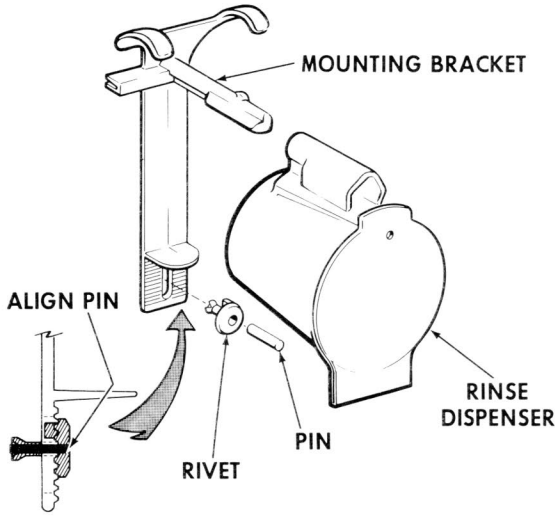


FIGURE B-22

CENTRIFUGAL RINSE DISPENSER (Figure B-22)

This dispenser is mechanically operated and does not require an electrical connection. The top of the dispenser bracket is held in place by the basket curl. An expanding plastic rivet fastened through a hole in the basket secures the bottom of the bracket.

Centrifugal force created in the first spray rinse causes the cup to move toward the basket, opening the lid. The rinse conditioner remains in the dispenser cup until the basket stops spinning at deep rinse fill. NOTE: For proper operation, the rinse conditioner must be diluted. The cup, Figure B-22, is marked with 1-ounce graduations.

a. To remove dispenser cup:

Rotate the cup to the 7 o'clock position and pull cup off of bracket.

b. To replace dispenser cup:

Rotate cup to the 5 o'clock position and snap into place on the bracket peg.

c. To remove dispenser bracket:

1) Remove dispenser cup.

2) Drive pin out using a nail or small punch.

3) Bracket may now be removed.

C. MECHANICAL SYSTEM

GEAR CASE AND SUPERSTRUCTURE

For purposes of describing the construction and functions of this major mechanical assembly, it will be divided into two major operating units - the gear case assembly and the basket drive and brake assembly.

Both of these units are driven by the machine motor by means of a flexible V-Belt which is notched to provide a deep, non-slip drive in the pulleys.

The function of these two units are controlled by the control magnet assembly and two cam bars mounted on top of the gear case, Figure C-1.

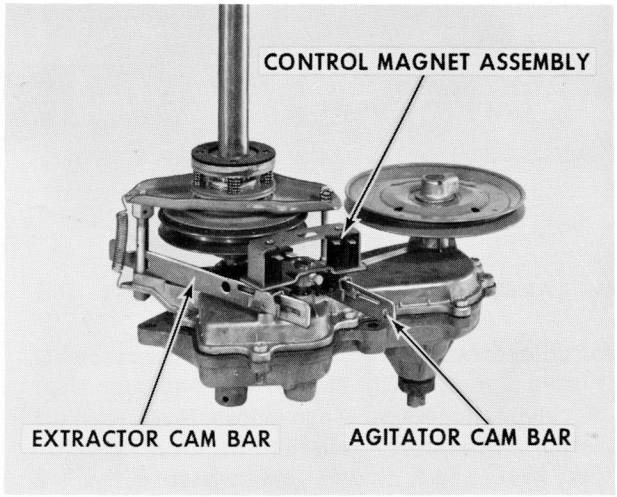


FIGURE C-1

1. Gear Case Assembly

The main function of the gear case assembly is to provide a means for driving the agitator - first in one direction; then in the other - to provide the necessary washing action. The size of the arc in which the agitator travels in each direction and the number of oscillations it makes per minute is determined by the particular design of the gears in this gear case assembly and the size of the pulleys which drive these gears. RCA WHIRLPOOL Automatic Washers are equipped with a normal stroke gear case which drives the agitator in a 195° arc, approximately 68 oscillations (or strokes) per minute at high motor speed.

The gears in the gear case are driven by a large pulley secured to the top of the main drive pinion by means of a self-locking set screw, Figure C-2. This pulley is known as the agitator drive pulley.

The main drive pinion meshes with the main drive gear which is mounted on a 1" diameter stud (Figure C-3).

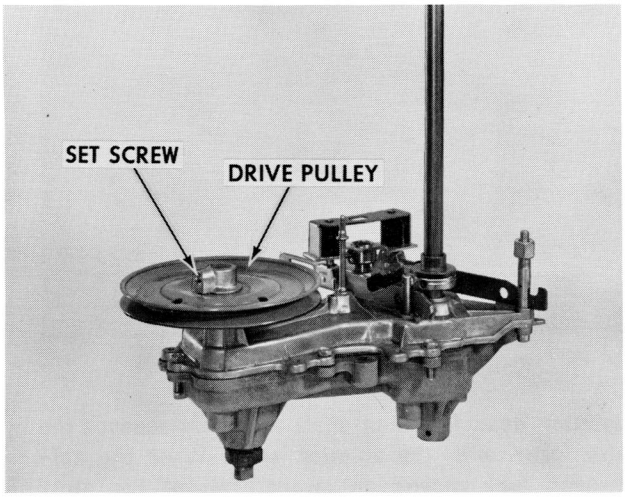


FIGURE C-2

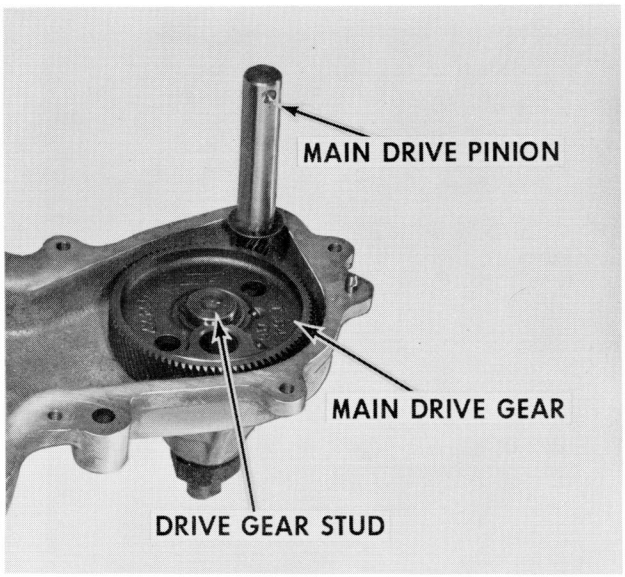


FIGURE C-3

The main drive gear is coupled to a gear sector by means of a heavy steel connecting rod (Figure C-4). Therefore, as the main drive gear rotates the sector gear oscillates. Since the sector gear meshes with the agitator gear (Figure C-4), this gear will turn first in one direction and then in the other.

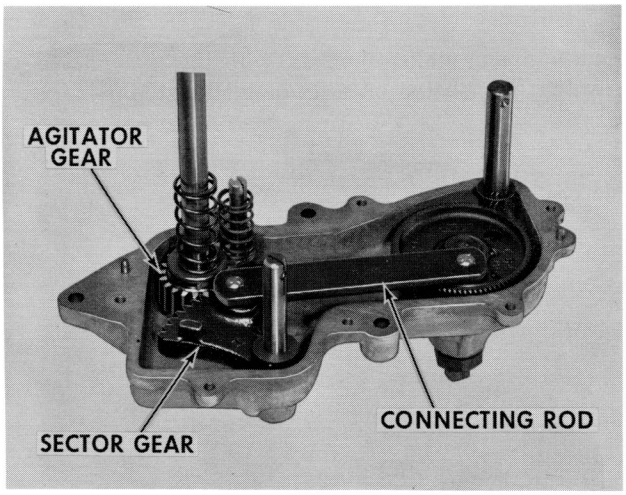


FIGURE C-4

An agitator gear fork and shaft assembly engages the agitator gear with the agitator shaft. When the agitator gear fork moves downward, two of the slots in the bottom of the gear mesh with a swedged drive pin in the agitator shaft (Figure C-5). This causes the agitator shaft to oscillate, providing the washing action or agitation in the automatic washer.

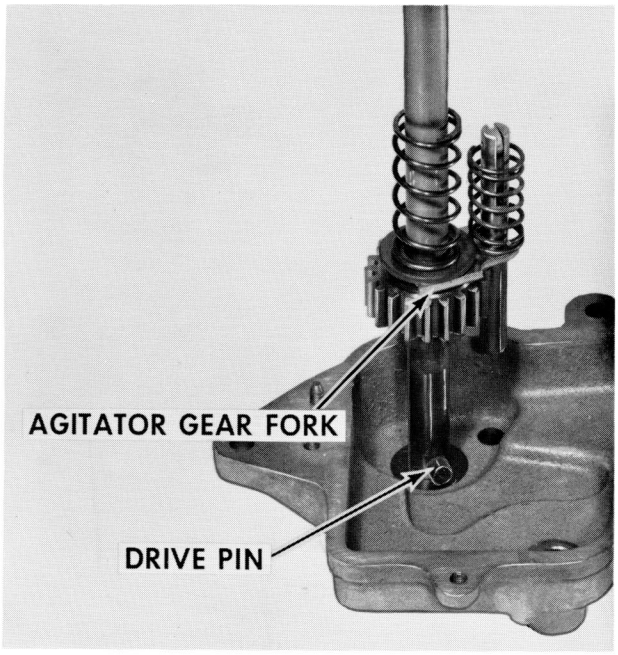


FIGURE C-5

Both the agitator shaft and the gear fork shaft are equipped with compression springs which constantly exert a downward pressure. The agitator gear fork is pulled upward by means of the agitator cam bar which slips into a slot in the agitator gear fork shaft. This action disengages the agitator gear from the agitator shaft, causing agitation to cease.

The agitator cam bar is not a part of the gear case assembly but is a part of the superstructure parts mounted on top of the gear case and is controlled by the plunger which moves up and down in the agitator solenoid. The agitator solenoid is a part of the control magnet assembly which is mounted on top of the gear sector shaft and turns back and forth with the gear sector, Figure C-6.

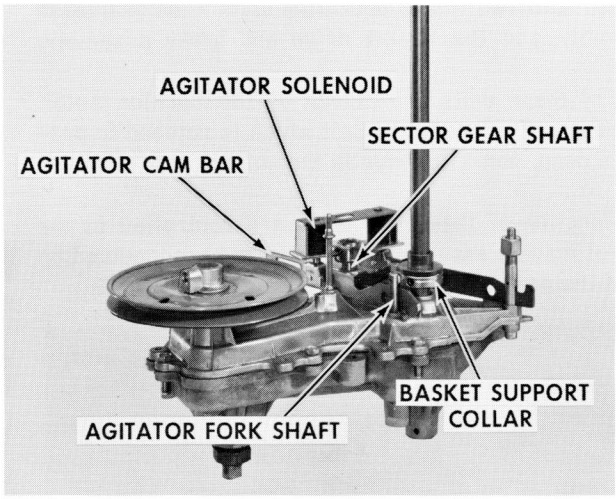


FIGURE C-6

LARGE CAPACITY GEARCASE - FIGURE C-6-1

Several differences are found in the gearcase assembly (See Figure C-6-1.) The spin tube and agitator shaft are, of course, longer to accommodate the deeper tub and basket. A polyflex belt is used on the large capacity. This belt has a much smaller cross section than the 95405 belt but it is stronger and retains tension better. The main drive pulley and spin pulley have been changed to fit the new belt.

Also, the O.D. of the pinion bearing has been increased by 3/16" to increase bearing life and reduce sound level.

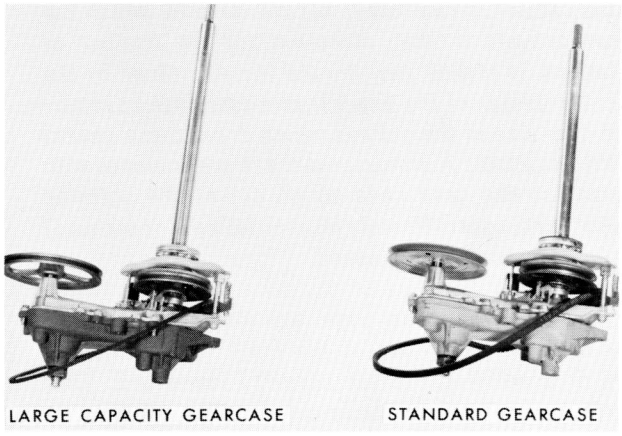


FIGURE C-6-1

2. Basket Drive & Brake Assembly

Other parts making up the superstructure on top of the gear case are associated with the spin or basket drive on the machine.

The same belt and motor pulley that supplies the power to the agitator drive pulley also drives the basket drive pulley. The basket drive pulley is a part of the basket drive and brake assembly, Figure C-7, which slips over the agitator shaft and rests on the basket support collar on top of the gear case assembly.

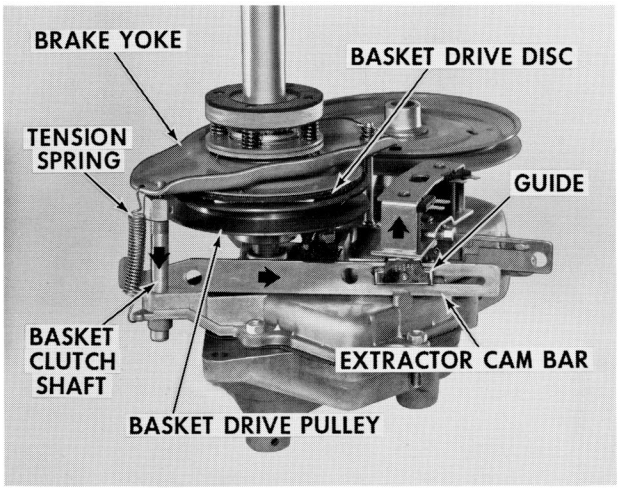


FIGURE C-7

The basket drive pulley is always revolving in a clockwise direction whenever the machine motor is running. This pulley turns freely, however, on the basket drive tube. Mounted directly above the basket drive pulley on the basket drive tube is the basket drive disc. Mounted on the drive pulley is a clutch lining which makes contact with the basket clutch plate during SPIN. The brake yoke exerts pressure downward on the basket drive plate by virtue of a tension spring hooked between the brake yoke and the gear case cover.

When the extractor solenoid is energized, its plunger is pulled upward by magnetic attraction into the center of the solenoid coil. The bottom end of this plunger straddles the extractor cam bar. A horizontal pin through the fork of this plunger rides in the slot in the cam bar. A cam bar guide also rides on each side of the cam bar, held in place by the horizontal pin. The horizontal pin in the plunger rides in the upper portion of the slot of the cam bar when the extractor solenoid is energized. Since the control magnet assembly is moving back and forth with the gear sector, this pin pulls the cam bar backward. Since the opposite end of the cam bar is inserted in a slot in the basket clutch shaft, this shaft pulls the brake yoke downward as the cam bar moves backward. This allows the bottom of the basket clutch plate to come into contact with the top facing of the revolving basket drive pulley lining.

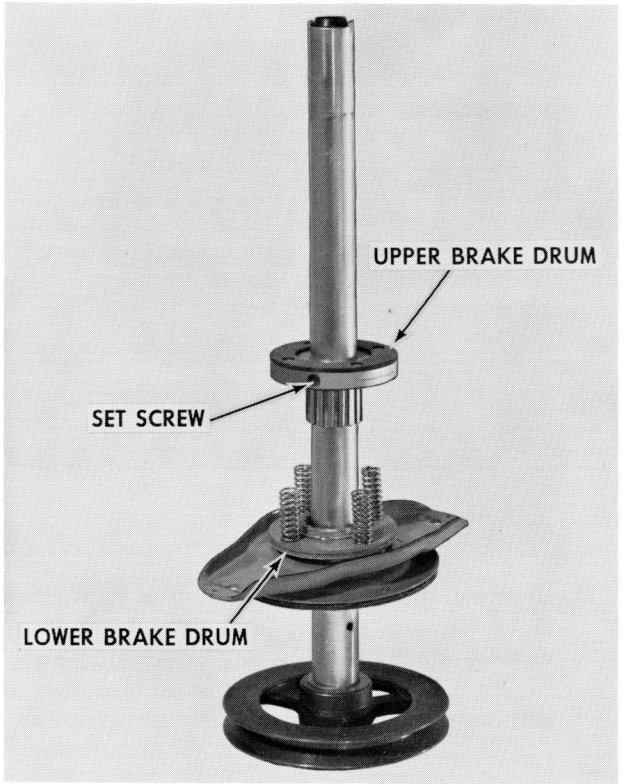


FIGURE C-8

The upper and lower brake drum assemblies turn with the basket drive disc since they are splined to fit its hub, Figure C-8. However, when the extractor solenoid is energized, the brake linings do not come into contact with their brake surfaces since the brake yoke is pulled down away from the brake drums.

Since the upper brake drum is secured to the basket drive tube by a self-locking screw, this tube always turns when the basket drive disc is engaged with the basket drive pulley.

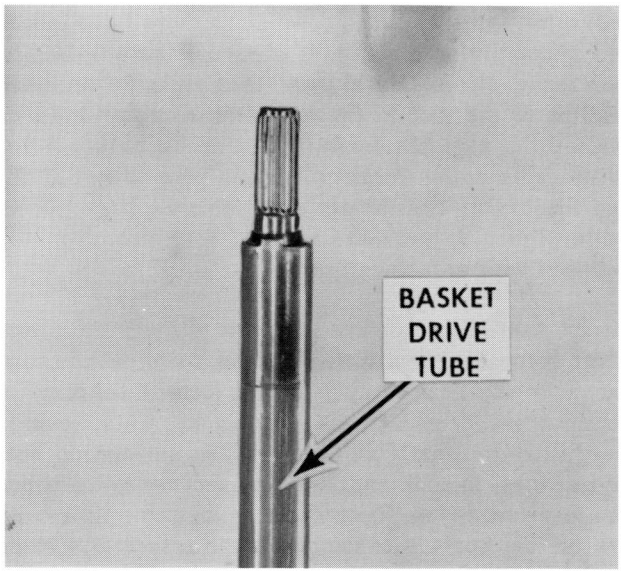


FIGURE C-9

The basket drive tube, Figure C-9, extends through the top of the center post of the base plate. There are two ears or teeth on the top surface of this drive tube which engage with notches inside the basket drive block. The basket drive block is split vertically to permit a tight fit on the top of the tube when the basket is set down over it and the spanner nut is tightened down against the top of the basket center post. This action locks the basket to the drive tube so that it turns with the drive tube.

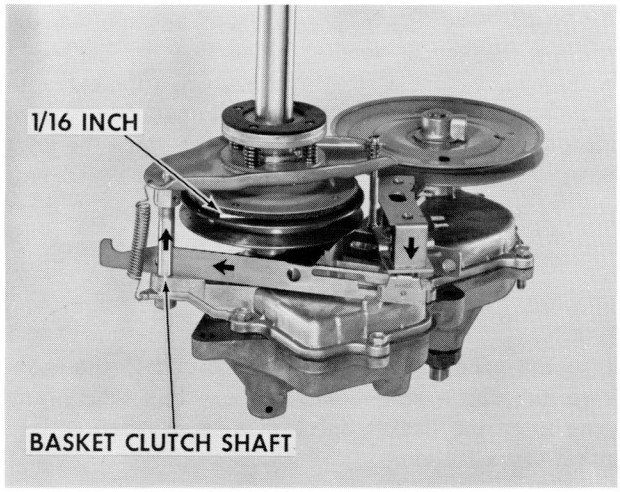


FIGURE C-10

At the end of each SPIN period in the cycle, the timer switch contacts break the circuit to the extractor solenoid. When this action occurs, the plunger in the extractor solenoid slides down since there is no longer any magnetic force pulling it upward, Figure C-10. The horizontal pin in this plunger then rides in the lower portion of the slot in the extractor cam bar and thus pushes the cam bar forward, lifting the basket clutch shaft. This action forces the brake yoke upward, pulling the basket clutch plate away from the basket drive pulley lining so that there is about 1/16 inch clearance between the two facings.

At the same time, the upward force of the brake clutch shaft brings the top surface of the brake yoke in contact with the brake lining that is located between the lower brake drum and the brake yoke. This lining is permitted to float, giving a braking surface on both of its sides. In addition, the lining secured to the upper brake drum comes in contact, at the same time, with the bottom surface of the base plate assembly, Figure C-8.

These two simultaneous braking actions bring the basket to a fast, smooth stop. Four compression springs between the two brake drums provide the necessary force for both an upper and lower braking action at the same time.

LARGE CAPACITY UNITS - FIGURE C-10-1

In addition to lengthening the basket drive tube, the brake lining material is changed to provide better braking action. The (4) brake springs (See Figure C-10-1) are the same size as on the standard superstructure but the spring rate is increased. These springs are blue-colored for identification purposes.

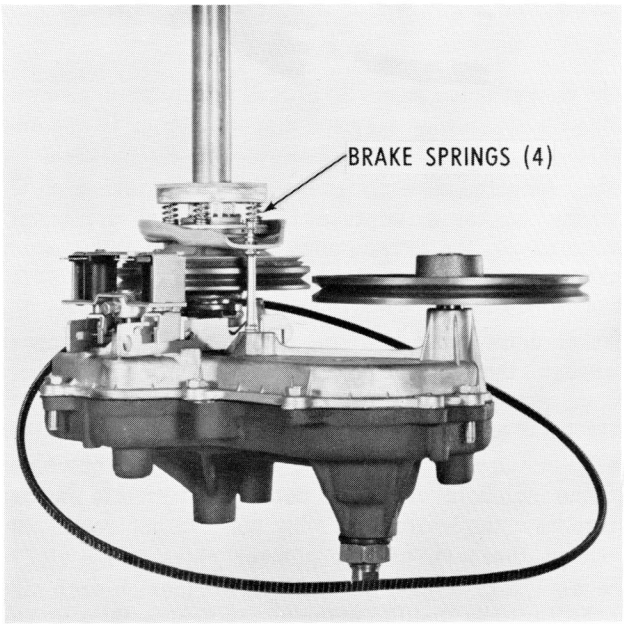


FIGURE C-10-1

a. To remove the gear case and superstructure:

1) It is not necessary to remove the top, basket or tub, but the agitator must first be removed.



FIGURE C-11

2) Unscrew the stud from the top of the agitator drive lug and remove the drive lug from the agitator shaft using the special drive lug puller, Figure C-11. Pouring hot water over the lug will make removal easier.

3) Remove the spanner nut with the special wrench. Figure C-12.

4) After disconnecting the water inlet hoses from the faucets or water inlet valve, lay the washer over on its back or side on a padded surface to protect the finish on the cabinet top and console.

5) Remove the belt from the motor pulley and disconnect the hoses from the pump.

6) Disconnect the lead wires from the control magnet solenoids on top of the gear case.



FIGURE C-12

7) Remove the cap screws and spacer that fasten the gear case and superstructure assembly to the base plate, Figure C-13.

8) Remove the three gear case support braces which are attached to both the gear case and base plate. NOTE: It is important for proper machine function that these braces be reinstalled.

9) The complete assembly can then be pulled out from the bottom of the machine.

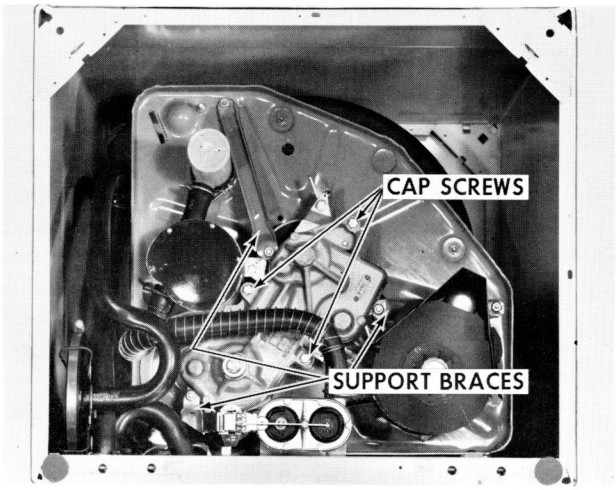


FIGURE C-13

Before reinstalling the gear case and superstructure assembly, carefully inspect both of the upper and lower seals and both bearings in the center post. If they should be badly worn, replace them. Use the special tools for this purpose and follow instructions. Scored bearings will cause the basket drive tube to wear excessively. Worn seals will allow water and detergents to enter and cause the bearings to wear excessively.

Be sure that the drive belt is on the proper side of the gear case support studs before bolting the assembly in place. Also be sure that the ears on the basket drive tube align with the recesses in the basket drive block.

After the gear case and superstructure has been reinstalled and the spanner nut has been tightened down on the basket center post, a new agitator drive lug should be replaced on the agitator shaft. However, before doing so, heat the plastic drive lug in hot water so the lug can be positioned with 2 or 3 light taps of a hammer. The drive lug should fit the shaft tightly to prevent noisy operation. Heating it will expand the lug and a tight fit will result when it cools.

b. To remove the basket drive and brake assembly from gear case assembly: See Figure C-14.

1) Remove the gear case and superstructure assembly from washer as per the preceding instructions.

2) Remove the hairpin retaining spring from brake shoe yoke support.

3) Lift the control rod spring off.

4) Unhook the brake shoe yoke spring.

5) Lift the complete basket drive and brake assembly off over end of agitator shaft.

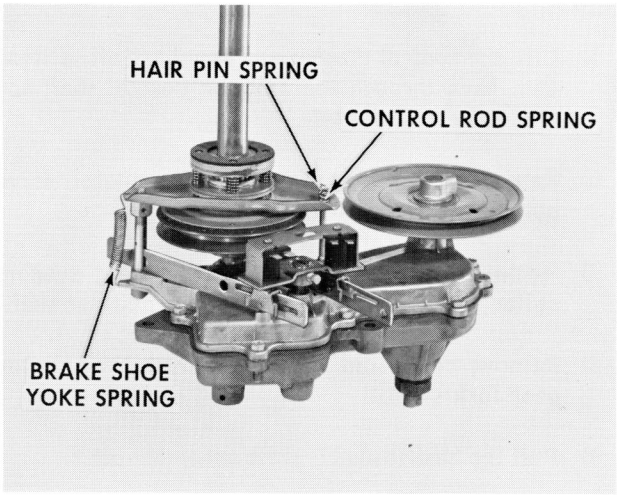


FIGURE C-14

To further disassemble the basket drive and brake assembly, remove the set screw from the upper brake drum assembly and slide this assembly, as well as the lower brake drum assembly, the brake yoke and basket drive disc assembly, off over end of basket drive tube. By prying the retaining ring out of the groove of the basket drive tube, the basket drive pulley and thrust washer may then be lifted off.

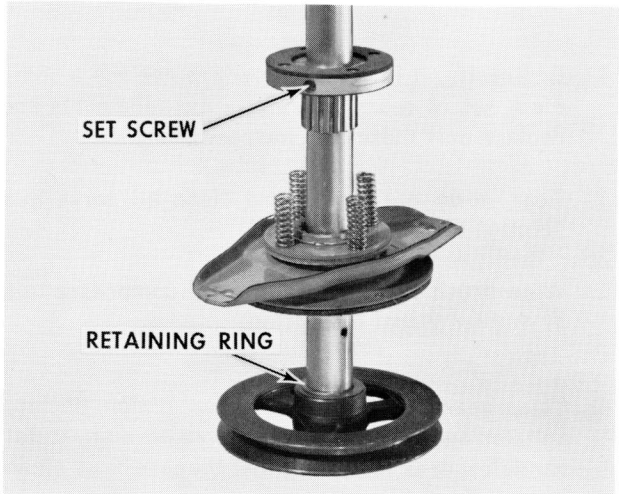


FIGURE C-15

c. To remove the gear case cover: See Figure C-14

1) Remove the basket drive and brake assembly from the gear case assembly as per preceding instructions.

2) Remove the cap screw holding cam bar brake spring.

3) Lift the cam bar brake spring off.

4) Remove the screw holding the control magnet to gear sector shaft.

5) Lift the control magnet and cam bars off, sliding cam bars through the agitator control shaft and the basket clutch shaft.

6) Remove the set screw from the agitator drive pulley. Lift the pulley off.

7) Remove the set screw from the basket support collar and slide collar off over the agitator shaft.

8) Remove roller pin and roller from the agitator gear fork shaft.

9) Pull the basket clutch shaft assembly out.

10) Remove the cap screws holding the cover to gear case. Lift gear case cover off. Careful prying may be necessary since the cover may bind slightly on the dowel pins.

11) Clean out and refill the gear case with 12 ounces of a good grade of S.A.E. #60 non-foaming, non-detergent motor oil before reinstalling the cover.

d. To completely rebuild a gear case, the following procedure is recommended:

1) Ordinarily, it is not necessary to replace a complete set of gears. Carefully examine parts and replace only those that warrant changing.

2) Tear down gear case and clean all parts in a solution of suitable solvent.

3) Wire-brush gears and follow with compressed air drying for visual inspection.

4) Clean gear case bottom. Blow out pinion, sector, agitator and fork shaft holes to remove any metal particles. It is important that the case be as clean as possible. Also remember to remove the agitator shaft thrust washer and ball.

5) Visually exmaine the following: See Figures C-3 and C-4

a. Pinion Gear - It is important that there is no wear other than polish in the area of the cover bearing or at the journal. A slight scoring at the journal is acceptable as long as the area is not undersized. Teeth areas should appear to have uniform wear and be free of sharp nicks.

b. Main Drive Gear - Teeth areas should appear to have uniform wear and should be free of destructive pitting, broken areas and sharp nicks.

c. Connecting rod - Be sure studs are securely staked to the bar. The stud diameter can be checked for wear by mating part with a new sector.

d. Sector gear - Teeth areas should have uniform wear and be free of destructive pitting and sharp nicks. Check connecting rod hole with a new connecting rod. Slight amount of play is acceptable but the hole should not be egg shaped. Check shaft to be sure it is properly secured to the gear.

e. Agitator gear - A new No. 92815 spring and No. 92814 seal are recommended for all gear case overhauls. If the gear is badly rounded in the pin engagement area it should NOT be re-used with the new spring. A small amount of wear will not affect the gear operations.

f. Agitator shaft - Plating should not be scored or damaged in the upper seal or bearing area. If the gear has not been jumping prior to overhaul, the shaft pin should not have excessive wear.

g. Gear case cover - Check cam bar slots for broken ears. If the pinion bearing is worn, only the bearing need be replaced. If the cover is worn by the cam bar in the area of the gear torque, a special hardening steel washer No. 10954 should be used (available N/C from the factory, La Porte Division). The washer fits over the fork shaft between the cam bar and cover.

h. Miscellaneous items - No. 16018 Agitator Thrust Washer (Nickel) - check for cracking or deformation. No. 85529 Ball (Agitator Shaft) - check for flat spots. Inspect cam bars, cam bar pins and plungers for wear.

7) Reassembly procedure: (This pertains mainly to the pinion and main drive gears)

a. Only used gears that are mated should be reused. Never mate used gears from separate gear cases.

b. A new pinion or main drive gear can be used in conjunction with comparable good used parts.

c. Fill the gear case with 12 ounces of S.A.E. #60 non-foaming, non-detergent motor oil.

d. Drive gear stud - with the use of new machining equipment which can hold closer tolerances, the drive gear stud on this gear case does not require adjustments.

NOTE: It is not recommended that the gear case be carried or handled by the agitator shaft. The spring between the agitator gear and cover allows more upward travel of the shaft. If the shaft is pulled up too far, the No. 16018 thrust washer may cock out of position and not allow the shaft to properly reseat itself.

e. To replace the center post bearings and seals:

1) Remove the gear case and superstructure assembly.

2) Remove the spin basket.

3) Using the special center post bearing puller tool, pull out the lower bearing and seal from the bottom of the base plate and the upper bearing and seal from the top of the center post. (Follow the factory prepared instruction sheet for using the bearing puller tool). Figure C-16

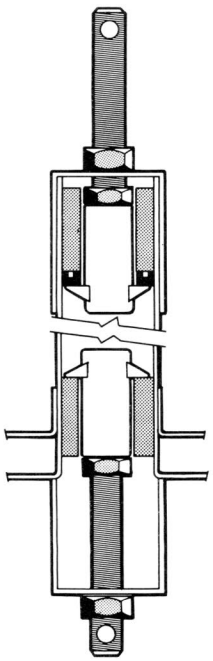


FIGURE C-16

4) Using the special bearing inserter tool, press a single lip seal (with the seal lip up) and a new bearing into the top of the center post, also a new bearing into the bottom of the center post. (Be sure to follow the instructions for using the bearing inserter tool.) See Figure C-17

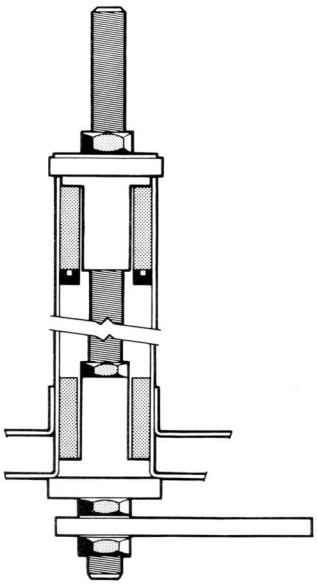


FIGURE C-17

NOTE: Before installing new center post bearings and seals, it is important that the inner wall of the entire center post be cleaned. Use a wire brush or similar tool as there is no seal directly above the lower bearing. Any foreign matter left in the center post could fall into the bearing area.

Proper installation of new bearings and seals is most important to insure long life. Prime factors affecting proper installation are:

1. Good alignment.
2. Proper seal design.
3. Bearing material.
4. Lubrication.

A very conclusive test has been completed to evaluate the results of life test failures where the lower 89090 Bearing as used in the center post base plate assembly was omitted.

Three conditions resulted from this test:

1. On some units, the base plate cracked before the end of the test.
2. Bearing wear was noticeably greater where one bearing was used than like units tested with two bearings properly positioned.

3. All units tested had loose gear case-to-base plate mounting studs at end of test.

Bearing Kit 99618 includes two 89090 Bearings and necessary seals to complete replacement of failed parts.

WARNING: use both top and lower bearings and seals as supplied. Failure to do so will result in early failure of field repaired machines.

5) Press a new single lip seal into the bottom of the center post beneath the bearing, being sure that the lip of the neoprene seal is up. Add approximately 1/2 oz. of Rykon #2 grease in the lower center post bearing section before installing the gear case and superstructure.

6) Install the gear case and superstructure. Be careful to protect the new center post seal from damage when inserting the top of the basket drive tube through it.

7) Before installing both the agitator shaft seal and center post seal add turbine oil in each cavity to an oil level just above the bearings. Each cavity has a seal installed just below the bearing to retain the oil.

8) Install the top center post seal and spin tube seal with the lip up, after the gear case and superstructure have been reinstalled and oil added.

Improper spin operation will occur when the base plate mounting of the gear case is not properly aligned. If this problem should occur, loosen the belt tension and the three (3) gear case mounting stud screws two turns. This allows the agitator shaft and spin tube to properly align in the center post bearings. Retighten the three (3) gear case mounting stud screws evenly and readjust belt to proper tension.

After machine has been operated in agitation cycle a moment, turn off and turn basket by hand. Basket should turn freely and without drag. If drag is evident, misalignment can be corrected by loosening one gear case mounting stud at a time until misalignment is relieved. If misalignment occurred at gear case mounting stud where support spacer is inserted, replace spacer. However, if condition takes place on one of the two other gear case mounting studs, shim out as needed with one (1) or two (2) .010" horse shoe shim washers part number 16385. Misalignment is also readily detected by pushing down on bottom of the basket. If basket does not readily move up and down correct problem as indicated above.

f. To adjust the drive belt (See Figure C-18):

1) Remove rear service panel.

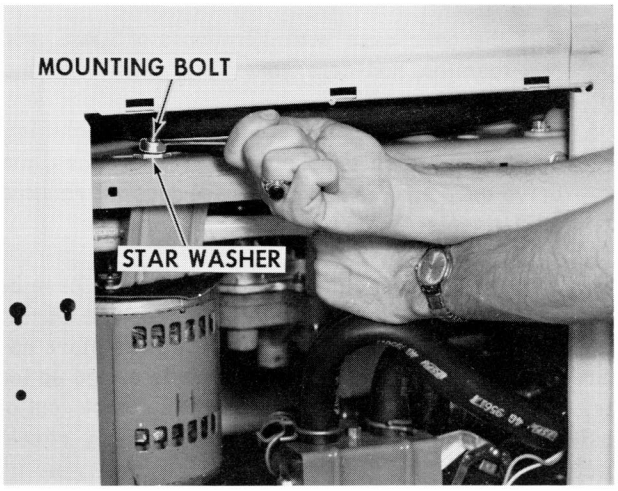


FIGURE C-18

2) Loosen the nut holding the motor mounting bracket in the slotted base plate hole. NOTE: Be sure star washer is loose.

3) Insert a hammer handle or long screwdriver between the two legs of the motor mount as illustrated and rotate the mount to the left to increase belt tension.

4) Tighten the motor mounting nut while holding the mounting in this position.

5) Proper initial belt tension is obtained when the belt will deflect 1 inch while applying a force of 23 ± 2 pounds at the midpoint between the motor pulley and drive pulley. This may be checked by hooking a spring scale at the midpoint to check the force required to obtain a 1 inch deflection. NOTE: After operating the machine, the force will be reduced. The minimum belt tension after extended operation shall be 15 pounds.

g. To replace the drive belt without removing the gear case and superstructure.

1) Remove rear service panel.

2) Loosen the nut holding motor mounting bracket and slide the motor over to relieve belt tension.

3) Remove the belt from pulleys.

4) Remove the gear case mounting stud and take out the spacer.

5) Remove the nuts which secure the support braces to the gear case. Loosen or remove the braces where they attach to the base plate.

NOTE: IT IS IMPORTANT FOR PROPER MACHINE FUNCTION THAT THESE BRACES BE REINSTALLED.

6) Unhook the brake shoe yoke spring. Slide the extraction cam bar out of the slot in the clutch yoke stud. (Push up on the bottom of the stud to free pressure on the cam bar.)
7) After the cam bar is free, the stud can be dropped down, so that the belt will slip out between the clutch yoke and the top of the stud.
8) Disconnect hoses from the pump. The belt is now free to be slipped down over the pump and the gear case.

h. To adjust the basket drive clutch:

1) Set the timer so that the clutch is disengaged (in agitation).
2) Lay the washer on its side on a padded surface to prevent damaging the finish.
3) Adjust the nut on the basket clutch shaft to obtain a clearance of 1/16 inch with the clutch disengaged, Figure C-19.

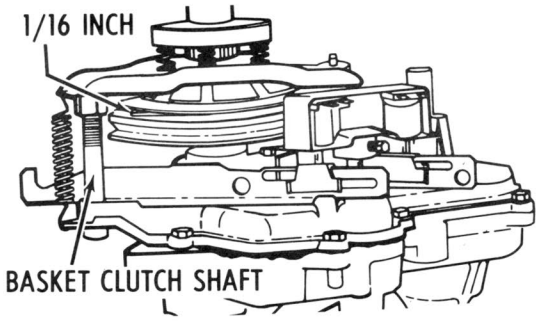


FIGURE C-19

3. Agitators

Agitators used on automatic washers are moulded from a black mineral-filled bakelite material.

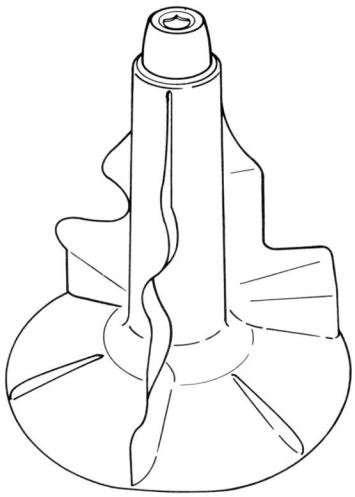


FIGURE C-20

The agitator is driven by a hexagon tapered drive lug pressed on top of the agitator shaft. A stud, with hex head, screws into the top of the agitator shaft and further helps to hold the drive lug down. The agitator cap screws onto the top of this stud and holds the agitator down.

4. Basket

The porcelain basket is perforated to allow free-flow draining and has a conical shaped bottom with a high center post to provide a clean smooth surface that does not trap sediment and soil deposits.

The basket on the 24-inch cabinet machines is 19 3/4 inches in diameter and 13 1/4 inches deep. Machines with 29-inch cabinets have a 21-inch diameter basket, 13 7/8 inches deep. Because of its larger size, it has approximately 80 more holes in its periphery than the smaller basket.

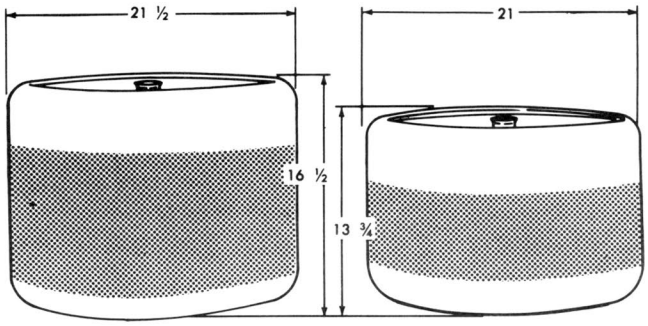


FIGURE C-21

a. To check basket;

1) Check to see if basket is loose on the spin tube. If so, it will cause excessive noise. Tighten the spanner nut.

2) Run your hand over the inside of the basket to be certain there are no sharp edges on any of the perforations that might cause clothes damage. If rough spots are found, sand or buff off.

b. To remove the basket:

1) Take out the agitator.

2) Remove top assembly as per instructions above.

3) Disconnect water inlet hose from inlet vacuum breaker or funnel on tub ring and remove snubber spring assembly.

4) Push retaining clips away from tub rings before attempting to remove it.

5) Use the special wrench to unscrew the spanner nut from the top of the basket center tube.

6) Lift the basket out of the tub.

5. Tub

The smaller basket fits into a tub 21 3/32 inches in diameter and 15 1/4 inches deep, while the 21-inch basket fits into a tub 22 1/8 inches in diameter and 15 1/2 inches deep. Both tubs are coated with a porcelain enamel, Figure C-22. The conical bottom permits faster drainage and lessens the chance of rust and dirt depositing in the bottom.

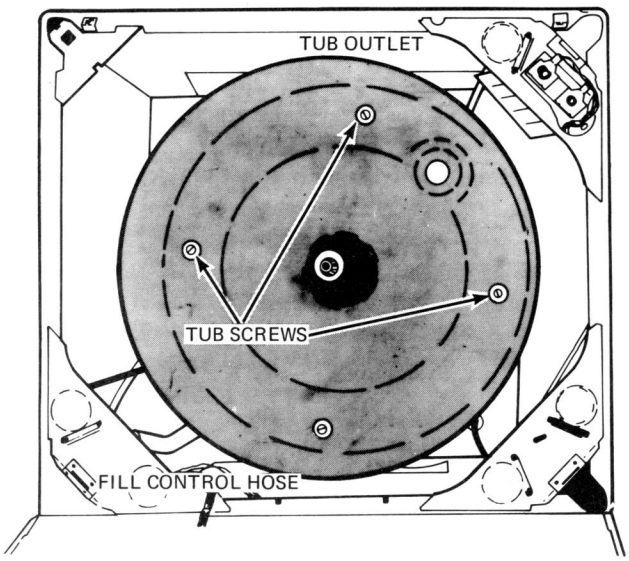


FIGURE C-22

The tub on the large capacity automatic is 1" larger in diameter. This provides more clearance between the basket and tub and improves extraction and pump-out. The side outlet has been moved toward the rear of the tub. On the standard machine the side outlet is 19° from the tub outlet; on the large capacity unit the side outlet is 73° from the tub outlet. (Figure C-22-1)

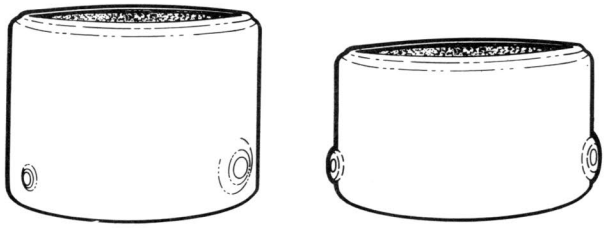


FIGURE C-22-1

a. To check the tub:

1) Remove the basket as outlined in the preceding section.

2) Inspect the drain opening at the bottom of the tub to be sure it is not clogged.

3) Check for loose screws or improper alignment.

4) In certain areas where peculiar types of soils are present that adhere to the tub surfaces, it is necessary to thoroughly rinse the tub with clear water after the clothes have been removed to prevent a build-up of this scum deposit which can later be dislodged and redeposited on the clothes. Special instructions to the user are necessary in those areas.

b. To remove the tub (after the basket has been removed):

1. Disconnect plastic tube from connector in fill control hose. On filter models, remove the side outlet hose.

2. Remove watter baffle (s) and tub screws from tub bottom and lift tub out of cabinet.

The baseplate which supports most of the mechanical units of the washer, is made of a heavy gauge steel, and has a strong center flange or hub welded to it. The center post that houses the spin tube and agitator shaft is pressed into this flange.

1) Disconnect plastic tube from connector in fill control hose. On filter models, remove the side outlet hose.

2) Remove the water baffles (24" models only) and screws from tub bottom and lift tub out of cabinet.

6. Baseplate

The base plate, Figure C-23, which supports most of the mechanical units of the washer, is made of a heavy gauge steel, and has a strong center flange or hub welded to it. The center post that houses the spin tube and agitator shaft is pressed into this flange.

The gear case and machine motor are fastened to the bottom of the base plate and the washer tub is secured to its top surface. Three braces are used between the gear case and base plate. Purpose of these braces is to further stabilize the center post, gear case, and base plate during spin, especially with off balance loads.

IT IS IMPORTANT THAT THESE BRACES BE RETAINED ON THE MACHINE TO OBTAIN MAXIMUM PERFORMANCE.

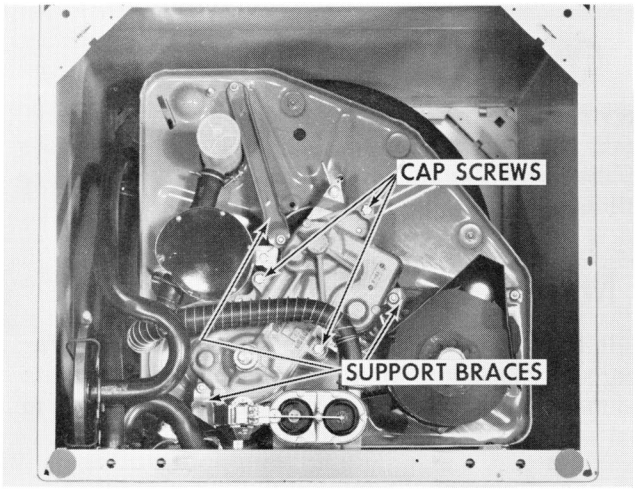


FIGURE C-23

Three suspension rods (Figure C-24) support the base plate in the cabinet. These rods are mounted to permit limited movement of the mechanism without transmitting vibrations to the cabinet.

Each suspension rod is fitted with a ball and socket joint at its upper and lower ends. These rubber ball halves are under tension when enclosed between the socket and cap, Figure C-24. The flexing of the ball permits a limited amount of movement to the suspension rods.

To replace base plate:

1) Remove top, tub ring, basket and outer tub.

2) Remove gear case and superstructure assemblies.

3) Release the three (3) suspension ball caps from the gussets attached to the cabinet.

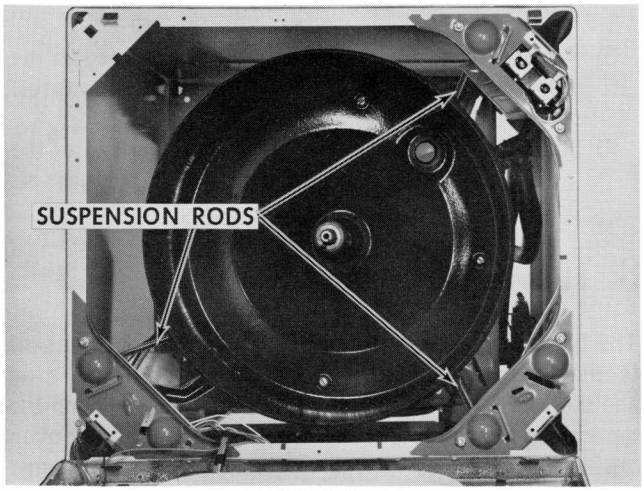


FIGURE C-24

7. Snubber

A snubber, Figure C-25, is used on each machine to reduce the oscillations of the base and tub assembly during the spinning operation. This snubber should be able to control an unbalanced load without permitting the mechanism to strike the cabinet.

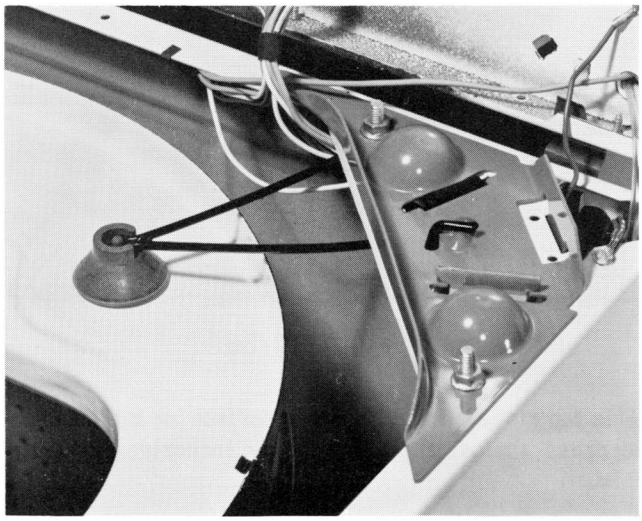


FIGURE C-25

The snubber assembly consists of a tempered steel wire snubber spring secured to the right rear corner gusset of the cabinet. The snubber pad presses against the top of the tub ring.

a. Procedure for checking the snubber:

1) If there is excessive noise or vibration due to a worn, loose or oily snubber, the snubber must be replaced.

b. To replace snubber:

1) Unlatch and raise the top assembly.

2) Lift up on the snubber spring and remove snubber.

3) Remove the nut and bolt securing one leg of the spring to the right rear suspension gusset.

4) Turn the spring to the right until the end of the other leg releases into the slot of the gusset.

8. Tub Ring

The tub ring is seated on top of the tub. A rubber gasket is used to provide a cushion between this tub ring and the tub, Figure C-26. It gives a tight seal around the top rim of the tub to prevent water from going out over the top of the tub during the spinning operation and helps to prevent water from splashing over during agitation.

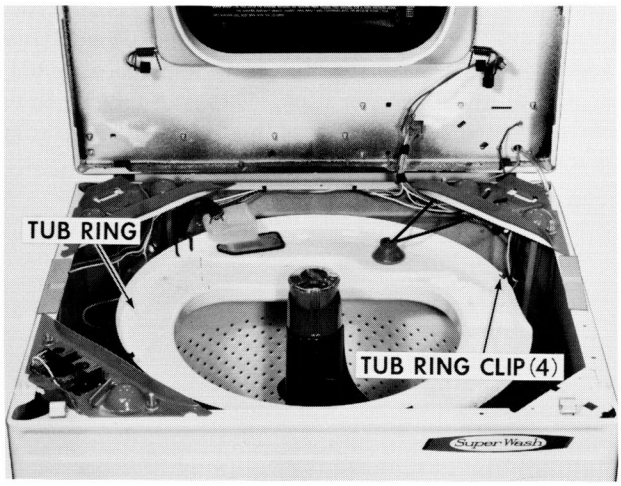


FIGURE C-26

This tub ring also provides a flat surface for the snubber to press against and a means for anchoring the water inlet.

A spout is provided in the design of the tub ring to direct the water away from the motor and other electrical components in the event the water level control should fail. Water splashed on the top of the tub ring during agitation should run back into the tub since the top of the tub ring slopes to the center.

The tub ring has been notched at the four points where the tub top ring clips make contact with it. This has been done to prevent tub ring rotary slippage during an extreme off-balance load.

To remove the tub ring:

1) Unlatch and raise the top assembly.
2) Remove the snubber, spring and water inlet hose.
3) Snap off the four (4) clips holding the tub ring in place.

9. Cabinet

The cabinet design incorporates support braces which are welded diagnonally in each upper corner. In additon 3 suspension gussets bolt to 3 of the corner braces.

The cabinet top is hinged at the rear to provide access for servicing many components of the automatic washer.

To raise hinged top assembly:

1) Raise the lid, grasp the top assembly at the front of the lid opening, pull slightly forward and jerk upward.

2) Pivot the top assembly back on its hinges and carefully rest it against a wall. To prevent paint or porcelain damage it is recommended that padding be used between the top and the wall.

D. CYCLE OF OPERATION

Servicing the automatic washer requires a sound, basic understanding of the cycle of operation. Because of the cycle variations between models, this section will only deal with a basic single speed cycle.

1. Normal Cycle

1. In addition to an understanding of the cycle of operation, a thorough understanding of the electrical circuits and mechanical functions will enable the serviceman to deal with any problem encountered.

The components of the electrical system consists of: the timer unit, containing a hand switch, multiple switches, and a motor; the water level switch; the main motor; the solenoids that convert electrical impulses into mechanical action; and the lights and wiring that connect all of the electric components together. Each of the electrical schematics contained at the end of this manual has a cycle chart. This chart keys the functions to the individual electrical circuit involved.

Under normal wash conditions, the operator will manually select the wash time, water temperature (if the model has a selector switch), and the water level. The factors affecting this manual selection are the wash load, the type of fabric and how soiled the clothes are.

After the manual selection has been made, the timer knob is pushed in actuating the machine. The circuits are completed through the empty position of the water level switch and through the timer to the mixing valve. The temperature of the water to flow through the mixing valve is either controlled by a selector switch or the timer, depending on the model.

Simultaneously the tub begins to fill with water of the temperature desired. When the tub has been filled to the pre-selected level, the water level switch stops the voltage into mixing valve solenoids, shutting off the fill water. The water level switch is actuated by pressure against its diaphragm.

When the water level switch closes (full position), the current is directed to the main motor, timer motor and agitator solenoid through timer switches which were automatically preset by the timer cams. Thus, the pressure switch is always in control of the filling, motor and agitation functions during any wash cycle.

When the washing is complete, the pump-out phase of the cycle begins. The timer switch controlling the circuit to the agitation solenoid opens to stop the agitation. This mechanically moves the cam bar to disengage the agitator gear and through mechanical linkage changes the position of the pump flapper. The wash water is then pumped out of the machine.

As the water is pumped out of the machine, pressure is relieved from the water level switch diaphragm. This opens the "Full" Switch contacts and closes the "Empty" Switch contacts. A circuit will not be complete to the timer switches controlling "Spin" and "Spray" Rinses. Also, at the end of wash phase, the timer by-pass switch closes. This retains voltage to the timer motor and the main motor allowing the pumping to continue after the water level switch has opened.

After the wash water has been pumped out, the washer goes into the spin rinse cycle. The spin circuit is completed through the water level switch to the timer switch. The timer switch controls the spin solenoid circuit. During the spin rinse cycle, four (4) five-second spray rinses enter the machine. This circuit is completed to the mixing valve solenoid through the intermittent spray cam of the timer.

From the spin rinse, the washer goes into the deep rinse portion of the cycle. At this point, the timer switch to the motor and the timer switch to the spin solenoid open to stop the spinning of the basket. Only by-pass timer switch to the timer motor, and the mixing valve circuits through the water level switch and timer are closed during the first step of the deep rinse.

If the machine fills before the two minute period is up, the machine will not agitate until the full two minutes have elapsed.

If the machine has not filled at the end of the two minutes, the timer will advance presetting the agitator solenoid and the motor circuit. When the tub is full and the water level switch is satisfied, the motor will start and agitation will begin.

At the end of the deep rinse, the agitator solenoid will open to stop agitation. As the cam-bar moves to disengage the agitator gear, the pump flapper's position is mechanically changed and discharge pumping begins. The timer by-pass switch is closed to retain a circuit to the main motor after the water level switch has moved to the empty contact.

Upon completion of the pump-out period, the timer advances to the final spin cycle. The spin circuit is completed through the water level switch to the timer switch which controls the spin solenoid. During the first part of the final spin, four (4) five-second rinses again enter the machine. (Some models emit only two (2) spray rinses at this portion of the cycle, dependent on timer use.) This circuit is completed to the mixing valve solenoid through the intermittent spray cam of the timer.

At the end of the final spin, the master cam switch in the timer opens stopping all operations of the washer.

2. Wash and Wear Cycle

2. The functions performed in this cycle are similar to the normal cycle with one major exception - the cool down period. To prevent wrinkling of Wash 'N Wear garments, it is necessary to cool them after the wash cycle and prior to the spin cycle. This cool down is accomplished by alternately partially pumping out and refilling with cold water.

At the end of the wash portion of the cycle, timer switches controlling cold rinse fill are pre-set and pump out begins, as soon as enough water is pumped out the water level switch breaks contact V to T thus breaking the circuit to the timer motor and machine motor. Simultaneous pressure switch contacts V to P close causing cold water to enter the tub. When the proper water level is reached, the pressure switch contacts again reverse stopping the cold water fill and restarting pump out and timer motor operation. This alternate pump out and cold fill will continue for one increment of timer operation. The cycle then proceeds normally through spray rinse, rinse and spin.

3. Hand Washable Cycle

The hand washable setting was introduced on the 1967 Mark XII to provide the consumer with a cycle for a small clothes load. The NORMAL or GENTLE cycle should usually be selected for the HAND WASHABLE setting with the amount of washing time depending upon the amount of soil.

The HAND WASHABLE select knob, which is located on the infinite water level switch, actuates two micro-switches which are mounted to the infinite water level switch. One micro switch selects low agitation speed; the other micro switch removes the infinite water level switch from the circuit and puts the new low water level switch in control. Spin speed may be either high or low as selected on the spin speed control switch. A water fill of approximately 7 1/2 gallons is obtained on the HAND WASHABLE setting.

E. SERVICE TOOLS

Before attempting to service an automatic washer, the serviceman should be equipped with the proper tools. The following is a list of tools recommended for servicing the RCA WHIRLPOOL Automatic Washer.

1. Assorted sizes of screwdrivers — both Phillips and bladed.
2. Pliers
   (a) Standard or Water Pump Pliers
   (b) Needle-Nose Pliers
   (c) Vice Grip Pliers
   (d) Truarc No. 2 Retaining Ring Pliers*
   (e) Corbin Hose Clamp Pliers*
   (f) Terminal Crimping Pliers*
3. Wrenches
   (a) Adjustable wrenches - 6 inch and 10 inch
   (b) Assorted sizes of open-end wrenches
   (c) Assorted sizes of Allen wrenches
   (d) Assorted sizes of socket wrenches
   (e) Basket Locknut Spanner Wrench-No. 12393*
4. Test Cord or Voltmeter*
5. Continuity Tester or Ohmmeter*
6. Wattmeter*

*HOW TO ORDER TOOLS

Special service tools are available from Robinair Manufacturing Corporation, Montpelier, Ohio.

For complete listing of their tools, refer to Catalog "Service Tools, Equipment, and Test Instruments for RCA WHIRLPOOL Appliances".

Order from Whirlpool Authorized Parts Jobber or Distributor serving your area.

7. Other special tools*
   (a) Agitator Drive Lug Puller-No. 12331*
   (b) Center Post Bearing Puller-No.12709*
   (c) Center Post Bearing Inserter-No. 14223*
   (d) Pump Bearing Inserter-No. 14083*
   (e) Pump Tester-No. 12966*
   (f) Riveting Pliers - No. 14171*
   (g) Seal Installers - No. 12704 and 12708
8. Lubricants
   (a) Turbine Oil Capsule - No.10943
   (b) Lubriplate - No. 89318
   (c) Rykon - #2 No. 74940
   (d) Gearcase Oil - No. 89122
9. Other Miscellaneous Items
   (a) Goodyear Pliobond
   (b) Perma Gum

As a safety precaution, ALWAYS disconnect electrical power from the automatic washer before attempting to remove any parts from the machine. For testing purposes, the power cord can again be plugged into a live receptacle after the necessary parts are removed.

Also, it is advisable to make certain that the water supply faucets or valves are closed and the washer is drained of all water, if any parts are to be removed or disconnected in the water system.

F. TROUBLE DIAGNOSIS

PROBLEM	POSSIBLE CAUSE	ACTION *
1. WATER WILL NOT ENTER MACHINE	1a. Water supply valves closed.	1a. Open valve.
	1b. Faulty water temperature switch.	1b. See A-2.
	1c. Open circuit in timer.	1c. Replace timer. See A-1
	1d. Open circuit in wiring harness.	1d. Check continuity of wiring.
	1e. Loose lead on valve solenoid.	1e. Secure terminal.
	1f. Open inlet valve solenoid.	1f. See A-3.
	1g. Clogged inlet strainer screens.	1g. Remove screens, flush sediment from screens.
	1h. Defective water level switch.	1h. See A-2.
	1i. Supply hoses kinked.	1i. Relocate hose to prevent kinking.

* NOTE: Reference numbers in ACTION column, refer to component listing for Section III in Table of Contents.

	PROBLEM		POSSIBLE CAUSE		ACTION
2.	MOTOR WILL NOT RUN	2a.	Branch circuit fuse blown or motor thermal overload tripped.	2a.	Replace fuse; allow motor thermal overload to coil.
		2b.	No power to washer.	2b.	Check cord to wall receptacle.
		2c.	Faulty timer.	2c.	See A-1.
		2d.	Loose lead on timer.	2d.	Secure terminal.
		2e.	Inoperative motor.	2e.	See A-4.
		2f.	Open circuit in washer wiring.	2f.	Check continuity of wiring.
		2g.	Terminal receptacle disconnected.	2g.	Secure terminal receptacle.
		2h.	Faulty water level control switch.	2h.	See A-2.
3.	MACHINE WILL NOT AGITATE	3a.	Broken Belt	3a.	Replace Belt See C-1.
		3b.	Timer contacts inoperative.	3b.	See A-1.
		3c.	Loose lead connection (timer - motor - solenoid).	3c.	Secure terminals.
		3d.	Faulty transmission.	3d.	See C-1.
		3e.	Inoperative motor.	3e.	See A-4.
		3f.	Inoperative agitator solenoid.	3f.	See A-3.
		3g.	Loose pulleys (main drive and motor).	3g.	Tighten pulleys.
		3h.	Broken cam-bar rivet.	3h.	Install new cotter pin.
		3i.	Faulty water level control switch.	3i.	See A-2.
4.	WATER DOES NOT DRAIN FROM MACHINE	4a.	Clogged drain connection.	4a.	Remove obstruction.
		4b.	Clogged pump.	4b.	Remove obstruction.
		4c.	Loose impeller in pump.	4c.	See C-3.
		4d.	Drain hose kinked.	4d.	Relocate hose to prevent kinking.
		4e.	Loose motor belt.	4e.	See C-1.
		4f.	Air lock.	4f.	Check hole in manifold baffle and flapper valve seating in pump.
		4g.	Suds lock.	4g.	Add cold water to washer. Remove suds.
		4h.	Faulty two-way valve (suds model only).	4h.	See B-2.
5.	BASKET WILL NOT SPIN	5a.	Loose belt.	5a.	See C-1.
		5b.	Broken belt.	5b.	See C-1.
		5c.	Loose motor pulley.	5c.	Tighten pulley set screw.
		5d.	Grease or oil on clutch lining.	5d.	See C-1.
		5e.	Broken wire or loose connection.	5e.	Check continuity.
		5f.	Faulty lid switch (if used).	5f.	See A-2.
		5g.	Defective spin solenoid.	5g.	See A-3.
		5h.	Broken cam-bar rivet.	5h.	Install new cotter pin.
		5i.	Faulty water level switch.	5i.	See A-2.
6.	MACHINE WILL NOT SPRAY RINSE	6a.	Water supply valves closed.	6a.	Open valve.
		6b.	Faulty mixing valve and solenoids.	6b.	See A-3 and B-1.
		6c.	Kinked supply hoses.	6c.	Relocate hose to prevent kinking.
		6d.	Plugged screens.	6d.	Clean or replace screens.

PROBLEM	POSSIBLE CAUSE		ACTION	
	6e.	Faulty water level control switch.	6e.	See A-2.
	6f.	Faulty water temperature switch. (if used)	6f.	See A-2.
	6g.	Defective timer.	6g.	See A-1.
	6h.	Break in wiring harness.	6h.	Repair harness.
7. MACHINE WILL NOT SHUT OFF	7a.	Defective timer.	7a.	See A-1.
	7b.	Break in wiring harness.	7b.	Repair harness.
8. SUDS WATER WILL NOT RETURN TO MACHINE	8a.	Faulty two-way valve.	8a.	See B-2.
	8b.	Flapper in pump not operating.	8b.	See B-3.
	8c.	Loose or worn belt.	8c.	See C-1.
	8d.	Kinked or plugged hose.	8d.	Relocate or clean hose.
	8e.	Defective water level switch.	8e.	See A-2.
	8f.	Faulty timer.	8f.	See A-1.
	8g.	Loose connection or break in harness.	8g.	Repair connector or break in harness.
9. EXCESSIVE VIBRATION OR MACHINE WALKS	9a.	Washer not level.	9a.	Level machine.
	9b.	Leveling leg lock nuts not tight.	9b.	Secure lock nut against frame of washer after leveling.
	9c.	Weak flooring.	9c.	Normal solidity of floor necessary.
	9d.	Oil or grease on snubber.	9d.	Clean snubber or replace if worn. See C-7
	9e.	Unbalanced load.	9e.	Redistribute load.
	9f.	Diagonal resting on floor.	9f.	Lower leveling legs.
	9g.	Damaged suspension rods and bulbs.	9g.	Increase pressure on rod bulbs by adding material under cap.
	9h.	Gear case braces loose or removed.	9h.	Install braces or tighten loose braces.
	9i.	Foam shipping blocks not removed.	9i.	Remove shipping blocks.
10. MACHINE DAMAGES CLOTHING	10a.	Broken agitator.	10a.	Replace agitator.
	10b.	Defective basket.	10b.	See C-4.
	10c.	Use of excessive bleach.	10c.	Instruct customer.
	10d.	Overloading the machine.	10d.	Instruct customer.
11. WATER WILL NOT SHUT OFF	11a.	Sticking contacts in timer.	11a.	See A-1.
	11b.	Inlet valve plunger not sealing pilot hole in diaphragm.	11b.	See B-1.
	11c.	Faulty solenoids on water inlet valve.	11c.	See A-3.
	11d.	Air leaks at fill control hose coupling.	11d.	Replace coupling.
	11e.	Defective water level control switch.	11e.	See A-2.
12. MACHINE LEAKS WATER	12a.	Inlet hose not secured to inlet valve.	12a.	Check hose clamps.
	12b.	Drain connection or drain hose not secured to pump.	12b.	Check hose clamps.
	12c.	Pump case gasket not in place.	12c.	Replace gasket. See B-3.
	12d.	Leak in tub.	12d.	See C-5.
	12e.	Broken hose.	12e.	Replace hose.
13. MACHINE LEAKS OIL	13a.	Leak in transmission.	13a.	See C-1.

G. LUBRICATION INSTRUCTIONS

Every Whirlpool Automatic Washer is thoroughly lubricated at the time of assembly and should not require further lubrication under normal operating conditions. In exceptional cases where lubrication is required, the following Lubrication Guide is provided.

If repairs are performed on the machine, then a complete relubrication is desirable. The following information is a guide to when and where to lubricate, type of lubrication and how much lubricant to use.

COMPONENT	LUBRICANT	APPLICATION INSTRUCTIONS
Pump	Turbine Oil	Soak the oil wick using Part No. 99243 Turbine Oil (available in pint can) whenever the pump requires service. When the pump is disassembled, lubricate the impeller shaft, bearings and seal.
Cam Bar	Rykon #2 or Lubriplate 202	Brush the cam bar slot area with Rykon #2, Part No. 74940 (available in quart cans) or Lubriplate 202, Part No. 89318 (two ounce tube). Lightly brush slot and friction surface areas, except omit slot areas on plastic guide liner models. Clean old accumlation before re-lubing.
Wig-Wag Plungers	Turbine Oil	(Old Style Large Diameter) - Completely clean the plungers and solenoid liners to remove old oil and dirt. Relubricate by dipping plungers in turbine oil (99243 pint can). (New Style Small Diameter, Nickel-Plated) Clean plungers and liners and reinstall without lubrication.
Lid Hinge	Lubriplate 202	Rub lightly on moving parts as required. A two ounce tube is available, Part No.89318.
Rear Leveling Link Mechanism	Lubriplate 202	Rub lightly on moving parts as required. A two ounce tube is available, Part No. 89318.
Agitator Shaft & Upper Center Post Bearings: (1961 MODELS & EARLIER)	Turbine Oil	Remove the stud from the top of the drive lug and fill cavity to within one-half inch of the top. Use Part No. 10943 Capsule or 99243 pint can.
Agitator Shaft & Upper Center Post Bearings: (1962 MODELS & LATER:)	Turbine Oil	Upon repair or inspection, fill cavity above bearing with Turbine Oil 99243.
Gearcase	SAE 60 Non-Detergent, Non-Foaming Motor Oil	Replace with 12 ounces of oil whenever gearcase is repaired. One pint cans are available as Part No. 89122.
Brake Drum Splines	Rykon #2	Lightly coat the splines when reassembling the superstructure. Use Rykon #2, Part No. 74940, in pint cans.
Tee Bearing	Rykon #2	Brush with grease upon repair after cleaning surface.
Lower Centerpost Bearing	Turbine Oil	Use one quarter ounce of Turbine Oil, Part No. 99243 (available in pint can), in the lower center post bearing before installing the gearcase and superstructure.
Basket Drive	Rykon #2	Fill the cavity in the basket drive pulley before replacing the bearing. Also, brush area on spin tube where pulley bearing rides with lubricant.

H. WIRING DIAGRAMS

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LSB4500	2	41
LSB4580	3	42
LSB4640	4	43
LSB4660	4	43
LSB5150	5	44
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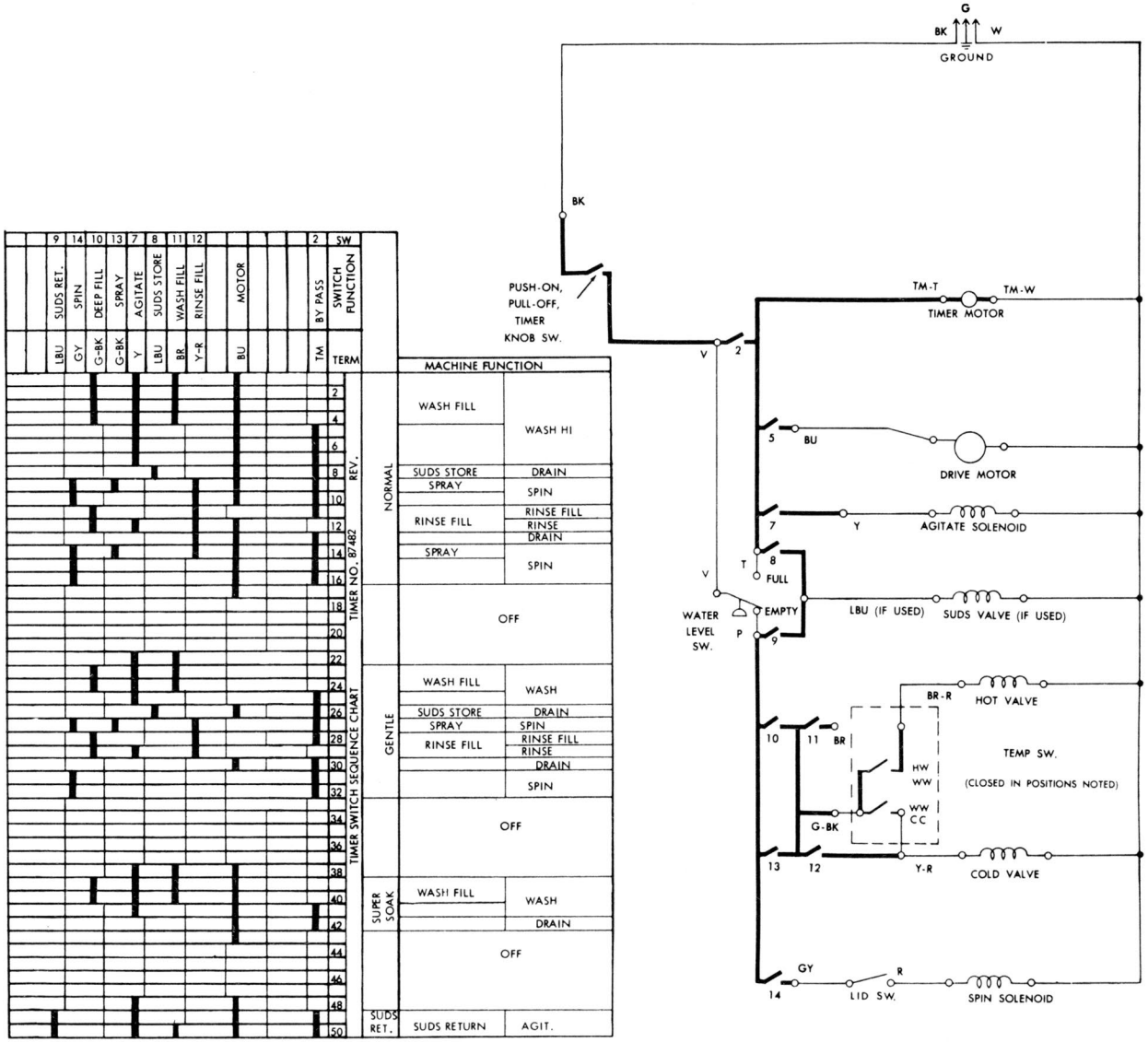

G
BK
W
GROUND
BK
PUSH-ON, PULL-OFF, TIMER KNOB SW.
V
2
TM-T
TM-W
TIMER MOTOR
5
BU
DRIVE MOTOR
7
Y
AGITATE SOLENOID
T
8
FULL
V
WATER LEVEL SW.
P
EMPTY
9
LBU (IF USED)
SUDS VALVE (IF USED)
BR-R
HOT VALVE
10
11
BR
HW
WW
TEMP SW.
(CLOSED IN POSITIONS NOTED)
WW
CC
G-BK
13
12
Y-R
COLD VALVE
GY
14
R
LID SW.
SPIN SOLENOID
SW
SWITCH FUNCTION
TERM
9 SUDS RET.
14 SPIN
10 DEEP FILL
13 SPRAY
7 AGITATE
8 SUDS STORE
11 WASH FILL
12 RINSE FILL
MOTOR
2 BY PASS
LBU
GY
G-BK
G-BK
Y
LBU
BR
Y-R
BU
TM
TIMER NO. 87482
TIMER SWITCH SEQUENCE CHART
REV.
MACHINE FUNCTION
NORMAL
WASH FILL
WASH HI
SUDS STORE
DRAIN
SPRAY
SPIN
RINSE FILL
RINSE FILL
RINSE
DRAIN
SPRAY
SPIN
OFF
GENTLE
WASH FILL
WASH
SUDS STORE
DRAIN
SPRAY
SPIN
RINSE FILL
RINSE FILL
RINSE
DRAIN
SPIN
OFF
SUPER SOAK
WASH FILL
WASH
DRAIN
OFF
SUDS RET.
SUDS RETURN
AGIT.
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
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DIAGRAM NO. 1

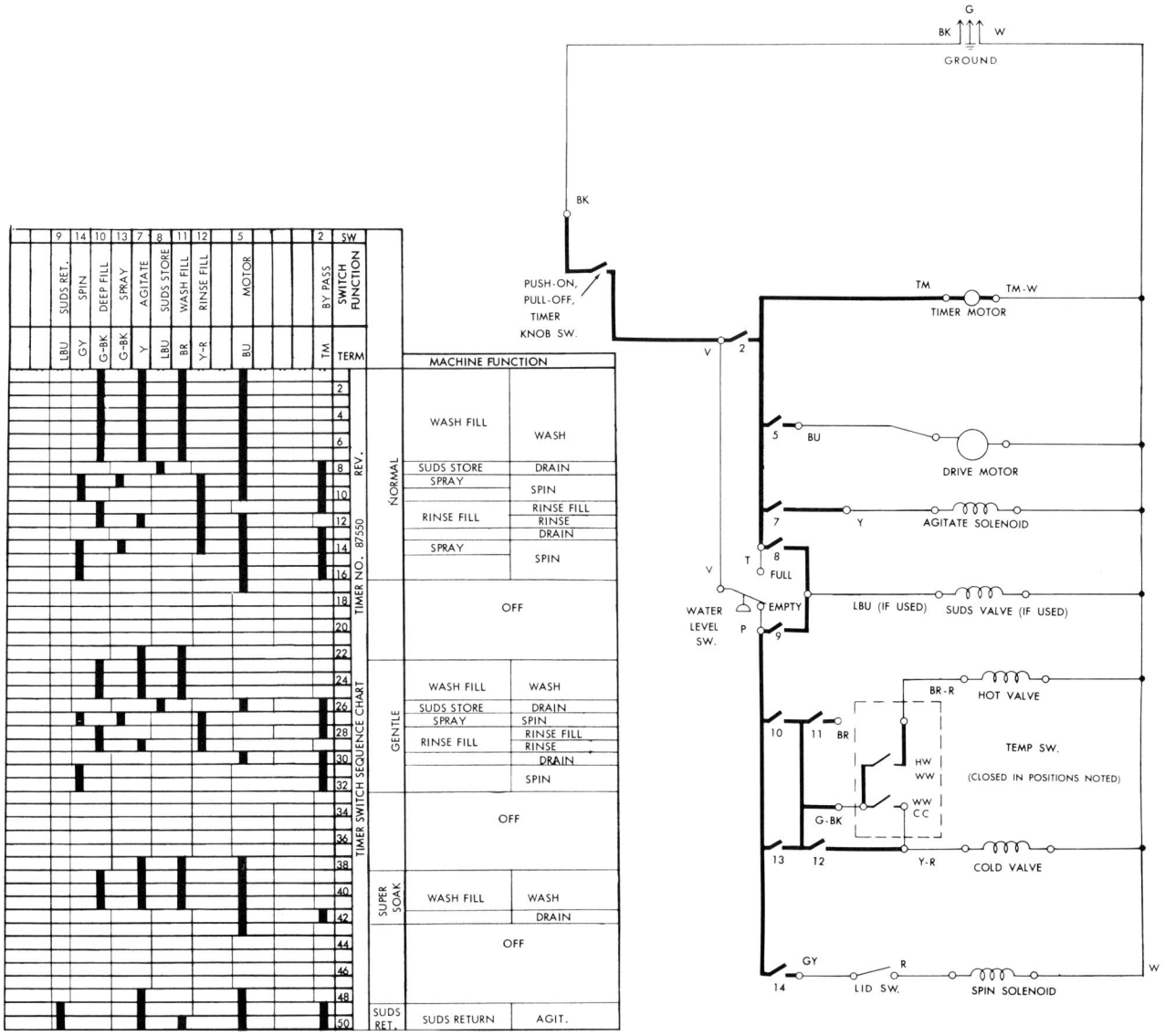

SW
SWITCH FUNCTION
TERM
9 SUDS RET.
14 SPIN
10 DEEP FILL
13 SPRAY
7 AGITATE
8 SUDS STORE
11 WASH FILL
12 RINSE FILL
5 MOTOR
2 BY PASS
LBU
GY
G-BK
G-BK
Y
LBU
BR
Y-R
BU
TM
TIMER SWITCH SEQUENCE CHART
TIMER NO. 87550
REV.
MACHINE FUNCTION
NORMAL
WASH FILL
WASH
SUDS STORE
DRAIN
SPRAY
SPIN
RINSE FILL
RINSE FILL
RINSE
DRAIN
SPRAY
SPIN
OFF
GENTLE
WASH FILL
WASH
SUDS STORE
DRAIN
SPRAY
SPIN
RINSE FILL
RINSE FILL
RINSE
DRAIN
SPIN
OFF
SUPER SOAK
WASH FILL
WASH
DRAIN
OFF
SUDS RET.
SUDS RETURN
AGIT.
G
BK
W
GROUND
BK
PUSH-ON, PULL-OFF, TIMER KNOB SW.
V
2
TM
TM-W
TIMER MOTOR
5
BU
DRIVE MOTOR
7
Y
AGITATE SOLENOID
T
8
FULL
V
WATER LEVEL SW.
P
EMPTY
9
LBU (IF USED)
SUDS VALVE (IF USED)
BR-R
HOT VALVE
10
11
BR
TEMP SW.
HW
WW
(CLOSED IN POSITIONS NOTED)
WW
CC
G-BK
13
12
Y-R
COLD VALVE
GY
14
R
LID SW.
SPIN SOLENOID
W

DIAGRAM NO. 2

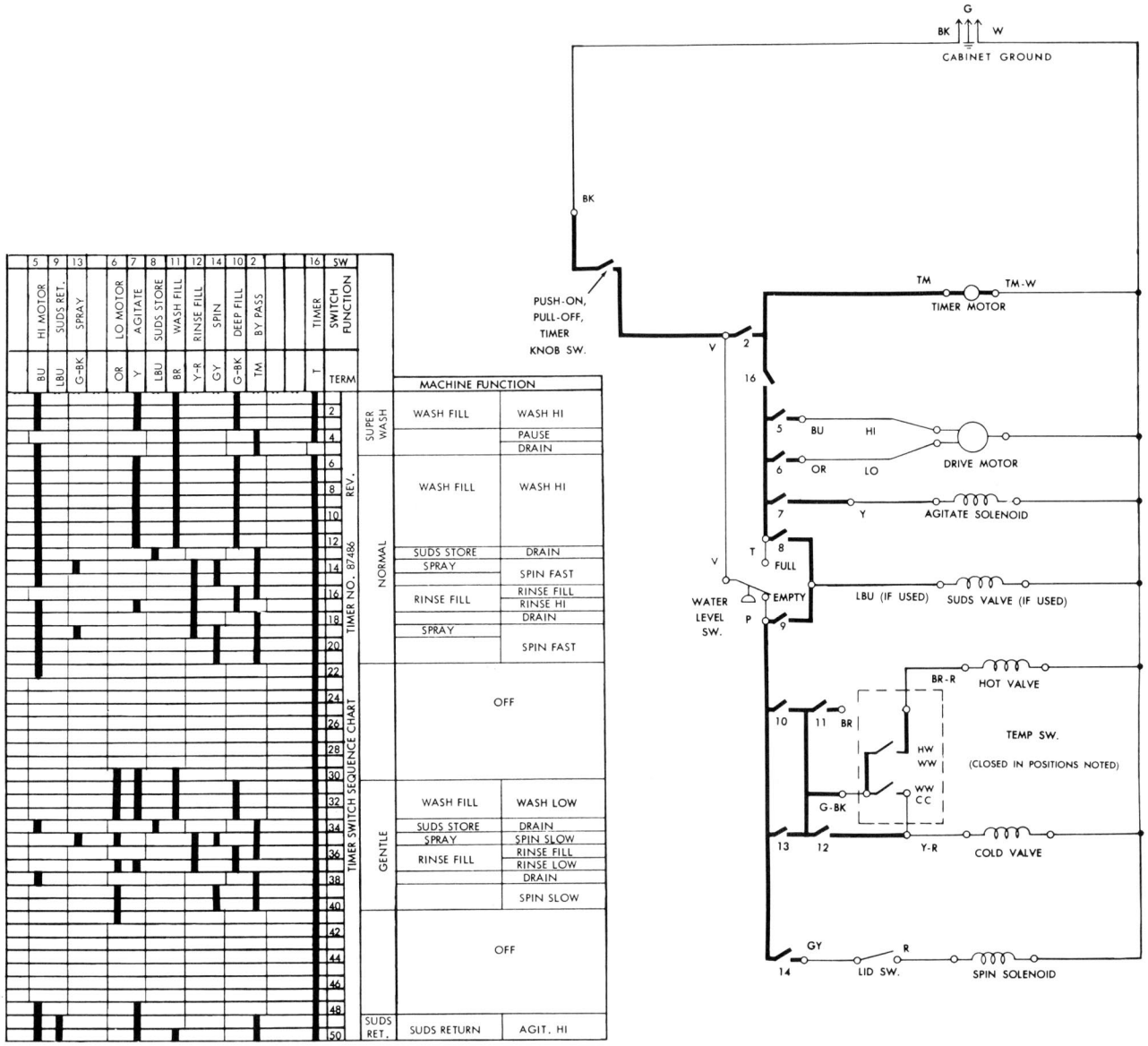

SW
SWITCH FUNCTION
TERM
HI MOTOR
SUDS RET.
SPRAY
LO MOTOR
AGITATE
SUDS STORE
WASH FILL
RINSE FILL
SPIN
DEEP FILL
BY PASS
TIMER
BU
LBU
G-BK
OR
Y
LBU
BR
Y-R
GY
G-BK
TM
T
MACHINE FUNCTION
SUPER WASH
WASH FILL
WASH HI
PAUSE
DRAIN
NORMAL
WASH FILL
WASH HI
SUDS STORE
DRAIN
SPRAY
SPIN FAST
RINSE FILL
RINSE FILL
RINSE HI
DRAIN
SPRAY
SPIN FAST
OFF
GENTLE
WASH FILL
WASH LOW
SUDS STORE
DRAIN
SPRAY
SPIN SLOW
RINSE FILL
RINSE FILL
RINSE LOW
DRAIN
SPIN SLOW
OFF
SUDS RET.
SUDS RETURN
AGIT. HI
REV.
TIMER NO. 87486
TIMER SWITCH SEQUENCE CHART
G
BK
W
CABINET GROUND
BK
PUSH-ON, PULL-OFF, TIMER KNOB SW.
V
2
16
TM
TM-W
TIMER MOTOR
5
BU
HI
6
OR
LO
DRIVE MOTOR
7
Y
AGITATE SOLENOID
T
8
FULL
V
WATER LEVEL SW.
P
EMPTY
9
LBU (IF USED)
SUDS VALVE (IF USED)
BR-R
HOT VALVE
10
11
BR
TEMP SW.
HW
WW
(CLOSED IN POSITIONS NOTED)
WW
CC
G-BK
13
12
Y-R
COLD VALVE
GY
14
R
LID SW.
SPIN SOLENOID

DIAGRAM NO. 3

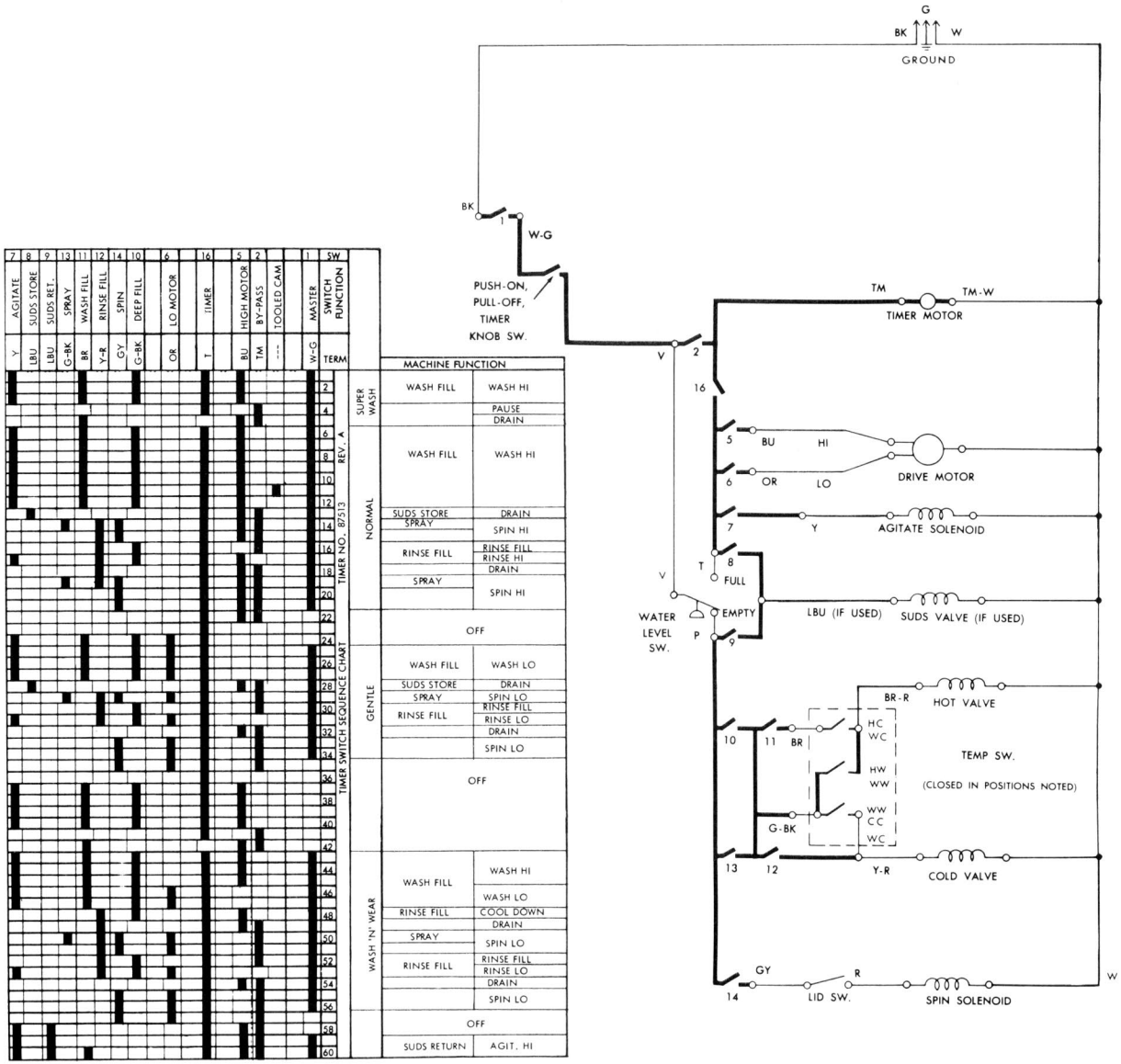

G
BK
W
GROUND
BK
1
W-G
PUSH-ON,
PULL-OFF,
TIMER
KNOB SW.
V
2
TM
TM-W
TIMER MOTOR
16
5
BU
HI
6
OR
LO
DRIVE MOTOR
7
Y
AGITATE SOLENOID
T
8
FULL
V
WATER
LEVEL
SW.
P
EMPTY
9
LBU (IF USED)
SUDS VALVE (IF USED)
BR-R
HOT VALVE
10
11
BR
HC
WC
HW
WW
WW
CC
WC
TEMP SW.
(CLOSED IN POSITIONS NOTED)
G-BK
13
12
Y-R
COLD VALVE
GY
14
R
LID SW.
SPIN SOLENOID
W
7 AGITATE Y
8 SUDS STORE LBU
9 SUDS RET. LBU
13 SPRAY G-BK
11 WASH FILL BR
12 RINSE FILL Y-R
14 SPIN GY
10 DEEP FILL G-BK
6 LO MOTOR OR
16 TIMER T
5 HIGH MOTOR BU
2 BY-PASS TM
TOOLED CAM ---
1 MASTER W-G
SW SWITCH FUNCTION
TERM
TIMER NO. 87513 REV. A
TIMER SWITCH SEQUENCE CHART
MACHINE FUNCTION
SUPER WASH
WASH FILL
WASH HI
PAUSE
DRAIN
NORMAL
WASH FILL
WASH HI
SUDS STORE
DRAIN
SPRAY
SPIN HI
RINSE FILL
RINSE FILL
RINSE HI
DRAIN
SPRAY
SPIN HI
OFF
GENTLE
WASH FILL
WASH LO
SUDS STORE
DRAIN
SPRAY
SPIN LO
RINSE FILL
RINSE FILL
RINSE LO
DRAIN
SPIN LO
OFF
WASH 'N' WEAR
WASH FILL
WASH HI
WASH LO
RINSE FILL
COOL DOWN
DRAIN
SPRAY
SPIN LO
RINSE FILL
RINSE FILL
RINSE LO
DRAIN
SPIN LO
OFF
SUDS RETURN
AGIT. HI

DIAGRAM NO. 4

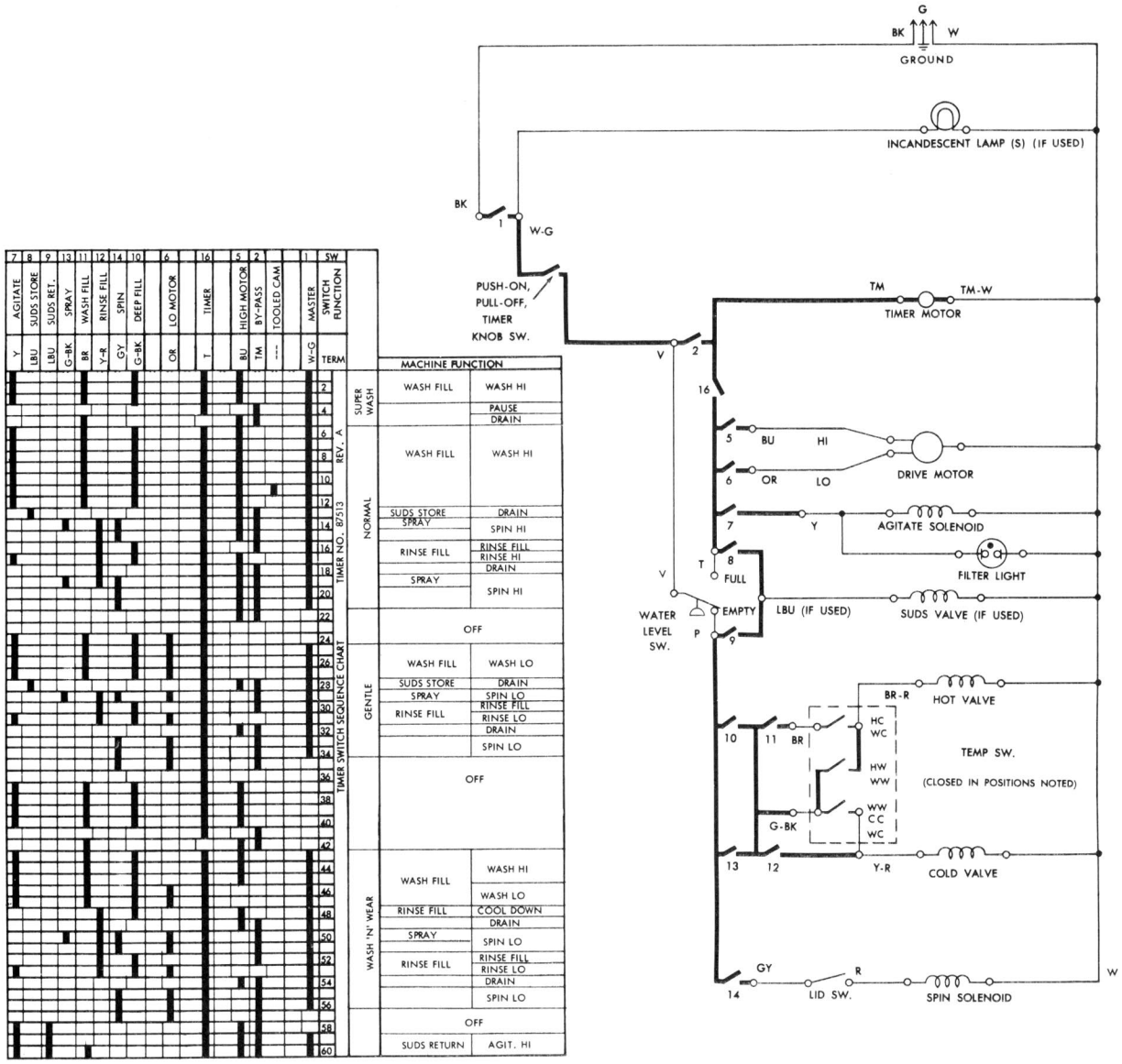

TIMER SWITCH SEQUENCE CHART
TIMER NO. 8713 REV. A
AGITATE
SUDS STORE
SUDS RET.
SPRAY
WASH FILL
RINSE FILL
SPIN
DEEP FILL
LO MOTOR
TIMER
HIGH MOTOR
BY-PASS
TOOLED CAM
MASTER SWITCH FUNCTION
SW
TERM
MACHINE FUNCTION
SUPER WASH
NORMAL
GENTLE
WASH 'N' WEAR
WASH FILL
WASH HI
PAUSE
DRAIN
SUDS STORE
SPRAY
SPIN HI
RINSE FILL
RINSE HI
SPRAY
OFF
WASH LO
SPIN LO
RINSE LO
SPIN LO
COOL DOWN
SUDS RETURN
AGIT. HI
G
BK
W
GROUND
INCANDESCENT LAMP (S) (IF USED)
PUSH-ON, PULL-OFF, TIMER KNOB SW.
W-G
TM
TM-W
TIMER MOTOR
BU
HI
OR
LO
DRIVE MOTOR
Y
AGITATE SOLENOID
FILTER LIGHT
FULL
EMPTY
LBU (IF USED)
SUDS VALVE (IF USED)
WATER LEVEL SW.
BR-R
HOT VALVE
BR
G-BK
HC
WC
HW
WW
CC
TEMP SW.
(CLOSED IN POSITIONS NOTED)
Y-R
COLD VALVE
GY
R
LID SW.
SPIN SOLENOID

DIAGRAM NO. 5

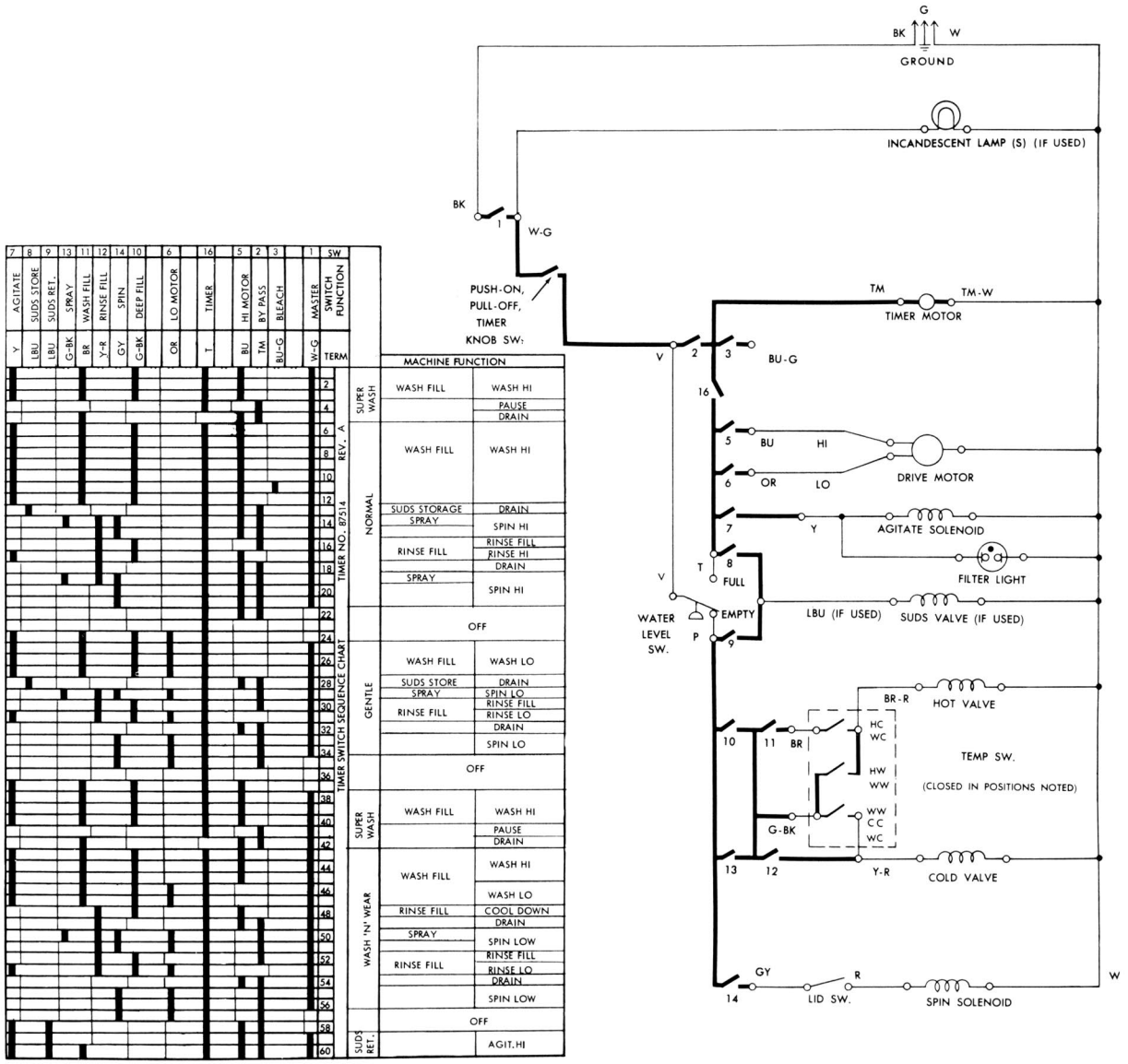

TIMER SWITCH SEQUENCE CHART
TIMER NO. 87514 REV. A
SW
SWITCH FUNCTION
TERM
AGITATE
SUDS STORE
SUDS RET.
SPRAY
WASH FILL
RINSE FILL
SPIN
DEEP FILL
LO MOTOR
TIMER
HI MOTOR
BY PASS
BLEACH
MASTER
MACHINE FUNCTION
SUPER WASH
NORMAL
GENTLE
WASH 'N' WEAR
SUDS RET.
OFF
AGIT. HI
PUSH-ON, PULL-OFF, TIMER KNOB SW.
GROUND
INCANDESCENT LAMP (S) (IF USED)
TIMER MOTOR
DRIVE MOTOR
AGITATE SOLENOID
FILTER LIGHT
SUDS VALVE (IF USED)
WATER LEVEL SW.
HOT VALVE
COLD VALVE
TEMP SW.
(CLOSED IN POSITIONS NOTED)
LID SW.
SPIN SOLENOID

DIAGRAM NO. 6

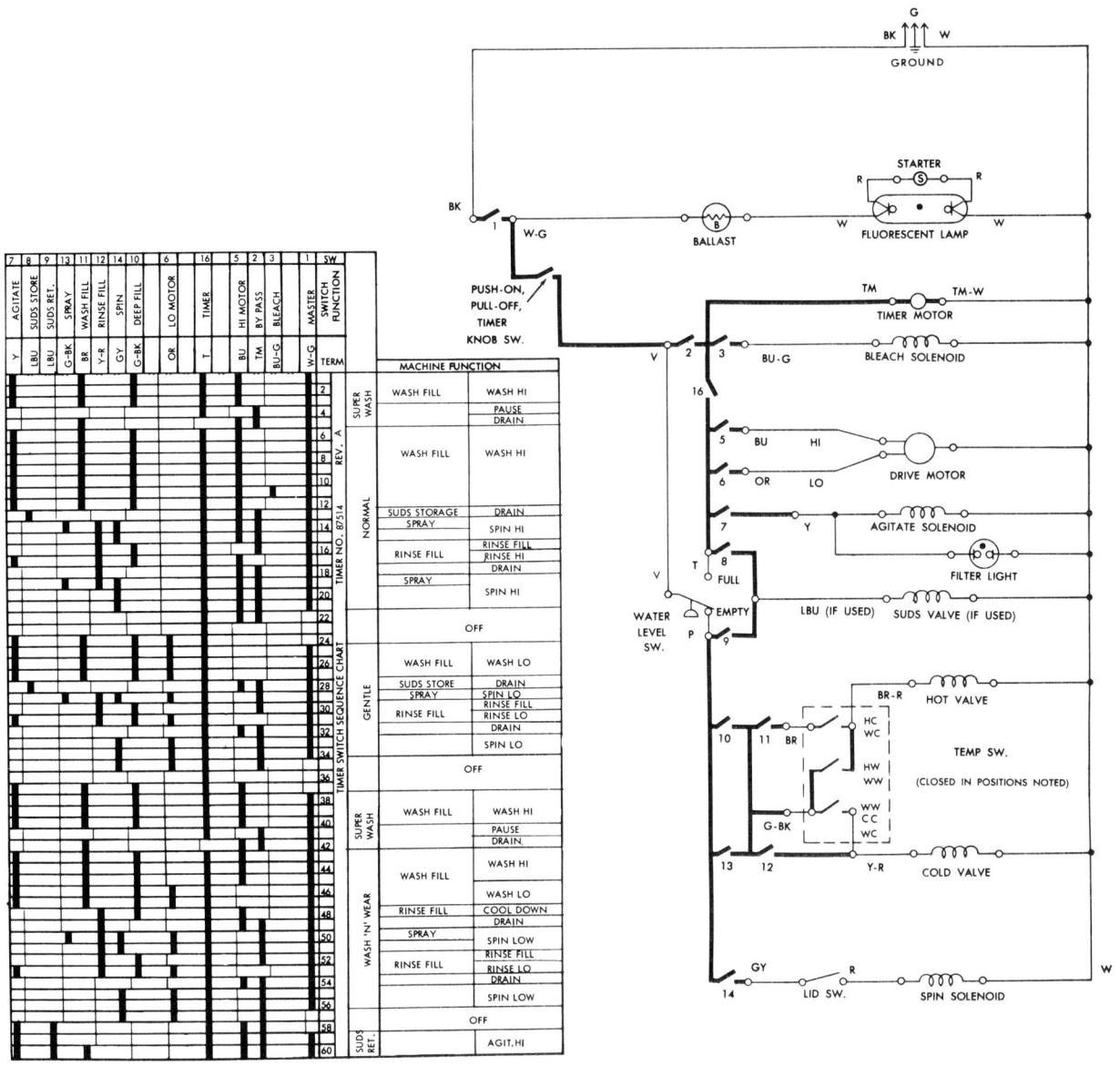
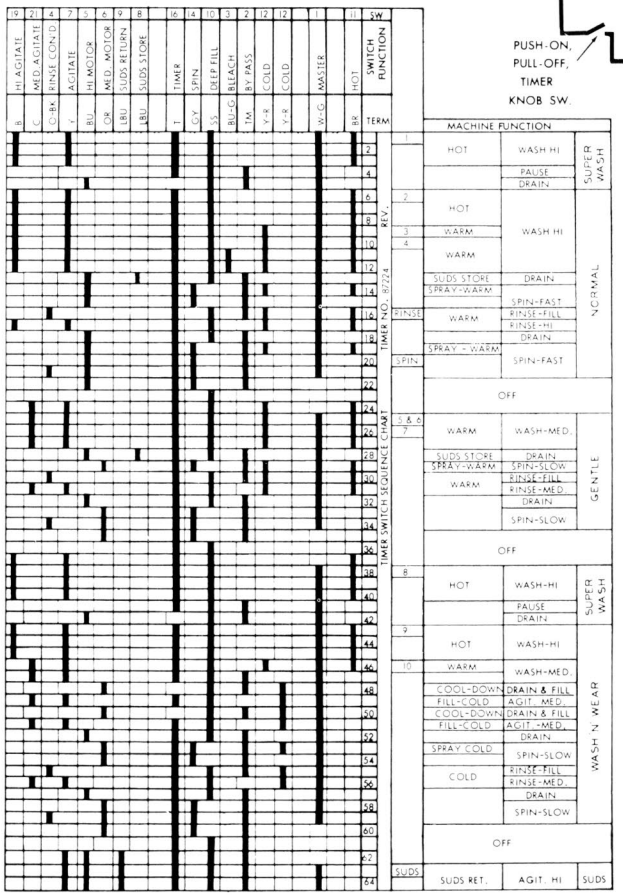

GROUND
STARTER
FLUORESCENT LAMP
BALLAST
PUSH-ON, PULL-OFF, TIMER KNOB SW.
TIMER MOTOR
BLEACH SOLENOID
DRIVE MOTOR
AGITATE SOLENOID
FILTER LIGHT
FULL
EMPTY
WATER LEVEL SW.
LBU (IF USED)
SUDS VALVE (IF USED)
HOT VALVE
TEMP SW.
(CLOSED IN POSITIONS NOTED)
COLD VALVE
LID SW.
SPIN SOLENOID
TIMER SWITCH SEQUENCE CHART
TIMER NO. 87514 REV. A
MACHINE FUNCTION
SWITCH FUNCTION
AGITATE
SUDS STORE
SUDS RET.
SPRAY
WASH FILL
RINSE FILL
SPIN
DEEP FILL
LO MOTOR
TIMER
HI MOTOR
BY PASS
BLEACH
MASTER
SW
TERM
SUPER WASH
NORMAL
GENTLE
WASH 'N' WEAR
SUDS RET.
WASH FILL
WASH HI
PAUSE
DRAIN
SUDS STORAGE
SPRAY
SPIN HI
RINSE FILL
RINSE HI
SPIN LO
RINSE LO
SPIN LOW
OFF
AGIT. HI
COOL DOWN

DIAGRAM NO. 7

AUXILIARY TIMER SWITCH FUNCTIONS

PUSHBUTTON	FUNCTION
=4	COLD WASH & RINSE, CYCLE =4
=6	LOW SPEED AGITATION, CYCLE =6
=7	LOW SPEED AGITATION, CYCLE =7
LOW AGITATE	LOW SPEED AGITATION, ALL CYCLES



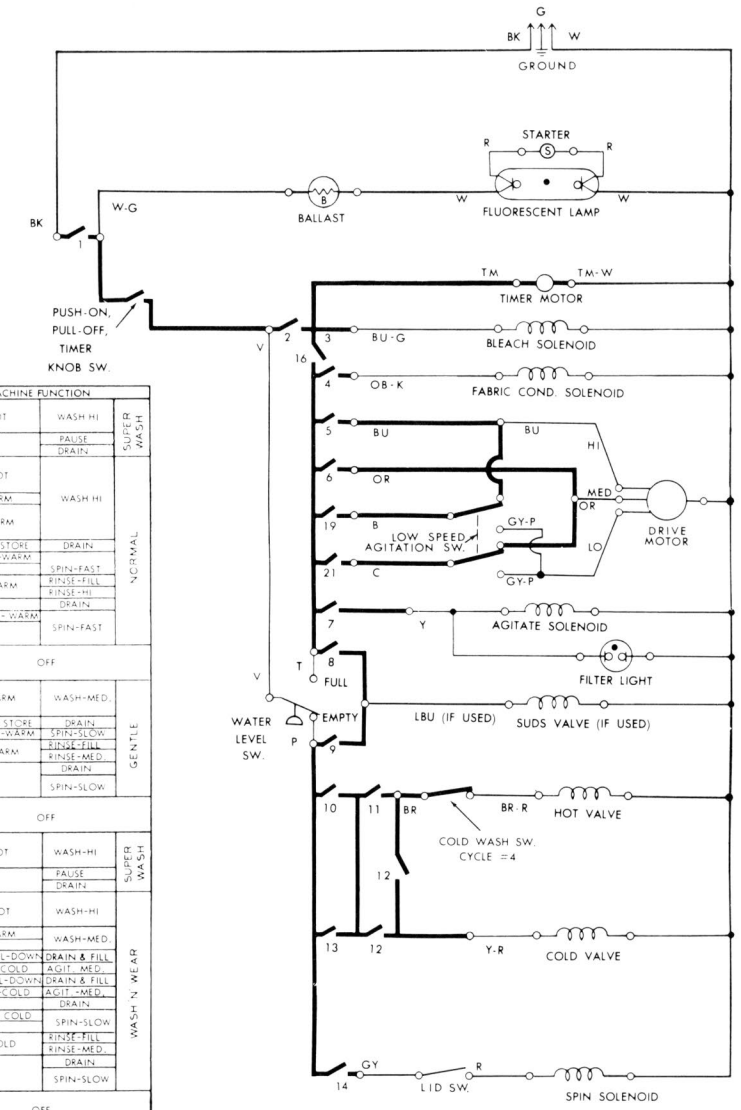


DIAGRAM NO. 8

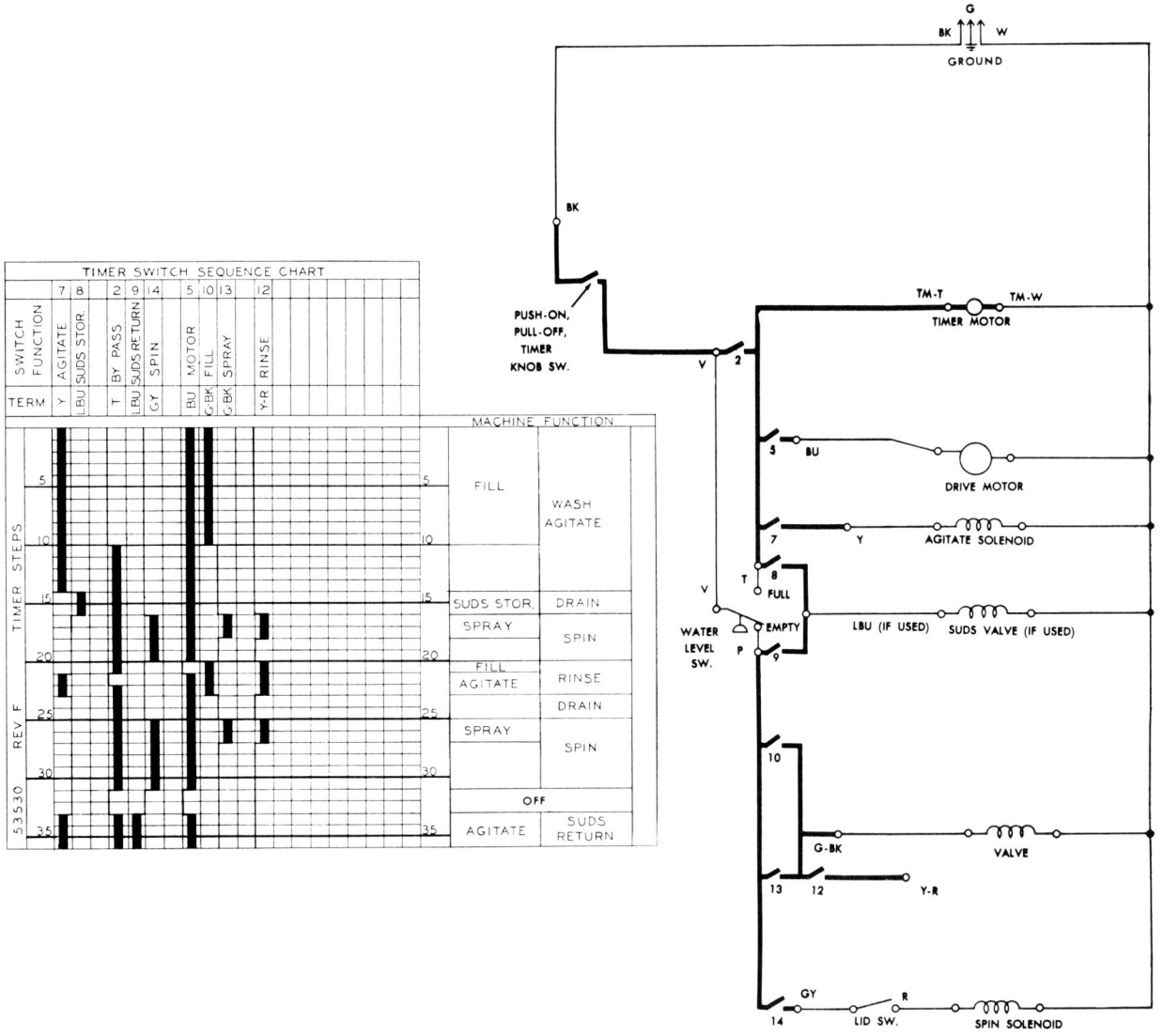
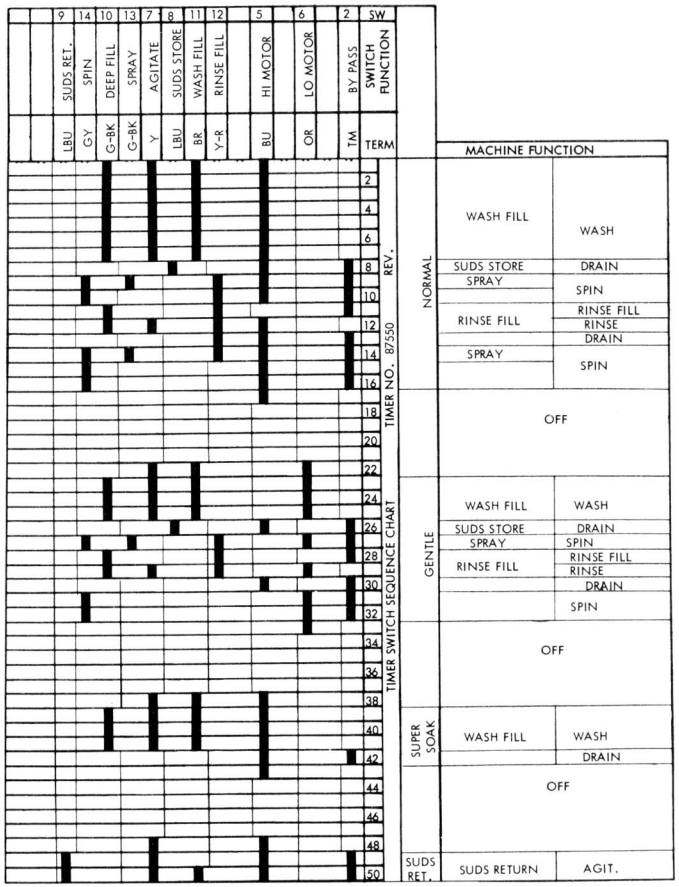

TIMER SWITCH SEQUENCE CHART
SWITCH FUNCTION
TERM
7 8 2 9 14 5 10 13 12
AGITATE
SUDS STOR.
BY PASS
SUDS RETURN
SPIN
MOTOR
FILL
SPRAY
RINSE
Y
LBU
T
LBU
GY
BU
G-BK
G-BK
Y-R
MACHINE FUNCTION
TIMER STEPS
REV F
53530
5
10
15
20
25
30
35
FILL
WASH
AGITATE
SUDS STOR.
DRAIN
SPRAY
SPIN
FILL
AGITATE
RINSE
DRAIN
SPRAY
SPIN
OFF
AGITATE
SUDS RETURN
G
BK
W
GROUND
BK
PUSH-ON, PULL-OFF, TIMER KNOB SW.
V
2
TM-T
TM-W
TIMER MOTOR
5
BU
DRIVE MOTOR
7
Y
AGITATE SOLENOID
T
8
FULL
V
WATER LEVEL SW.
P
EMPTY
9
LBU (IF USED)
SUDS VALVE (IF USED)
10
G-BK
VALVE
13
12
Y-R
GY
14
R
LID SW.
SPIN SOLENOID

DIAGRAM NO. 9



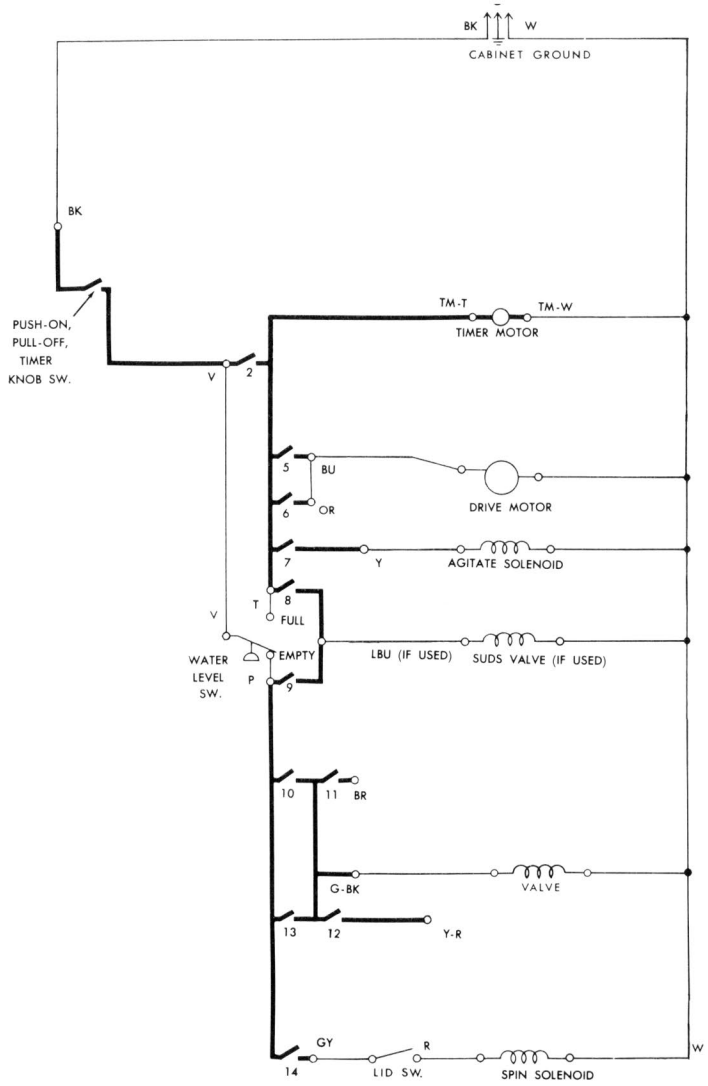
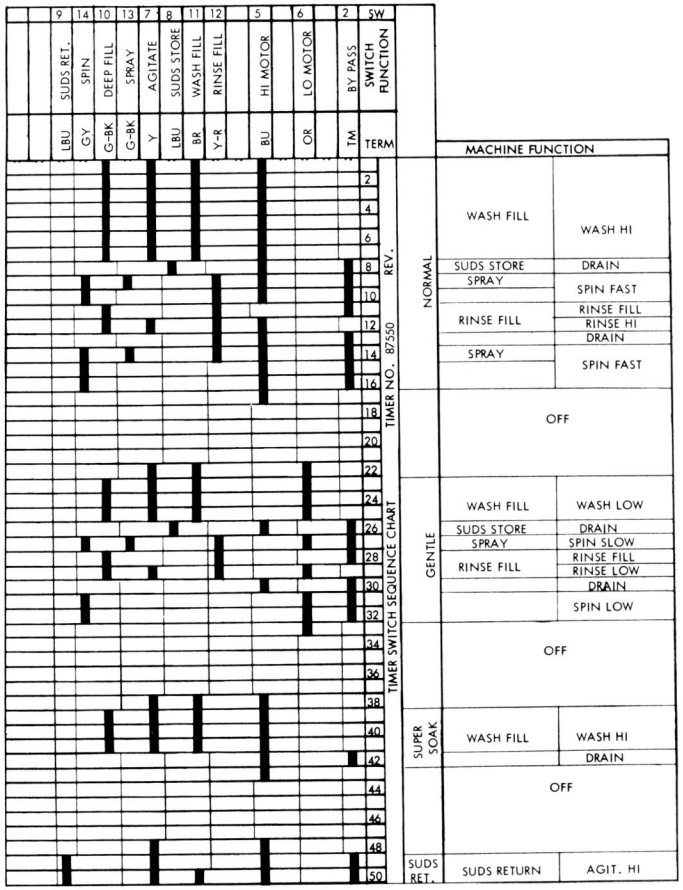


DIAGRAM NO. 10



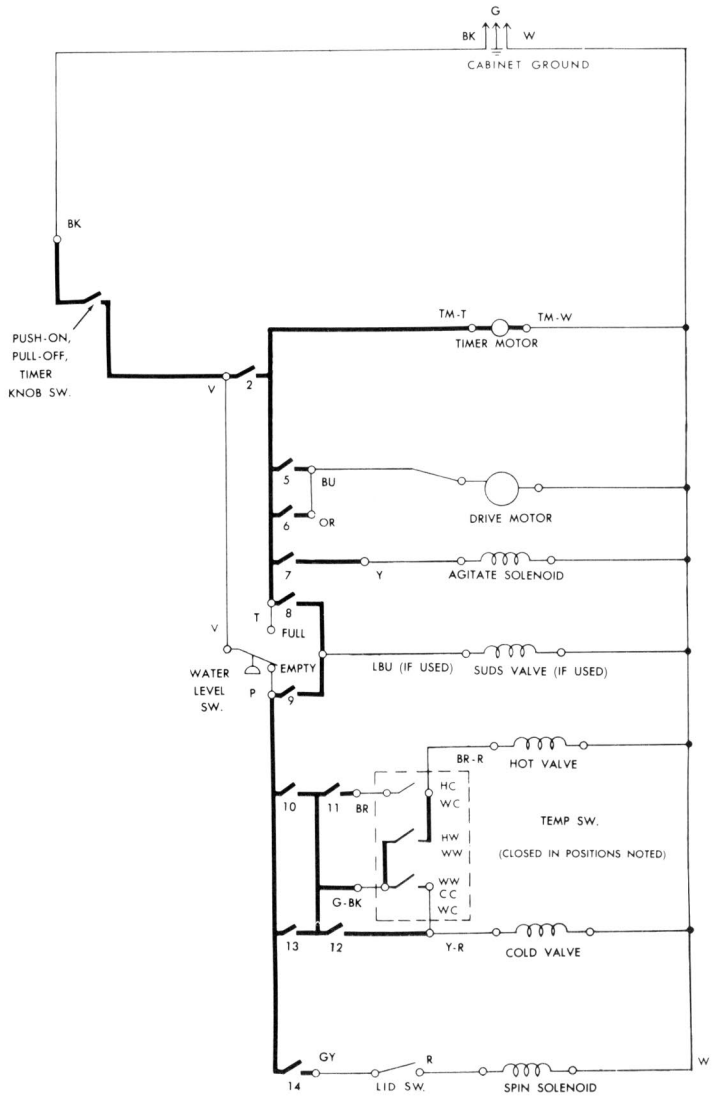
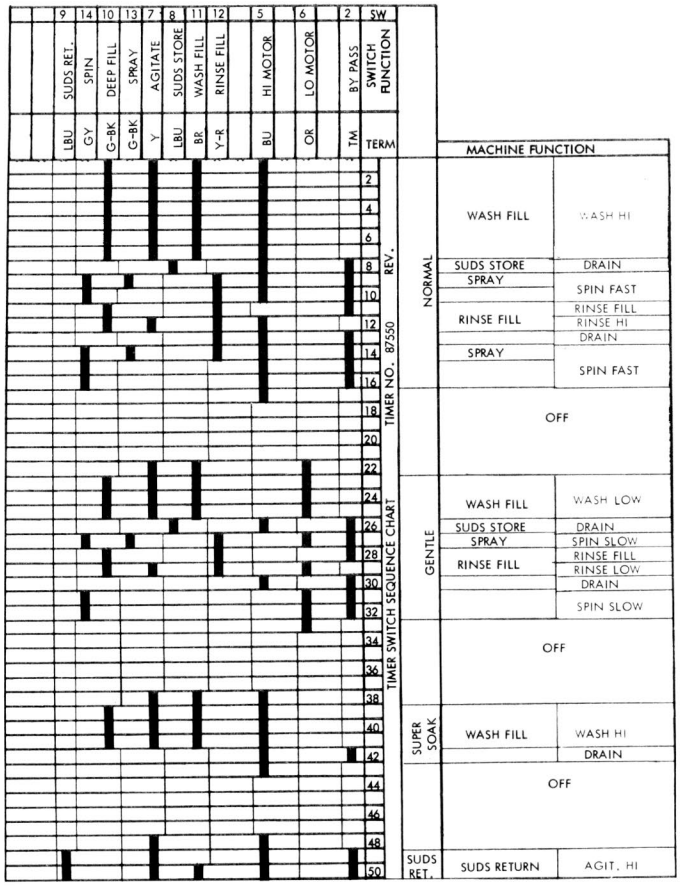


DIAGRAM NO. 11



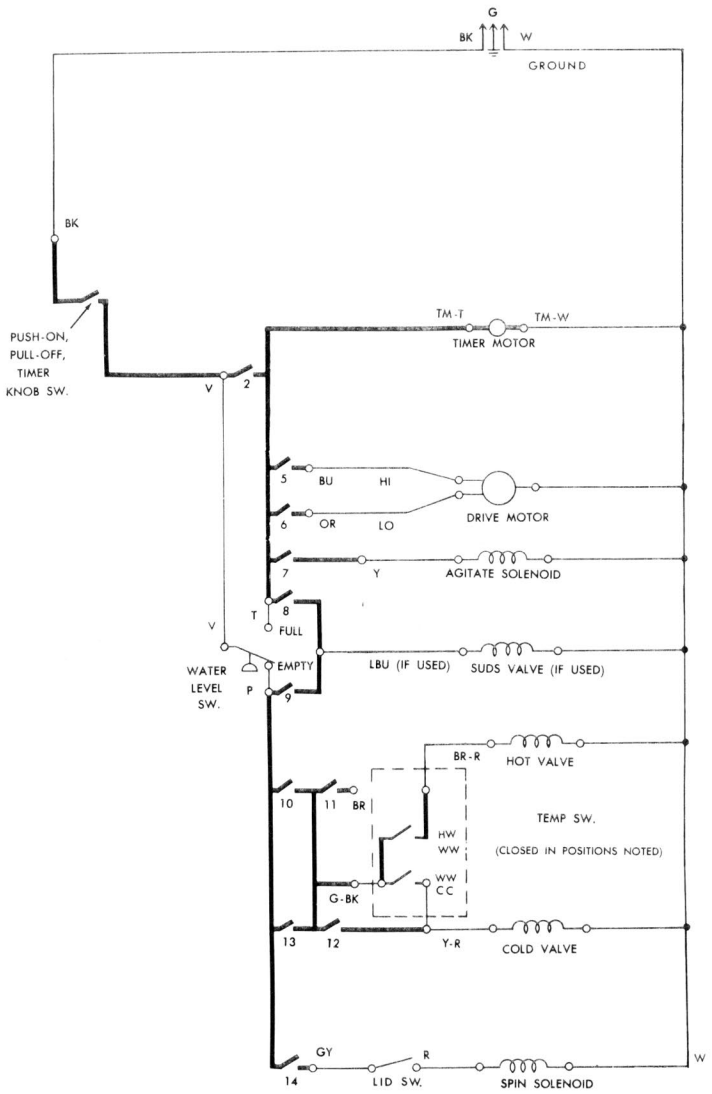
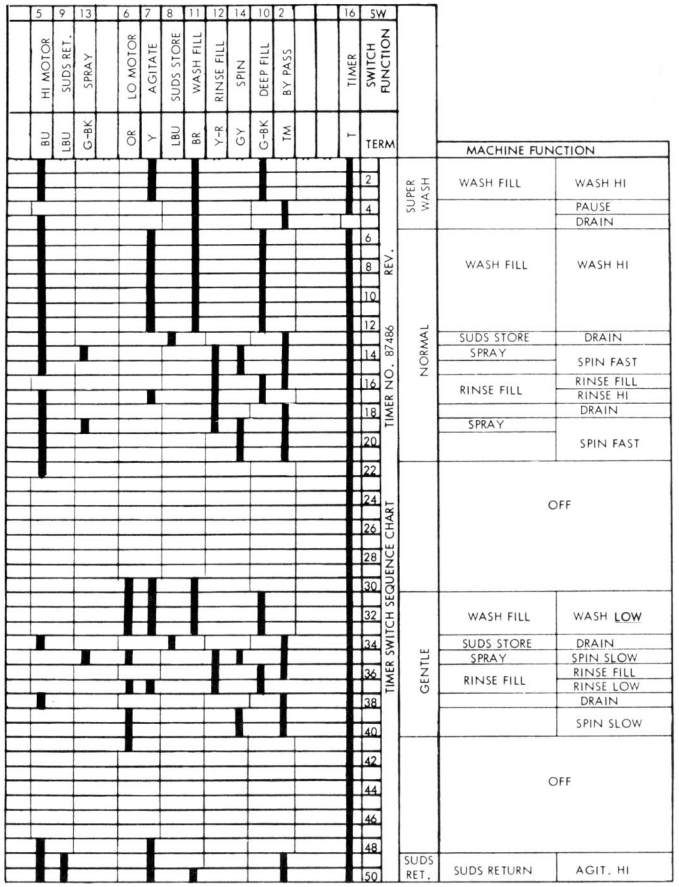


DIAGRAM NO. 12



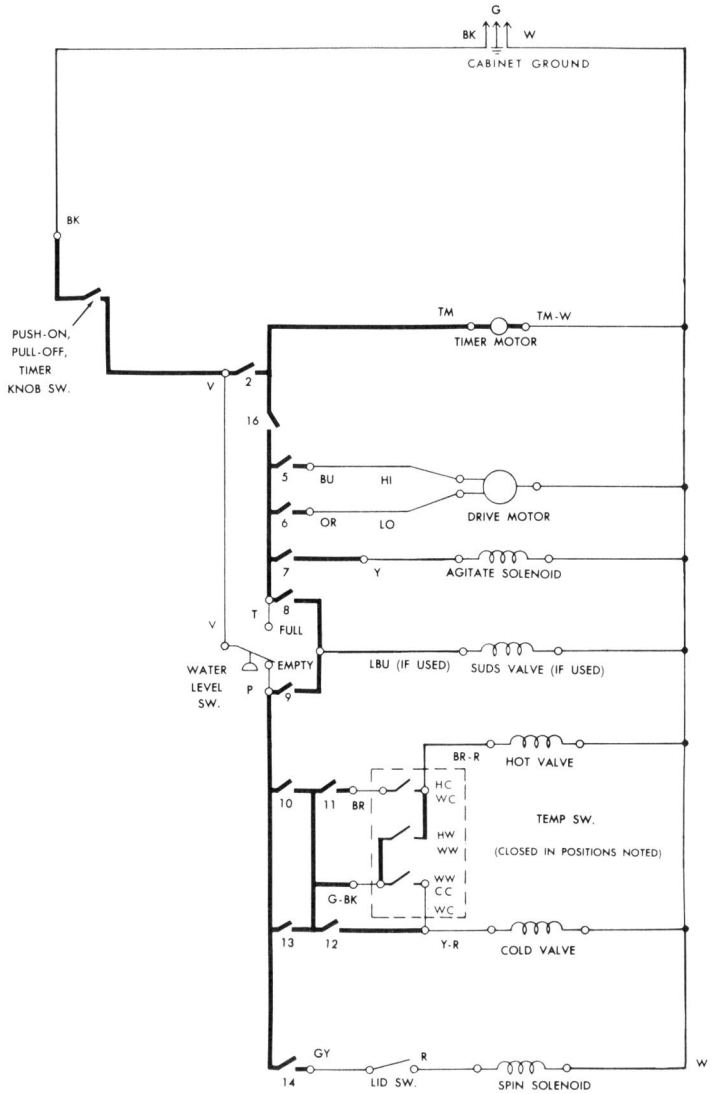
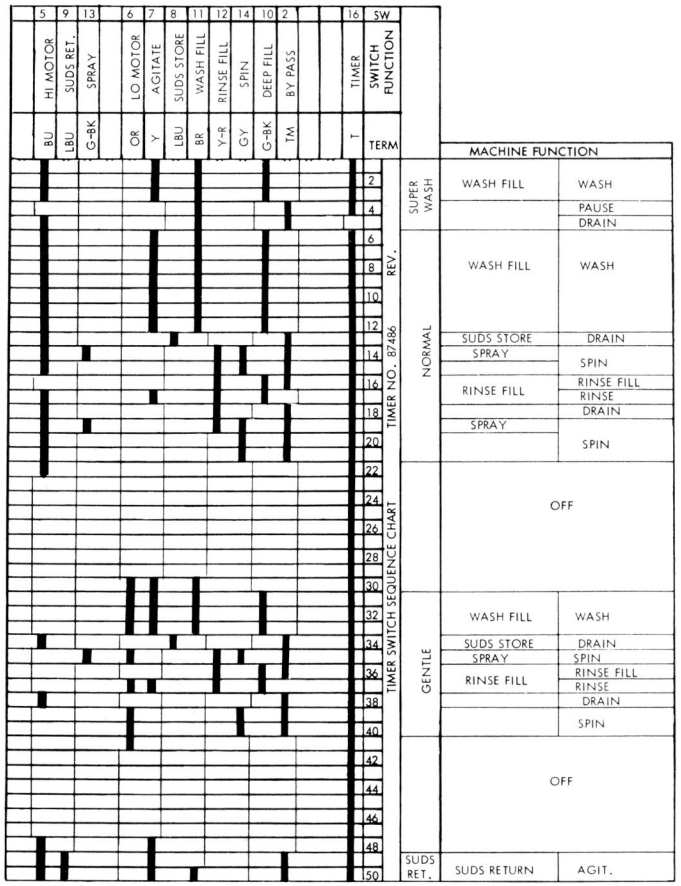


DIAGRAM NO. 13



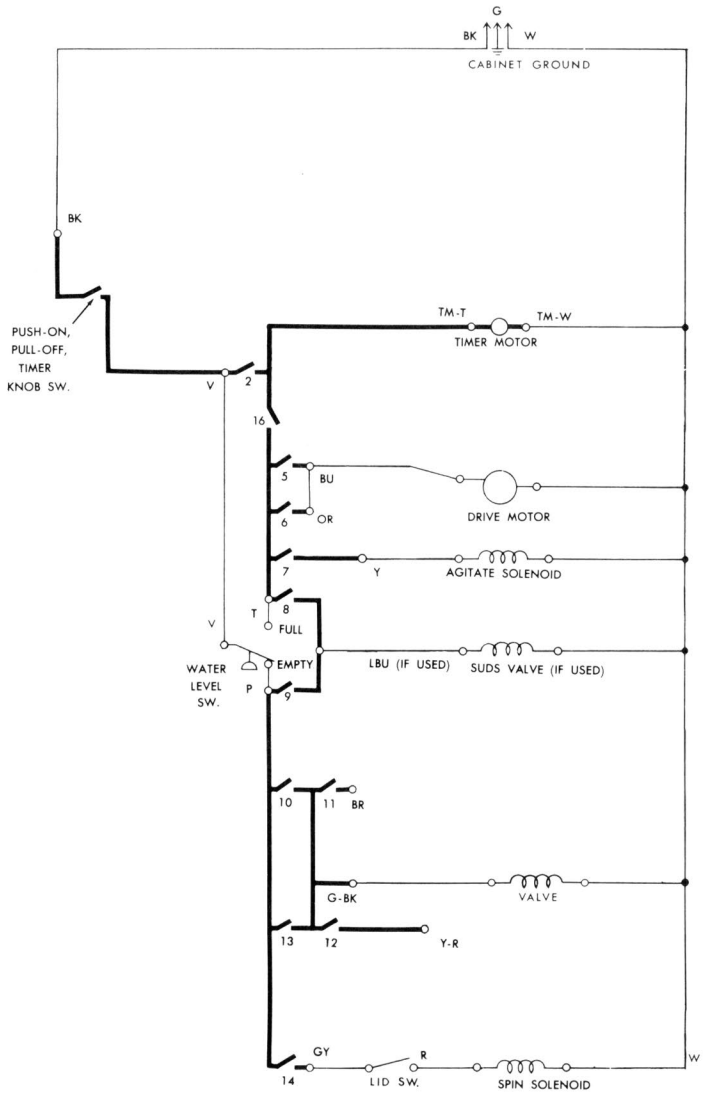
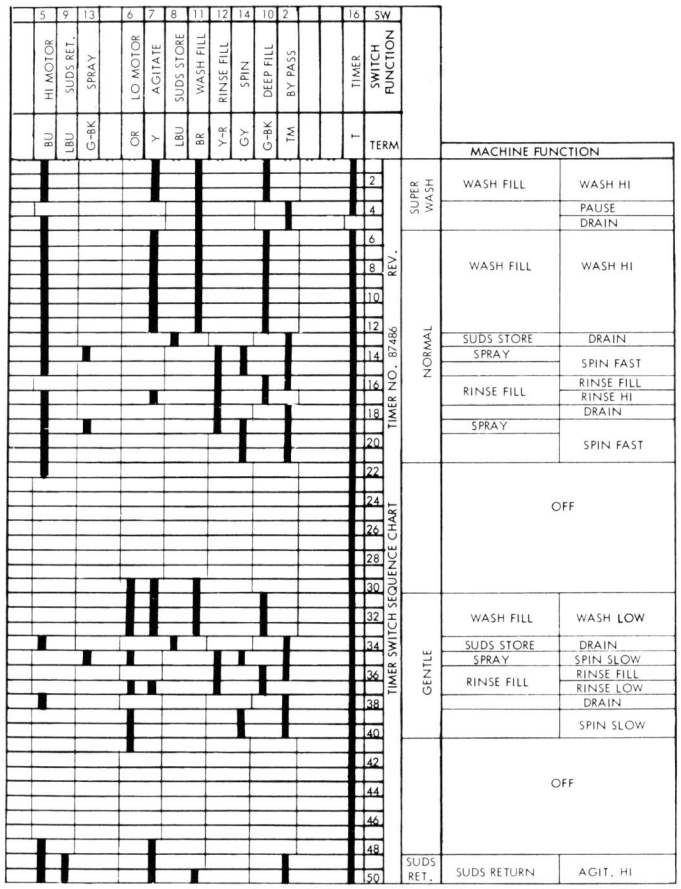


DIAGRAM NO. 14



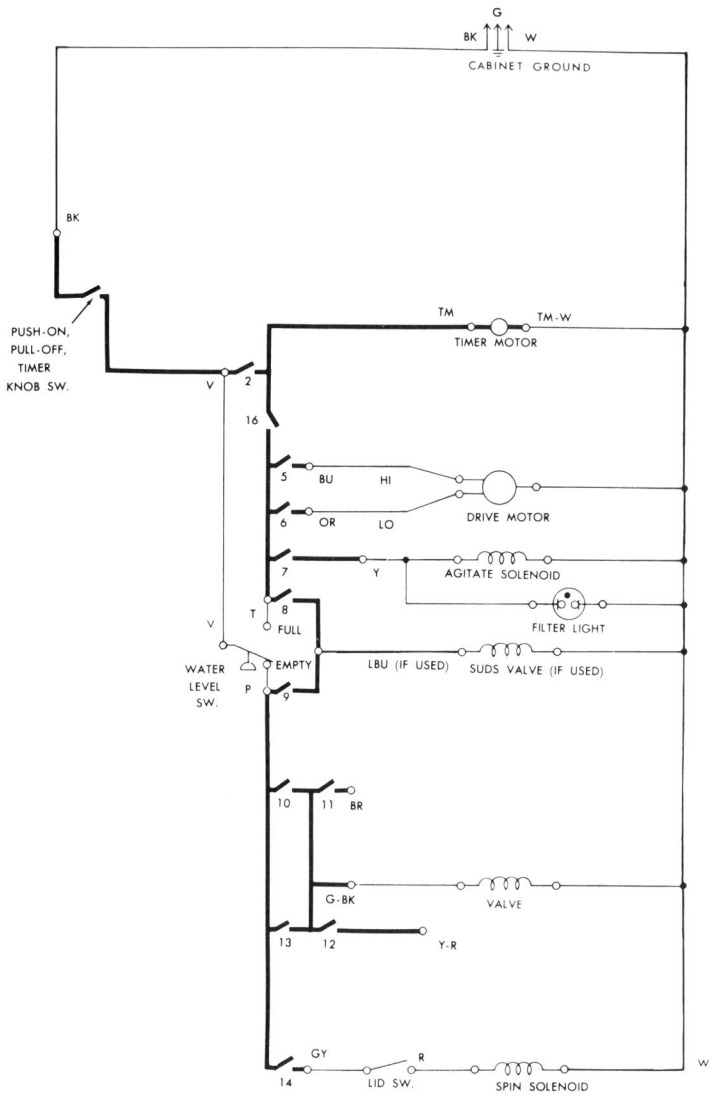
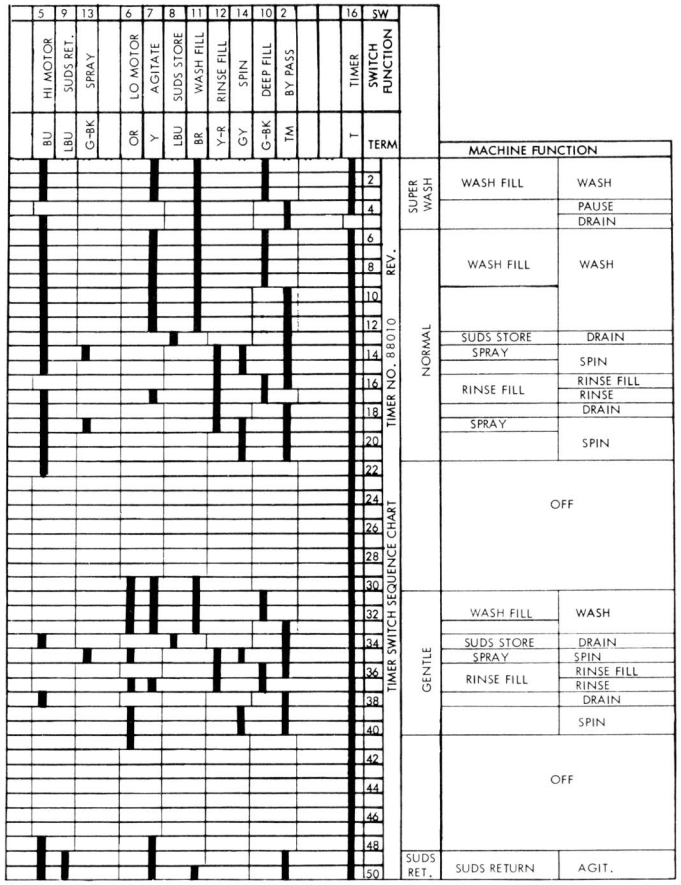


DIAGRAM NO. 15



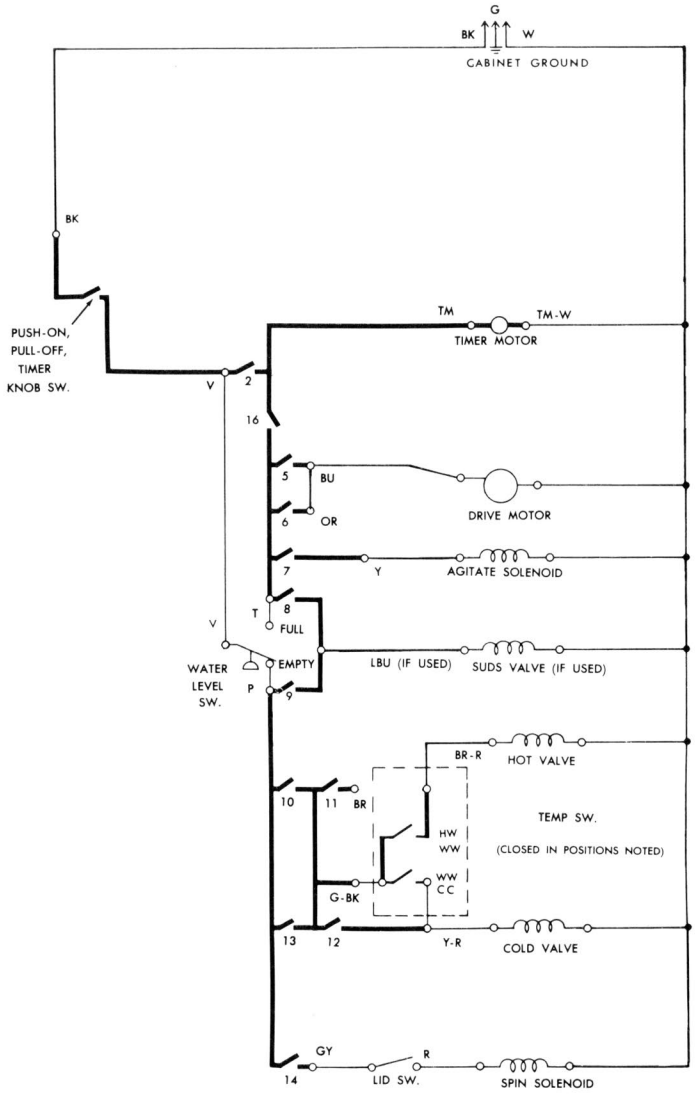
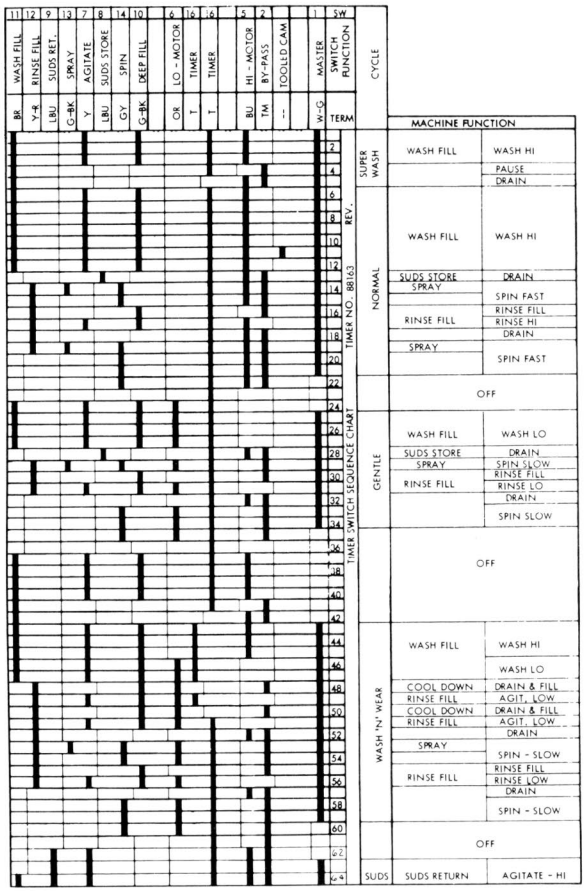


DIAGRAM NO. 16



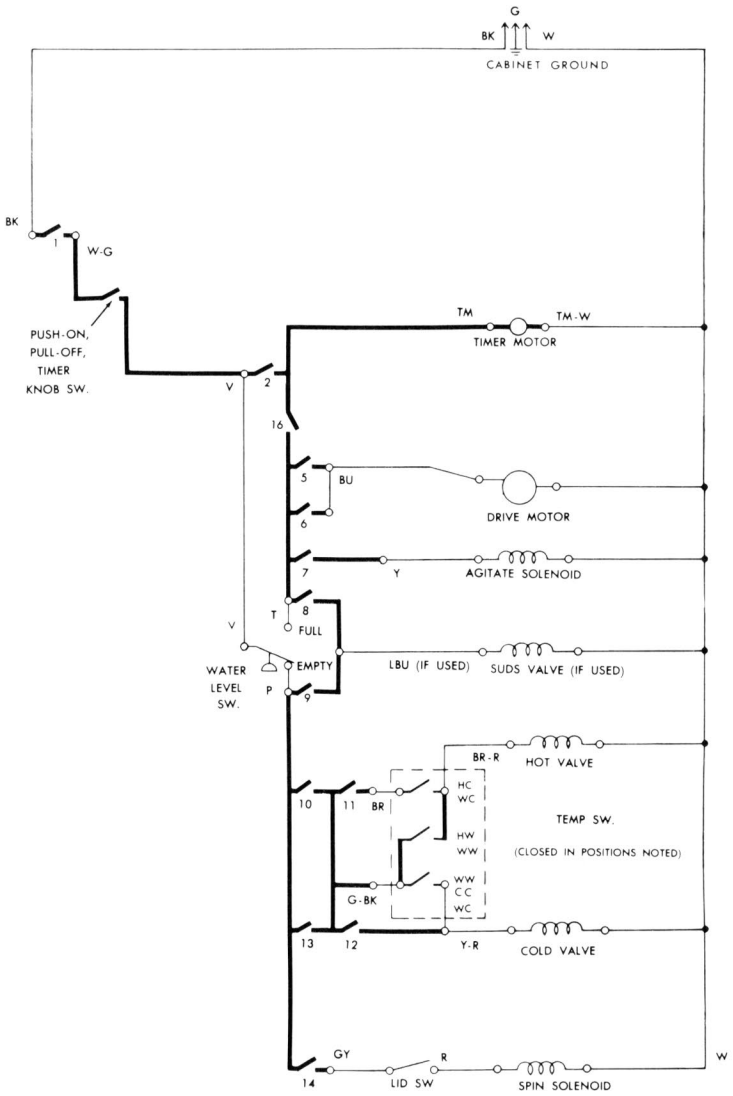
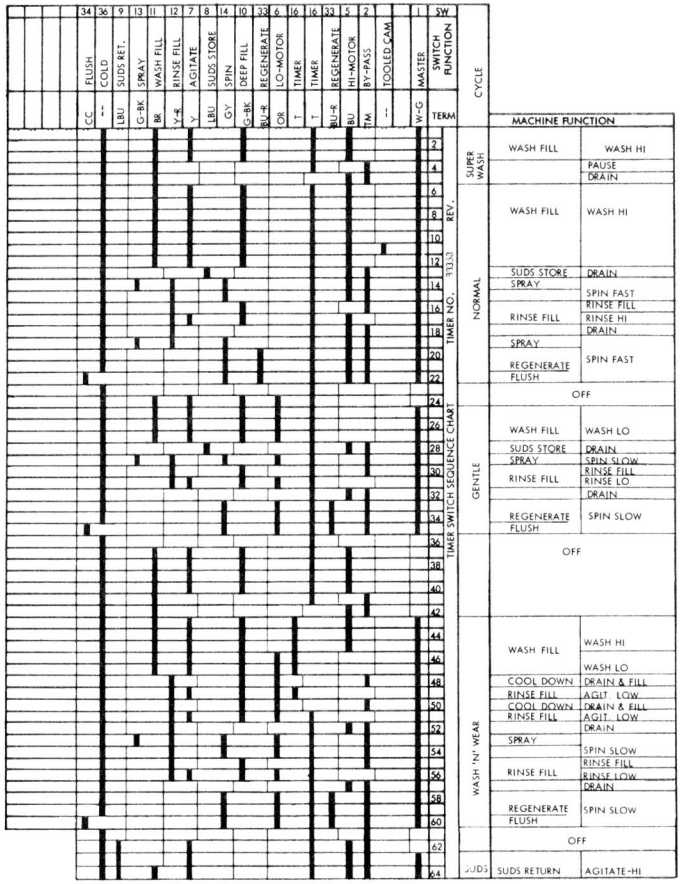


DIAGRAM NO. 17



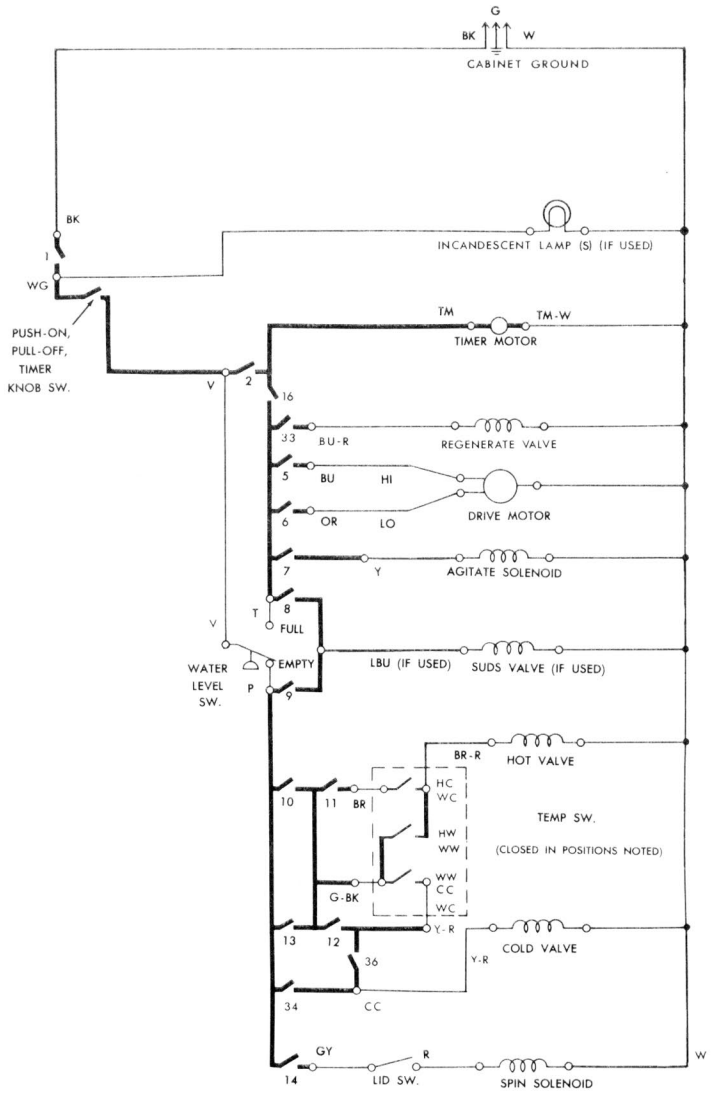
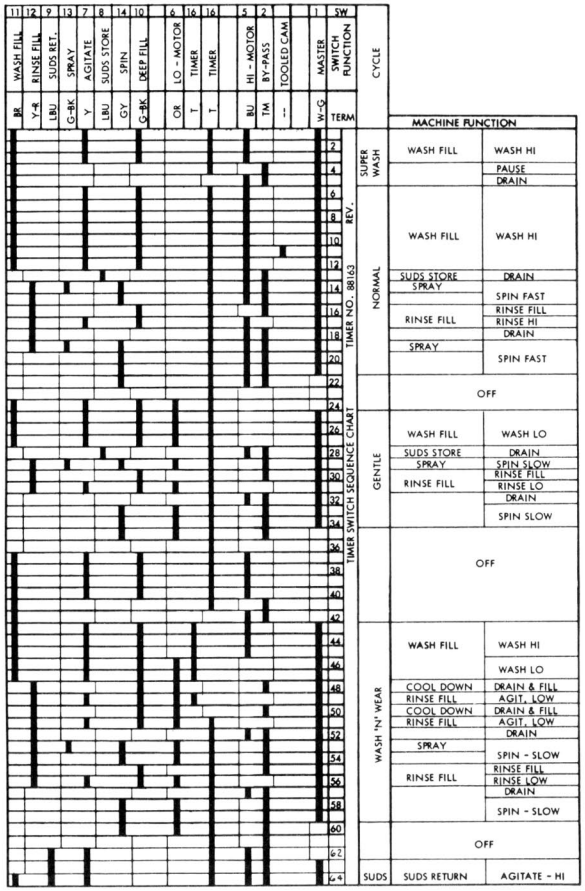


DIAGRAM NO. 18



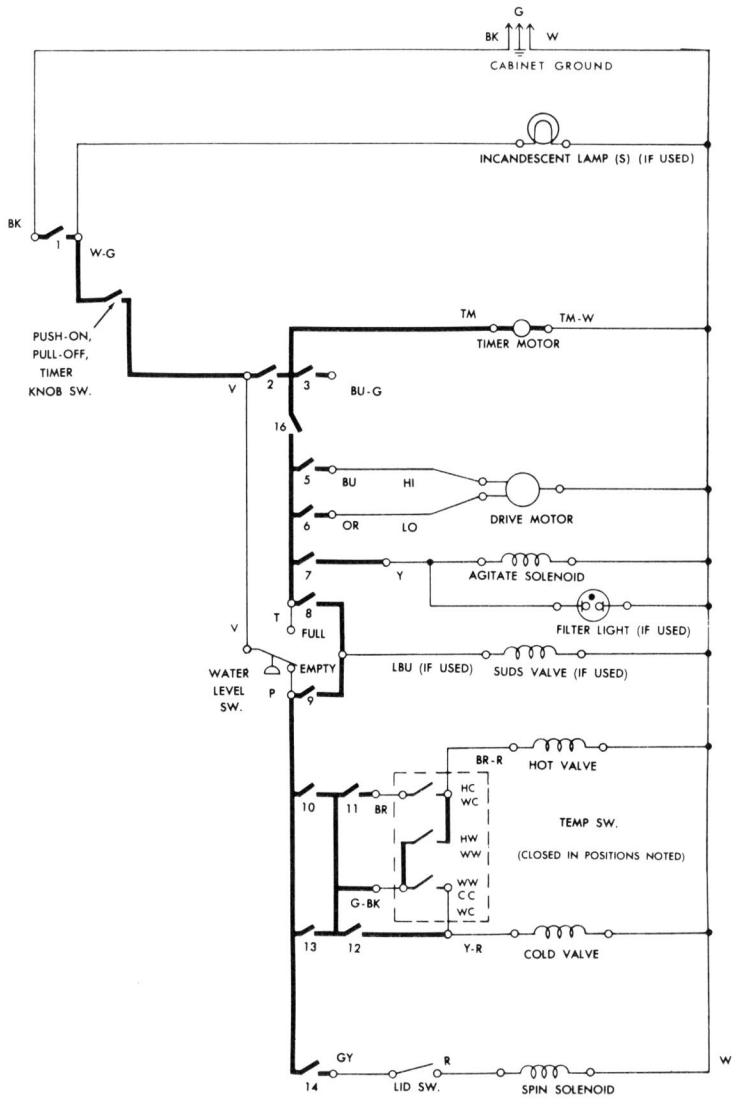
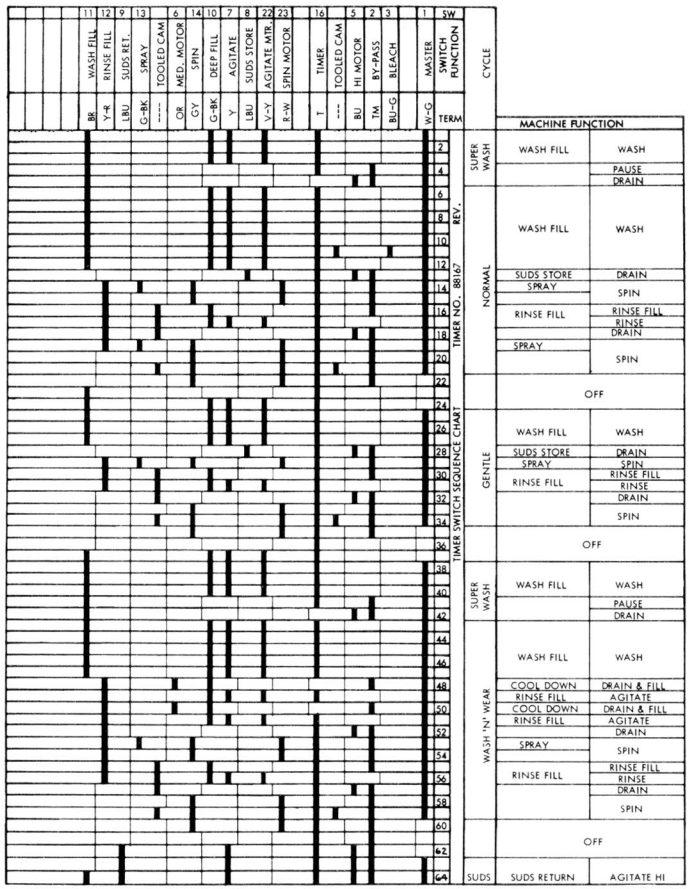


DIAGRAM NO. 19

SPEED CONTROL SWITCH

AGITATE - SPIN	SWITCH FUNCTION
HIGH - HIGH	V-Y TO BU; R-W TO BU
HIGH - LOW	V-Y TO BU; R-W TO OR
LOW - HIGH	V-Y TO OR; R-W TO BU
LOW - LOW	V-Y TO OR; R-W TO OR



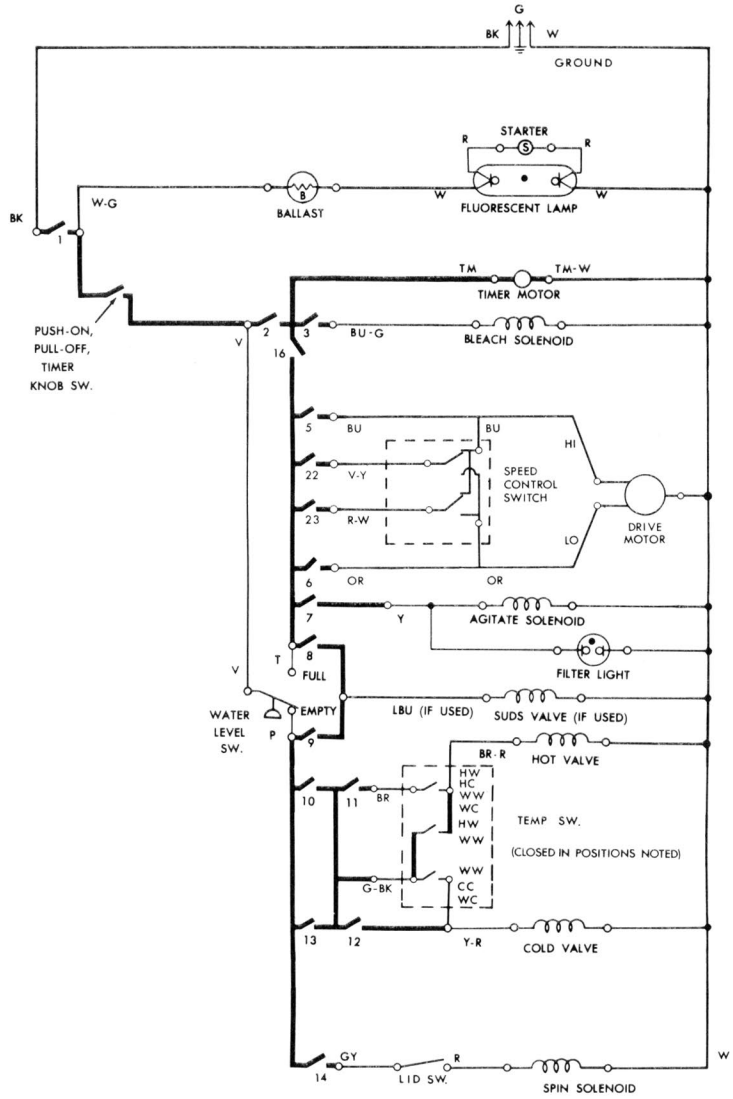
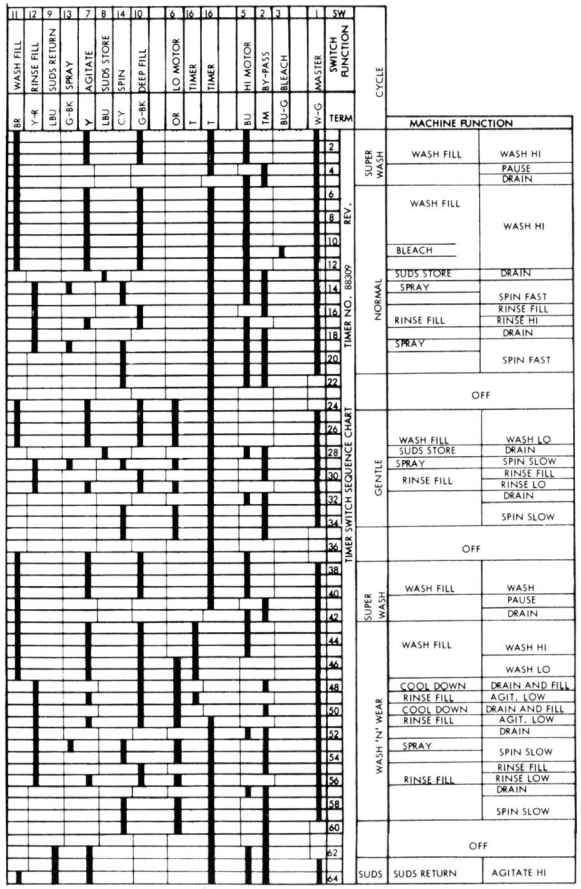


DIAGRAM NO. 20



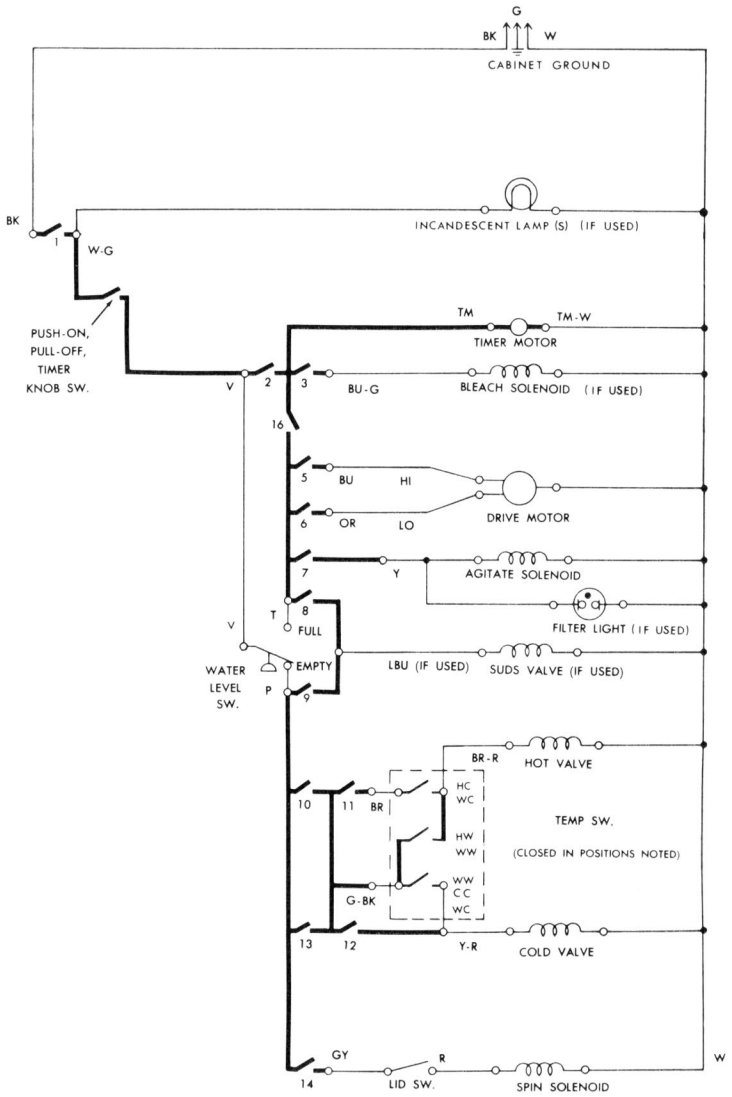


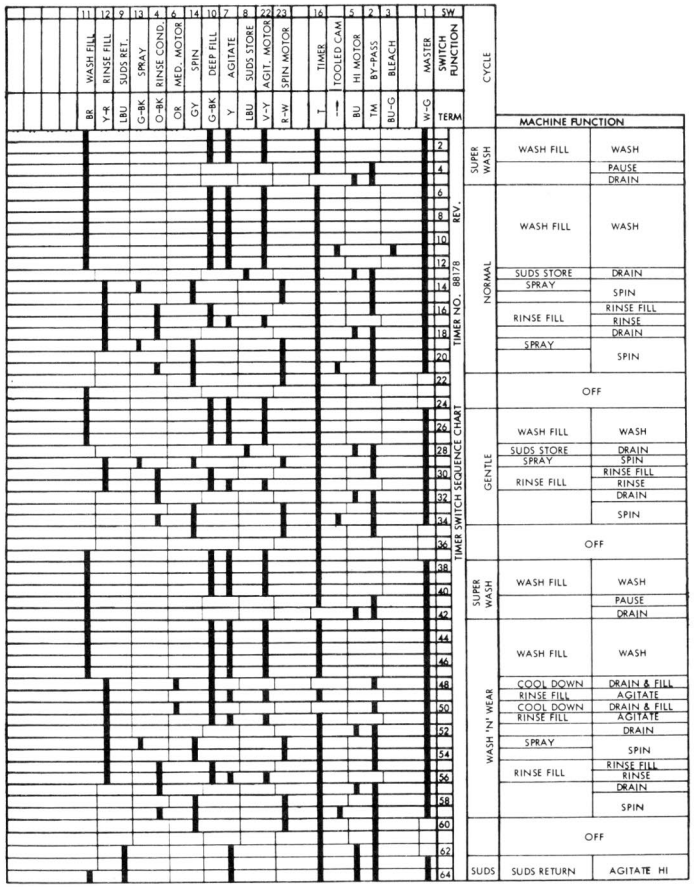
DIAGRAM NO. 21

SPEED CONTROL SWITCH

AGITATE	SWITCH FUNCTION
HIGH	BU-O TO BU
MEDIUM	BU-O TO OR
LOW	BU-O TO GY-P
SPIN	
HIGH	R-W TO BU
LOW	R-W TO OR

HAND WASH AUX. SWITCH

NORMAL	V TO W-BR V-Y TO BU-O
HAND WASH POSITION	V TO W-O V-Y TO GY-P



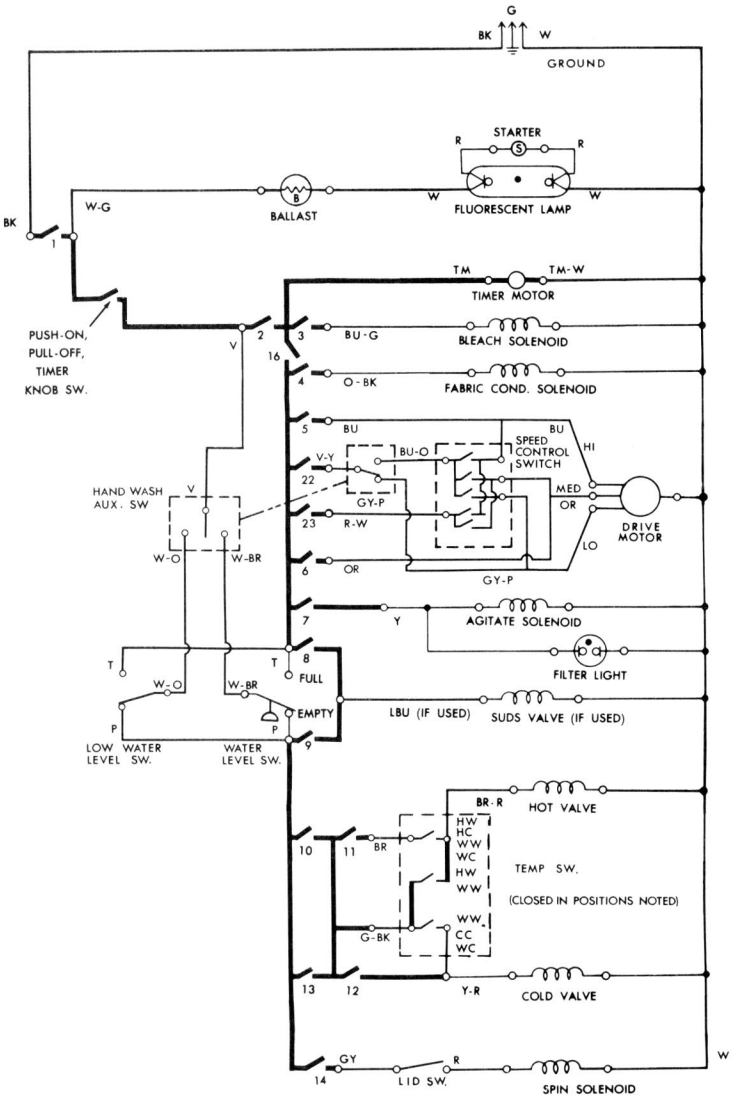


DIAGRAM NO. 22