FRIGIDAIRE SERVICE
Tech-Talk
Quality Products — Backed by Quality Service

VOLUME 70, NO. 6 CLOTHES WASHERS SEPTEMBER, 1970

"S" LINE CLOTHES WASHERS

Section I
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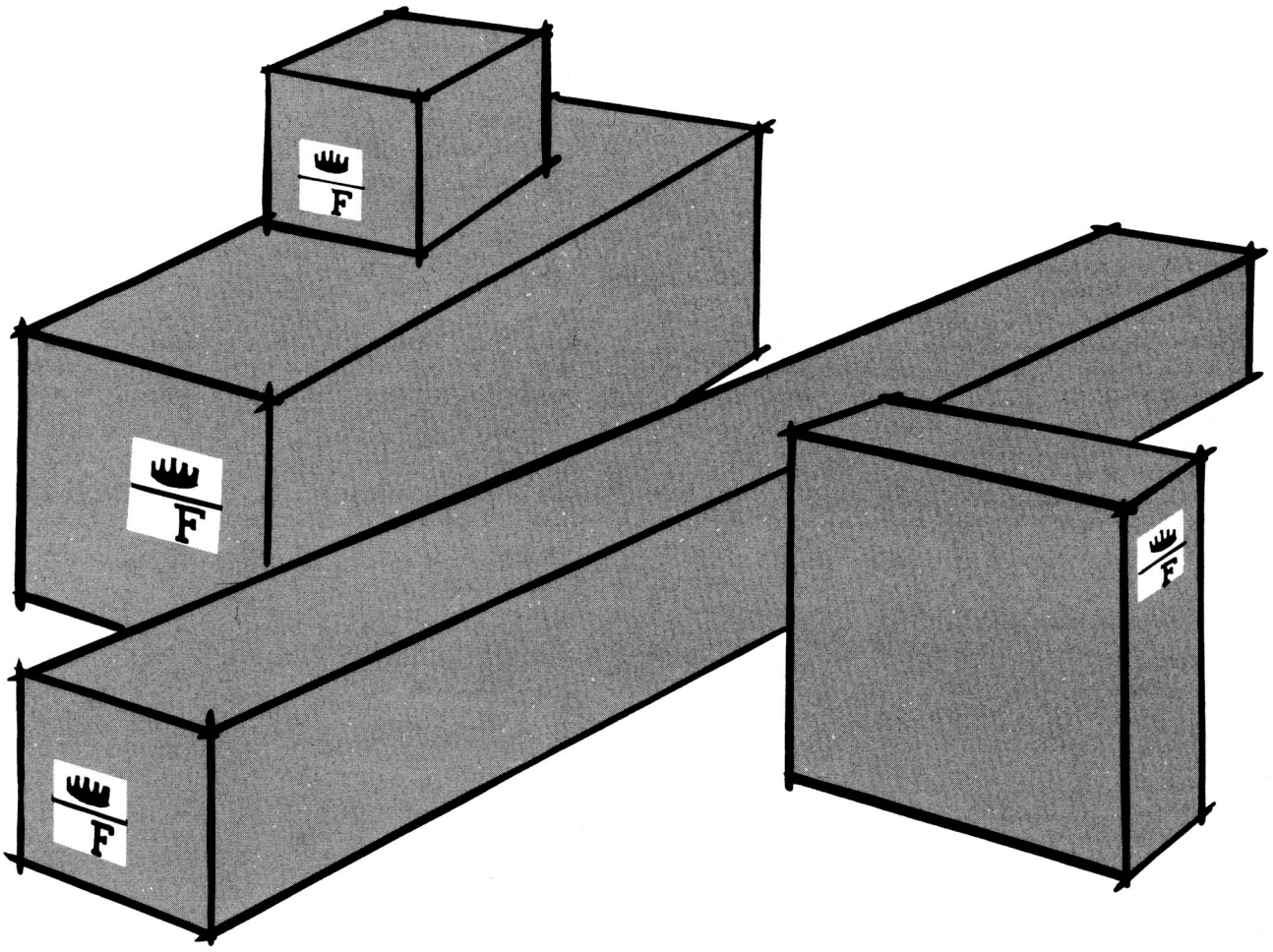
INDEX

Item	Vol.	No.	Page
TABLES			
I Specifications	70	6	W-4
II Timer Sequence—Models WAS, WCDS, WIAS, WIS	70	6	W-6
III Timer Sequence—Model WCDAS, Normal Cycle	70	6	W-7
IV Timer Sequence—Model WCDAS, Gentle Cycle	70	6	W-7
V Timer Sequence—Model WCDRS	70	6	W-8
VI Timer Sequence—Model WCIS	70	6	W-8
VII Torque Requirements	70	6	W-9
VIII Resistance Values, Components—Direct Current	70	6	W-9
IX Running Wattage Data	70	6	W-9
X Loc-Tite Requirements	70	6	W-9
Introduction, Construction, Operation and Testing Procedures	70	6	W-11
Agitate Arm Assembly:	70	6	W-19
Agitate Shaft:	70	6	W-19
Agitate Wheel and Bearing Assembly:	70	6	W-19
Agitation Operation:	70	6	W-22
Agitator:	70	6	W-17
Automatic Advance from Soak to Wash: Model WCIS	70	6	W-28
Automatic Advance from Wash to Extra Rinse: Model WCIS	70	6	W-28
Automatic Variable Wash:	70	6	W-28
Bleach Dispenser:	70	6	W-17
Brake Components:	70	6	W-21
Brake Operation:	70	6	W-21
Cabinet:	70	6	W-15
Cabinet Top:	70	6	W-14
Checking the Lid Switch:	70	6	W-30
Checking the Timer:	70	6	W-28
Checking the Water Valve:	70	6	W-27
Cold Water Control: Models WIAS-WCIS	70	6	W-30
Consoles:	70	6	W-11
Drive Pulley:	70	6	W-19
Drive Shaft:	70	6	W-19
Fabrics Control: Models WIAS-WCIS	70	6	W-30
Fluorescent Lamp: Models WIS-WCIS	70	6	W-30
Jet Circle Fill Tube and Vacuum Break:	70	6	W-16
Lid:	70	6	W-15
Lid Safety Switch:	70	6	W-30
Load Selector Control:	70	6	W-29
Mechanism:	70	6	W-18
Mechanism Mounting and Snubber:	70	6	W-18
Model, Serial and Data Plate:	70	6	W-11
Motor to Mechanism Application and Operational Characteristics:	70	6	W-18
Operation of Pressure Fill Control System:	70	6	W-30
Options Control: Model WCIS	70	6	W-29
Pressure Fill—Rinse Cycle:	70	6	W-30
Pressure Fill System and Components:	70	6	W-30
Recirculate and Filter System:	70	6	W-24
Rinse and Soak Temperature Control: Model WIS	70	6	W-30
Rollers, Agitate and Spin:	70	6	W-19
Speed Control:	70	6	W-30
Spin Operation:	70	6	W-23
Spin Shaft and Bearings:	70	6	W-20
Spin Wheel:	70	6	W-20
Spin Wheel, Brake and Clutch:	70	6	W-20
Sub Top:	70	6	W-16
Suds Saver; Model WCDRS	70	6	W-28
Suds Saving Control: Model WCDRS	70	6	W-30
Sure-Spin Clutch Components:	70	6	W-21
Timer Dial:	70	6	W-27
Timer Knob:	70	6	W-27
Tub:	70	6	W-17
Unbalanced Load—Automatic Spin Stop:	70	6	W-27
Water Pump:	70	6	W-18
Water Valve:	70	6	W-26
Water Valve Operation:	70	6	W-26
Installation Instructions for "S" Model Frigidaire Automatic Domestic Washers	70	6	W-33
Service Diagnosis	70	6	W-37
Diagnosis Tables:	70	6	W-39
Instructions for Washer Analyzer #14387:	70	6	W-37
Checking Cabinet Mounted Components:	70	6	W-37
Console Component and Lid Switch Check:	70	6	W-37

INDEX Cont'd.

Item	Vol.	No.	Page
Motor Start and Speed Control Circuits:	70	6	W-38
Pressure Switch Check:	70	6	W-38
Service Procedures	70	6	W-42
Agitator—Replacement:	70	6	W-48
—Bleach Cup:	70	6	W-49
—Diaphragm Replacement:	70	6	W-49
Base Pan—Replacement:	70	6	W-56
Bellows—Replacement:	70	6	W-50
Cabinet—Replacement or Removal:	70	6	W-54
Console—Removal:	70	6	W-42
Controls:	70	6	W-44
Counter Balance Springs—Adjustment:			
End Panel and Switch Mounting Plate—Removal:	70	6	W-56
	70	6	W-45
Escutcheon—Removal:	70	6	W-44
Front Access Panel—Removal:	70	6	W-53
Hinges, Lid—Adjust and Replace:			
Jet Circle Fill Tube and Vacuum Break-Replacement:	70	6	W-46
	70	6	W-46
Lamp Removal:	70	6	W-45
Mechanism Service	70	6	W-60
—Agitate Arm—Replacement:	70	6	W-64
—Agitate Shaft—Replacement:	70	6	W-72
—Agitate Wheel, Agitate Wheel Ring—Replacement:	70	6	W-65
—Belt—Replacement and Tightening:	70	6	W-62
—Belt—Tightening:	70	6	W-64
—Brake Components:	70	6	W-69
—Brake Plate:	70	6	W-69
—Discharge Pump Seals—Replacement:	70	6	W-68
—Drain Sump Assembly—Replacement:	70	6	W-73
—Drive Pulley—Replacement:	70	6	W-73
—Drive Shaft and Bearings—Replacement:	70	6	W-73
—Driver, Agitate and Spin—Replacement:	70	6	W-70
—Mechanism—Removal:	70	6	W-70
—Mechanism Support—Replacement:	70	6	W-73
—Motor—Replacement:	70	6	W-62
—Motor Switch—Replacement:	70	6	W-62
—Outer Tub Assembly—Replacement:	70	6	W-74
—Pump Assembly—Replacement:	70	6	W-66
—Roller—Replacement:	70	6	W-64
—Skirt Overflow—Replacement:	70	6	W-74
—Spin Shaft and Bearings—Replacement:	70	6	W-72
—Spin Wheel and Clutch Assembly, Brake Components—Replacement:	70	6	W-68
Pressure Switch—Removal:	70	6	W-43
Snubber Components—Counter Balance Springs:	70	6	W-56
Sub Top—Removal:	70	6	W-48
Sub Top Seal, Sub Top—Replacement:	70	6	W-48
Sudswater Saver Components—Replacement:	70	6	W-55
Switch, Lid Safety—Removal:	70	6	W-46
Switch, Out of Balance—Replacement:	70	6	W-46
Timer—Replacement:	70	6	W-42
Top—Removal:	70	6	W-46
Tub—Replacement:	70	6	W-51
Tub Support and Seal—Replacement:	70	6	W-51
Valve, Water—Repair and Replacement:	70	6	W-47
Tools	70	6	W-58
Electrical Circuit Diagnosis			
Model WAS	70	6	W-76
Model WCDS	70	6	W-78
Model WCDRS	70	6	W-80
Model WCDAS	70	6	W-82
Model WIAS	70	6	W-84
Model WIS	70	6	W-86
Model WCIS	70	6	W-88
Home-Ec Talk	70	6	W-90

no "hocus pocus"



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FRIGIDAIRE
CUSTOMER SERVICE

Table I
"S" Line Frigidaire Automatic Washer—Product Specifications

	WAS	WCDAS	WCDS	WCDRS	WIAS	WIS	WCIS
Washer Exterior Dimensions (In.)							
Height to Work Surface	36¼	36¼	36¼	36¼	36¼	36¼	36¼
Height to Top of Control Panel	44¼	44¼	44¼	44¼	44¼	44⅞	44⅞
Height to Top Edge of Open Lid	53½	53½	53½	53½	53½	53½	53½
Width of Cabinet	27	27	27	27	27	27	27
Depth of Cabinet	26¼	26¼	26¼	26¼	26¼	26¼	26¼
Depth Overall	28¼	28¼	28¼	28¼	28¼	28¼	28¼
Adjustment—Height of Leveling Glides	⅝-1⅛	ALL MODELS					
Distince Between Leveling Glides:							
Front to Back—Center Lines	23⅛	23⅛	23⅛	23⅛	23⅛	23⅛	23⅛
Side to Side—Center Lines	24⅝	24⅝	24⅝	24⅝	24⅝	24⅝	24⅝
CONTROLS:							
TIMER							
Pressure Fill Infinite Water Selection	X	X	X	X	X	X	X
Dual Cycle—Wash & Soak	X	—	X	X	X	X	—
Dual Cycle—Normal—Gentle	—	X	—	—	—	—	—
Triple Cycle—Wash—Extra Rinse—Soak	—	—	—	—	—	—	X
Automatic Variable Wash Preset Soil Set	X	X	X	X	X	X	X
Wash (Regular) Cycle Soil Settings							
Extra Heavy—Max. to Min. (Minutes)	14.4	—	14.4	14.4	14.4	14.4	14.4
Heavy—Max. to Min. (Minutes)	12-9.6	—	12-9.6	12-9.6	12-9.6	12-9.6	12-9.6
Normal—Max. to Min. (Minutes	6-3	—	6-3	6-3	6-3	6-3	6-3
Light—Max to Min. (Minutes)	6-3.6	—	6-3.6	6-3.6	6-3.6	6-3.6	6-3.6
Normal—Max. to Min. (Minutes)	—	15-3	—	—	—	—	—
Gentle—Max. to Min. (Minutes)	—	5-2	—	—	—	—	—
Soak Cycle—Automatic to Wash	—	—	—	—	—	—	X
Extra Rinse—Automatic Advance After Rinse	—	—	—	—	—	—	X
Suds Return	—	—	—	X	—	—	—
Sanitize Setting	X	X	X	X	X	X	X
FABRIC CONTROL:							
Rotary Switch—6 Position	—	—	—	—	X	—	X
OPTIONS CONTROL:							
Rotary Switch—5 Position	—	—	—	—	—	—	X
SPEED CONTROL:							
Incorporated In Timer	X	X	—	—	—	—	—
Rotary Switch—2 Position	—	—	X	X	—	—	—
Rotary Switch—4 Position	—	—	—	—	—	X	—
Incorporated in Fabric Control—Automatic	—	—	—	—	X	—	X
WATER TEMPERATURE CONTROL:							
Rotary Switch—4 Position	X	X	X	X	—	—	—
Incorporated in Fabrics Control—Automatic	—	—	—	—	X	—	X
RINSE & SOAK TEMPERATURE CONTROL:							
Rotary Switch—2 Positions	—	—	—	—	—	X	—
WASH TEMPERATURE CONTROL:							
Rotary Switch—3 Positions	—	—	—	—	—	X	—
COLD WATER CONTROL:							
Rotary Switch—3 Positions	—	—	—	—	X	—	X
SUDS SAVING:							
Incorporated in Timer Cycles	—	—	—	X	—	—	—
LAMP FLUORESCENT	—	—	—	—	—	X	X
INTERIOR DESIGNS & FEATURES:							
Jet Circle Fill with Spray Rinse	X	X	X	X	X	X	X
New Jet Cone Agitator & Diaphragm	X	X	X	X	X	X	X
Jet Flow Lint Filter System	X	X	X	X	X	X	X
Tub Capacity—1/18 Lb. (Dry Clothes)	X	X	X	X	X	X	X
Water Capacity—21 Gallons	X	X	X	X	X	X	X
AGITATOR:							
Bleach & Dye Dispenser	—	—	X	X	X	X	X
Fabrics Softener Dispenser	—	—	—	—	—	—	X

Table I
"S" Line Frigidaire Automatic Washer—Product Specifications (Cont.)

	WAS	WCDAS	WCDS	WCDRS	WIAS	WIS	WCIS
MECHANISM & OPERATION:							
Rollermatic Mechanism	X	X	X	X	X	X	X
Sure Spin Drive	X	X	X	X	X	X	X
Belt Driven	X	X	X	X	X	X	X
OPERATING SPEEDS:							
Single Speed Agitate (Strokes/Min.)	360	—	—	—	—	—	—
Single Speed Spin (RPM)	630/650	—	—	—	—	—	—
TWO SPEED OPERATION:							
Agitate Speed—Normal Strokes/Min.	—	360	360	360	360	360	—
Agitate Speed—Gentle Strokes/Min.	—	240	240	240	240	240	—
Spin Speed—(RPM) Normal	—	630/650	630/650	630/650	630/650	630/650	—
Spin Speed—(RPM) Slow	—	420/435	420/435	420/435	420/435	420/435	—
THREE SPEED OPERATION:							
Agitate Speed—Normal—Strokes/Min.	—	—	—	—	—	—	360
Agitate Speed—Gentle—Strokes/Min.	—	—	—	—	—	—	240
Agitate Speed—Hand Washables—Strokes/Min.	—	—	—	—	—	—	180
Spin Speed—Normal (RPM)	—	—	—	—	—	—	630/650
Spin Speed—Slow (RPM)	—	—	—	—	—	—	420/435
WATER USAGE: VARIABLE—							
Hot Water Usage Max. Load (Gals.) with 18 Lb. Clothes Load.							
Hot Wash—Warm Rinse	32.6	32	32.6	32.6	—	32.6	—
Hot Wash—Cold Rinse	19.5	19.5	19.5	19.5	—	19.5	—
Warm Wash—Warm Rinse	—	—	—	—	—	22.9	—
Cold Wash—Warm Rinse	—	—	—	—	—	13.1	—
Cold Wash—Cold Rinse	0	0	0	0	0	0	0
Regular—White & Colorfast	—	—	—	—	32.6	—	32.6
Regular—Non-Colorfast	—	—	—	—	22.9	—	22.9
Special	—	—	—	—	22.9	—	22.9
Sturdy Permanent Press	—	—	—	—	19.5	—	19.5
Delicate Permanent Press	—	—	—	—	9.8	—	9.8
Delicate	—	—	—	—	9.8	—	9.8
Cold Water Override to "O" Gals.	—	—	—	—	X	—	X
Hand Washables	—	—	—	—	—	—	9.8
HOT WATER USAGE MINI. LOAD (GALLONS):							
Hot Wash—Warm Rinse	16.5	15.9	16.5	16.5	—	16.5	—
Hot Wash—Cold Rinse	8.3	8.3	8.3	8.3	—	8.3	—
Warm Wash—Warm Rinse	—	—	—	—	—	12.4	—
Cold Wash—Warm Rinse	—	—	—	—	—	8.2	—
Cold Wash—Cold Rinse	0	0	0	0	—	0	—
Regular—White & Colorfast	—	—	—	—	16.5	—	16.5
Regular—Non-Colorfast	—	—	—	—	12.4	—	12.4
Special	—	—	—	—	12.4	—	12.4
Sturdy Permanent Press	—	—	—	—	8.3	—	8.3
Delicate Permanent Press	—	—	—	—	4.2	—	4.2
Delicate	—	—	—	—	4.2	—	4.2
Cold Water Override to "O" (Gals.)	—	—	—	—	X	—	X
Hand Washables	—	—	—	—	—	—	4.2
TOTAL WATER USAGE—WASH CYCLE (GALLONS):							
Maxi Load with 18 Lb. Clothes Load	45.7	44.5	45.7	45.7	45.7	45.7	45.7
Mini Load with 2 Lb. Clothes Load	24.7	23.5	24.7	24.7	24.7	24.7	24.7
WATER PRESSURE AT INLET (PSI):							
*Maximum Flow—120 PSI	X	X	X	X	X	X	X
*Minimum Flow—20 PSI	X	X	X	X	X	X	X
*Based on flow of 6 gal. per minute—May vary with line pressure.							
CYCLE TIME—MINUTES/SEC. (Plus Fill Time):							
Maxi Load—Max.	32/24	—	32/24	32/24	32/24	32/24	32/24
Maxi Load—Min.	21/36	—	21/36	21/36	21/36	21/36	21/36
Mini Load—Max.	32/24	—	32/24	32/24	32/24	32/24	32/24
Mini Load—Min.	21/36	—	21/36	21/36	21/36	21/36	21/36
NORMAL CYCLE—MINUTES (PLUS FILL TIME):							
Maxi Load	—	32	—	—	—	—	—
Mini Load	—	20	—	—	—	—	—

Table I
"S" Line Frigidaire Automatic Washer—Product Specifications (Cont.)

	WAS	WCDAS	WCDS	WCDRS	WIAS	WIS	WCIS
GENTLE CYCLE—MINUTES (PLUS FILL TIME)							
Maxi Load	—	18	—	—	—	—	—
Mini Load	—	15	—	—	—	—	—
EXTRA RINSE CYCLE (PLUS FILL TIME):							
Maxi Load	—	—	—	—	—	—	10/48
Mini Load	—	—	—	—	—	—	10/48
SOAK CYCLE—MINUTES/SEC. (PLUS FILL TIME):							
Maxi Load	33/36	—	33/36	33/36	33/36	33/36	18
Mini Load	33/36	—	33/36	33/36	33/36	33/36	18
SAFETY FEATURES:							
Out of Balance Safety Switch	X	X	X	X	X	X	X
Safety Lid Switch Stops all Action	X	X	X	X	X	X	X
External Grounding Kit	X	X	X	X	X	X	X
Sure Spin Clutch (Safety Spin Speed)	X	X	X	X	X	X	X
3-Prong Electrical Plug	X	X	X	X	X	X	X
6 Ft. Length—Electrical Cord	X	X	X	X	X	X	X
Net Weight—Approx. (Lbs.)	180	185	185	188	185	185	190
Shipping Weight—Approx. (Lbs.)	205	210	210	213	210	210	215

Table II
WAS, WCDS, WIAS, WIS, "S" Line Automatic Washer Models Timer Sequence

Load Selector Setting	Maxi Load with 18 lb. Clothes Load				Mini Load with 2 lb. Clothes Load		
WASH CYCLE	**Time Min.**	**Time Sec.**	**Total Gallons Water**	**Timer Clicks**	**Time Min.**	**Time Sec.**	**Total Gallons Water**
Wash Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3
Agitate and Recir. Max.	14	24		12	14	24	
Min.	(3	36)		(3)	(3	36)	
*Pause	—	—		—	—	—	
Spin	2	24 (PS)		2	2	24 (PS)	
Spin and Spray	1	12	7.2	1	1	12	7.2
Spin	2	24		2	2	24	
Deep Rinse Fill	Time Variable (PF)		17.8	1	Time Variable (PF)		8.0
Rinse Agitate and Recir.	3	36		3	3	36	
*Pause	—	—		—	—	—	
Spin	1	57 (PS)		2	1	57 (PS)	
Spin and Spray	0	15**	1.2**	—	0	15**	1.2**
Spin Dry	5	00		4	5	00	
Total Max.	31	12	45.7	27	31	12	23.5
Min.	20	24		18	20	24	
	Plus Fill Times (PF)				Plus Fill Times (PF)		
SOAK CYCLE							
Soak Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3
Agitate and Recir.	1	12		1	1	12	
Soak	28	48		24	28	48	
Spin Dry	3	36 (PS)		3	3	36 (PS)	
Total	33	36	19.5	28	33	30	8.3
	Plus Fill Times (PF)				Plus Fill Times (PF)		

* All pause periods are included in agitate periods and may vary from 2 to 22 seconds.
(PS) Spin time may vary due to positive spin-out feature.
** Spray time may vary from 6 to 20 seconds, amount of water will vary accordingly.
(PF) Positive fill is based on 6 G.P.M. Flow, will vary with line pressure.

Table III
WCDAS, "S" Line Automatic Washer Model Timer Sequence

Load Selector Setting	Maxi Load with 18 lb. Clothes Load				Mini Load with 2 lb. Clothes Load			
NORMAL CYCLE	**Time Min.**	**Time Sec.**	**Total Gallons Water**	**Timer Clicks**	**Time Min.**	**Time Sec.**	**Total Gallons Water**	
Wash Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3	
Agitate and Recir. Max.	15	00		15	15	00		
Min.	(3	00)		(3)	(3	00)		
*Pause	—	—		—	—	—		
Spin	2	00 (PS)		2	2	00 (PS)		
Spin and Spray	1	00	6	1	1	00	6	
Spin	2	00		2	2	00		
Deep Rinse Fill	Time Variable (PF)		17.8	1	Time Variable (PF)		8.0	
Rinse Agitate and Recir.	4	00		4	4	00		
*Pause	—	—		—	—	—		
Spin	1	48 (PS)		2	1	48 (PS)		
Spin and Spray	0	12**	1.2**	—	0	12**	1.2**	
Spin Dry	5	00		5	5	00		
Total Max.	31	00	44.5	32	31	00	23.5	
Min.	19	00		20	19	00		
	Plus Fill Times (PS)				Plus Fill Times (PS)			

Table IV
WCDAS "S" Line Automatic Washer Model Timer Sequence

Load Selector Setting	Maxi Load with 18 lb. Clothes Load				Mini Load with 2 lb. Clothes Load			
GENTLE CYCLE	**Time Min.**	**Time Sec.**	**Total Gallons Water**	**Timer Clicks**	**Time Min.**	**Time Sec.**	**Total Gallons Water**	
Wash Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3	
Agitate & Recir. Max.	5	00		5	5	00		
Min.	(2	00)		(2)	(2	00)		
*Pause	—	—		—	—	—		
Spin	2	00 (PS)		2	2	00 (PS)		
Spin & Spray	1	00	6	1	1	00	6	
Spin	2	00		2	2	00		
Deep Rinse Fill	Time Variable (PF)		17.8	1	Time Variable (PF)		8.0	
Rinse Agitate & Recir.	3	00		3	3	00		
*Pause	—	—		—	—	—		
Spin	1	48 (PS)		2	1	45 (PS)		
Spin & Spray	0	12**	1.2**	—	0	15**	1.2**	
Spin Dry	2	00		2	2	00		
Total Max.	17	00	44.5	18	17	00	23.5	
Min	14	00		15	14	00		
	Plus Fill Times (PF)				Plus Fill Times (PF)			

* All pause periods are included in agitate period and may vary from 2 to 22 seconds
(PS) Spin time may vary due to positive spin-out feature.
** Spray time may vary from 6 to 20 seconds, amount of water will vary accordingly.
(PF) Positive fill is based on 6 G.P.M. flow, will vary with line pressure.

Table V
WCDRS "S" Line Automatic Washer Model Timer Sequence

Load Selector Setting	Maxi Load with 18 lb. Clothes Load				Mini Load with 2 lb. Clothes Load		
WASH CYCLE	**Time Min.**	**Time Sec.**	**Total Gallons Water**	**Timer Clicks**	**Time Min.**	**Time Sec.**	**Total Gallons Water**
Wash Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3
Agitate & Recir. Max.	14	24		12	14	24	
Min.	(3	36)		(3)	(3	36)	
*Pause	—	—		—	—	—	
Spin	2	24 (PS)		2	2	24 (PS)	
Spin & Spray	1	12	7.2	1	1	12	7.2
Spin	2	24		2	2	24	
Deep Rinse Fill	Time Variable (PF)		17.8	1	Time Variable (PF)		8.0
Rinse Agitate & Recir.	3	36		3	3	36	
*Pause	—	—		—	—	—	
Spin	2	00 (PS)		2	2	00 (PS)	
Spin & Spray	0	12**	1.2**	—	0	12**	1.5**
Spin Dry	5	00		4	5	00	
Total Max.	31	12	47.7	27	31	12	24.7
Min.	20	24		18	20	24	
	Plus Fill Times (PF)				Plus Fill Times (PF)		
SUDS RETURN:							
Return & Agitate	2	24		2	2	24	
SOAK CYCLE:							
Soak Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3
Agitate & Recir.	1	12		1	1	12	
Soak	28	48		24	28	48	
Spin Dry	3	36 (PS)		3	3	36 (PS)	
Total	33	36	19.5	28	33	36	8.3

* All pause periods are included in agitate periods and may vary from 2 to 22 seconds.
(PS) Spin time may vary due to positive spin-out feature.
** Spray time may vary from 6 to 20 seconds, amount of water will vary accordingly.
(PF) Positive fill is based on 6 G.P.M. flow, will vary with line pressure.

Table VI
WCIS "S" Line Automatic Washer Model Timer Sequence

Load Selector Setting	Maxi Load with 18 lb. Clothes Load				Mini Load with 2 lb. Clothes Load		
WASH CYCLE	**Time Min.**	**Time Sec.**	**Total Gallons Water**	**Timer Clicks**	**Time Min.**	**Time Sec.**	**Total Gallons Water**
Wash Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3
Agitate & Recir. Max.	14	24		12	14	24	
Min.	(3	36)		(3)	(3	36)	
*Pause	—	—		—	—	—	
Spin	2	24 (PS)		2	2	24 (PS)	
Spin & Spray	1	12	7.2	1	1	12	7.2
Spin	2	24		2	2	24	
Deep Rinse Fill	Time Variable (PF)		17.8	1	Time Variable (PF)		8.0
Rinse Agitate & Recir.	3	36		3	3	36	
*Pause	—	—		—	—	—	
Spin	2	00 (PF)		2	2	00 (PS)	
Spin & Spray	0	12**	1.2**	—	0	12**	1.2 **
Spin Dry	5	00		4	5	00	
Total Max.	31	12	45.7	27	31	12	23.7
Min.	20	24		18	20	24	
	Plus Fill Times (PF)				Plus Fill Times (PF)		
EXTRA RINSE CYCLE:							
Deep Rinse Fill	Time Variable (PF)		19.5	—	Time Variable (PF)		8.3
Rinse Agitate & Recir.	3	36		3	3	36	
*Pause	—	—		—	—	—	
Spin	2	00 (PS)		2	2	00 (PS)	
Spin & Spray	0	12**	1.2**	—	0	12**	1.2**
Spin Dry	5	00		5	5	00	
Total	10	48	20.7	9	10	48	9.5
	Plus Fill Time (PF)				Plus Fill Time (PF)		

* All pause periods are included in agitate periods and may vary from 2 to 22 seconds.
(PS) Spin time may vary due to positive spin-out feature.
** Spray time may vary from 6 to 20 seconds, amount of water will vary accordingly.
(PF) Positive fill is based on 6 G.P.M. flow, will vary with line pressure.

Table VII
Torque Requirements

Locations	Torque—In. Lb. Minimum
AGITATOR:	
Column Mounting Nut	120-140
Bellows Spacer Retaining Nut	80-Min.
TUB MOUNTING:	
Tub Support Nut	80-Ft. Lb. or ⅛ Turn
Tub Mounting Screw	80-160
Mechanism to outer tub mounting	80-100
Motor to mounting plate to outer tub	90-120
Pulley to motor shaft	200-250
Motor to Motor Mounting Plate	25-30
MECHANISM:	
Drive Pulley Set Screw	120-150
Agitate Roller Mounting Screw	20-30
Spin Roller Mounting Screw	20-30
Agitate Wheel Mounting	100-130
Agitate Wheel Weight Mounting Screws	80-Min.
Agitate Arm to Agitate Wheel Mounting	180-240
Agitate Arm to Agitate Shaft	100-140
Agitate Arm Ball to Agitate Shaft coupling	80-Min.
Brake Plate to Housing Mounting Screw	25-40
Pump Impeller Mounting Stud	90-Min.

Table VIII
Component DC Resistance Values with Coil or Winding. Temperature at 75° Fahrenheit

COMPONENT	OHMS
Timer Motor	2900
Water Valve Solenoid, Hot & Cold	565 ± 6%
Fluorescent Lamp Ballast	22.7 — 24.2
Sudsaver Solenoid Coil	12.1 ± 10%
Out of Balance Relay Coil	840 ± 10%
Washer Motor—Single Speed:	
Starting Winding	2.68 To 3.36
Running Winding	1.12 To 1.40
Washer Motor—2 Speed:	
Starting Winding	2.82 To 3.54
4-Pole Running Winding	1.10 To 1.38
6-Pole Running Winding	2.17 To 2.72
Washer Motor—3-Speed:	
4-Pole Phase Starting Winding	2.65 To 3.21
4-Pole Running Winding	1.05 To 1.28
6-Pole Running Winding	2.07 To 2.51
8-Pole Running Winding	3.30 To 3.99

Table IX
Running Wattage Data*

	Agitate			Spin	
	Handwash	Gentle	Normal	Slow	Normal
MODELS:					
Single Speed			640		450
2-Speed		480	640	450	450
3-Speed	360	480	640	450	450

*Maximum Wattage with Water Load.

Table X
Loc-Tite Requirements

Use Loc-Tite on the Following Components Before Reassembly.

Column Mounting Nut	Blue
Tub Support Nut	Yellow
Agitate Roller Screws	Blue
Pump Impeller Stud	Blue
Agitate Arm to Pulsate Shaft	Blue
Threads of Lid Mounting Screws	Blue
Tub Support Screws	Blue
Brake Plate Mounting Screws	Blue
Spin Roller Screw	Blue
Suspension Spring Eye Bolt	Brown

NOTES

The "S" line of automatic washers is an all NEW GENERATION of laundry products.

The "S" line will consist of the following models; WAS-WCDAS-WCDS-WCDRS-WIAS-WIS-WCIS

The major changes in construction are outlined as follows.

- New styling of the console panel.
- Timer Dial—Push to rotate and set—Pull to start.
- Acrylic enamel cabinet finish on all models. Porcelain enamel finish on top and lid.
- New safety features.
- Pressure fill system—All models.
- Jet Circle fill and spray rinses—All models.
- Vacuum break in fill system—All models.
- Re-circulate system with removable filter.
- Jet cone deep action Agitator.
- Extra large load—perforated tub 1 to 18 lb. capacity.
- Bleach and laundry aid dispensers—column locations.
- Removable front panel.
- Front serviceable.
- Removable console—Quick disconnect wiring harness and pressure fill tube.
- Removable top—Quick disconnect wiring harness and pressure fill tube.
- Product leveling. Front access. Self locking feet.
- Rollermatic mechanism—With motor separate from mech.
- 1-2-3 speed models.
- Standard mechanism—All models.
- All new suspension system.
- All new snubber and base.

SERIAL PLATE

Figure 1
Serial Plate Location

Frigidaire Automatic Clothes Washers
WAS - WCDAS - WCDRS - WIAS - WIS - WCIS

Control panel styling for all "S" models is shown in Figures 2 thru 7. The cabinet styling is the same on all models. Model WCIS shown in Figure 8.

Model, Serial and Data Plate:

The serial plate for all "S" line of washers is located at the top right hand end of the console rear cover panel. This provides easy product identification when the product is installed in any location, Figure 1.

Consoles: Fig. 2 through 8.

The consoles feature White end panels on White products models WAS, WCDAS and WIAS; Chrome end panels on WCDS, WCDRS, WIS and WCIS and all colored products. The controls have a fixed dial-cycle indication lithographed onto the metal escutcheon. The knobs are white plastic on the

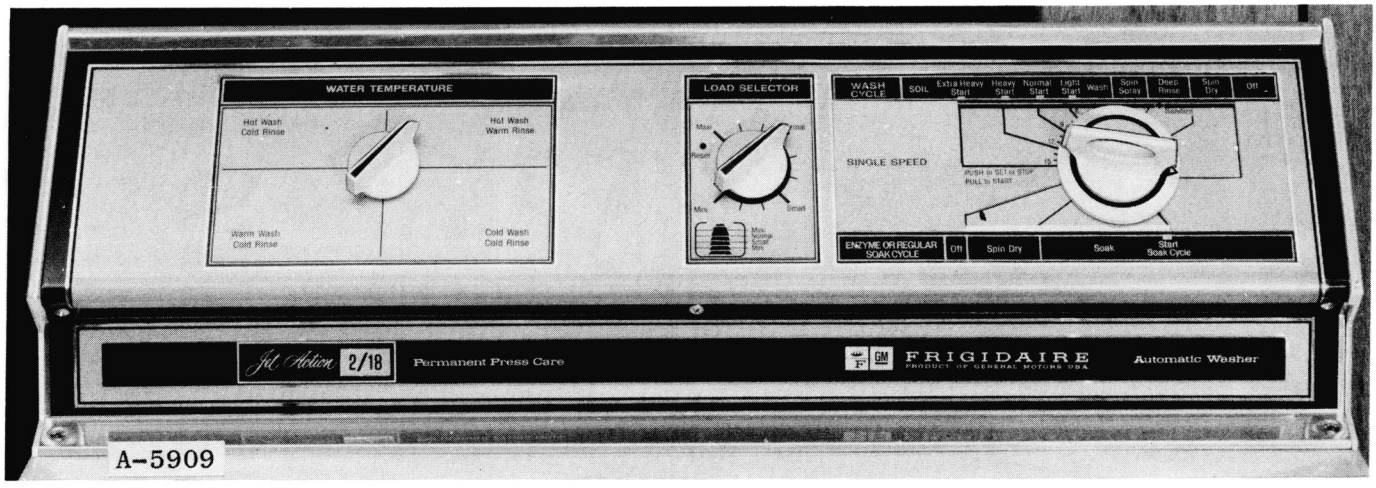


Figure 2
Console View — WAS

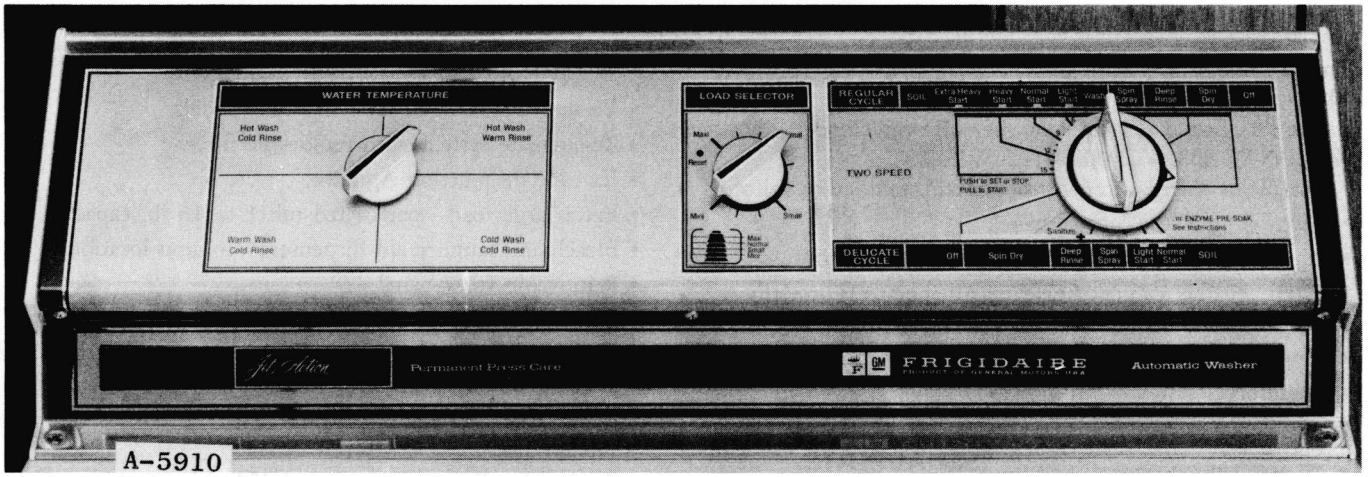


Figure 3
Console View — WCDAS

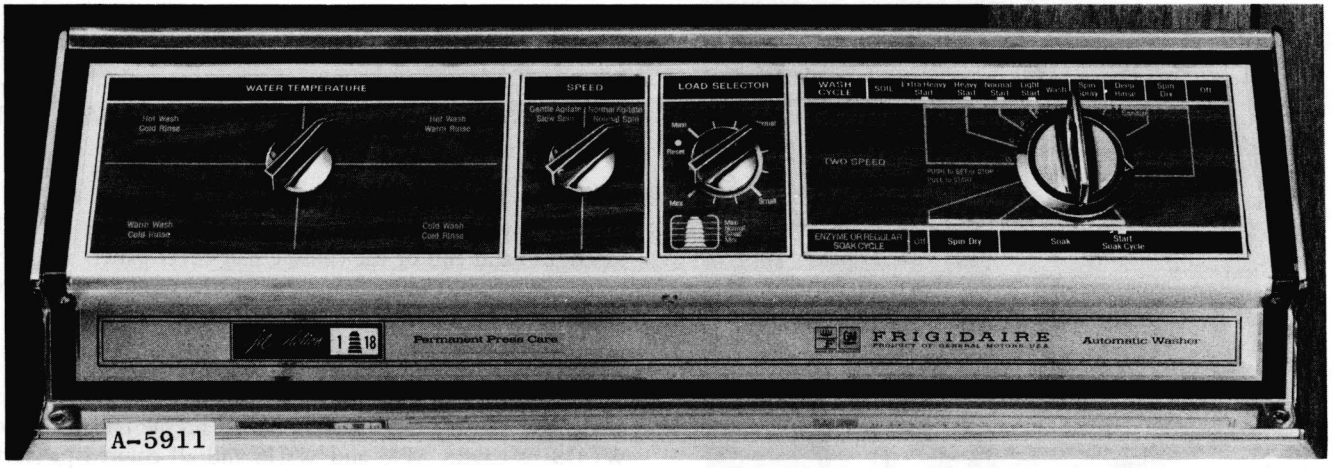


Figure 4
Console View — WCDS

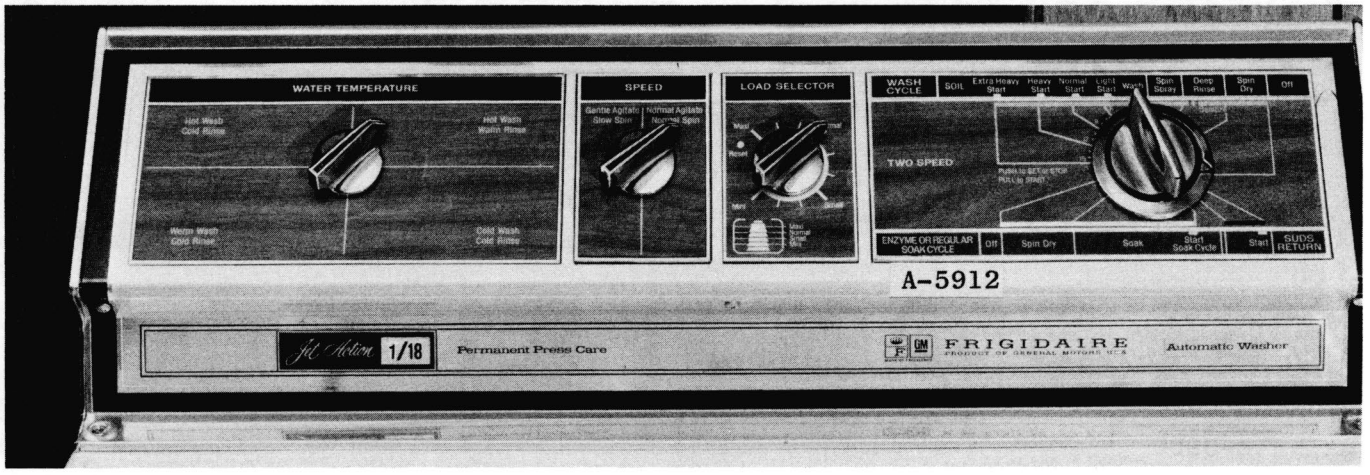


Figure 5
Console View — WCDRS

Figure 6
Console View — WIAS

Figure 7
Console View — WIS

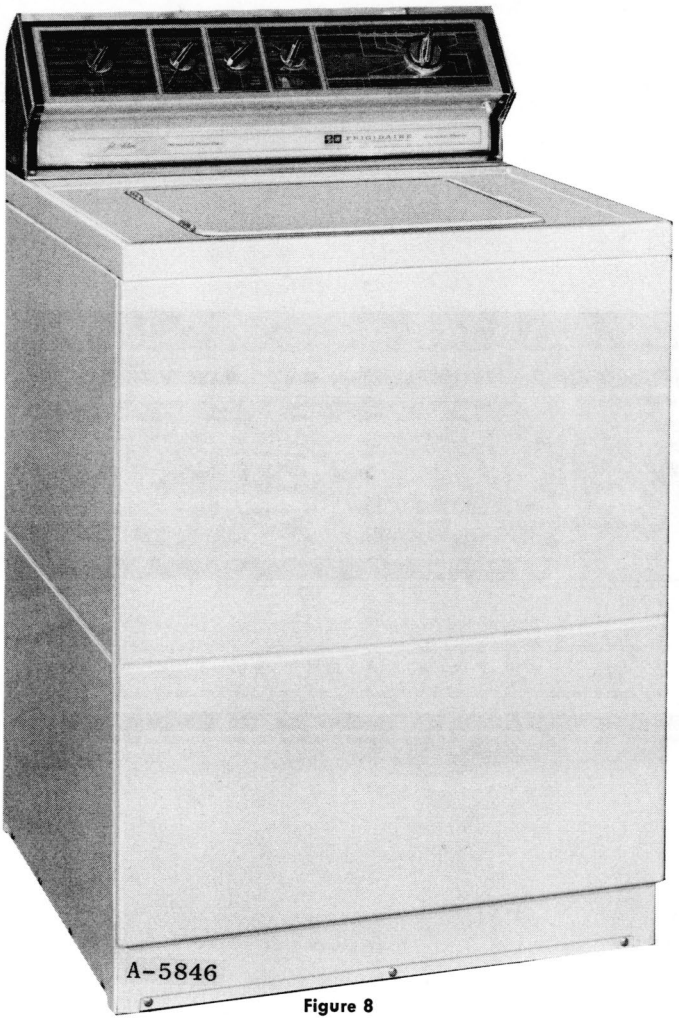


Figure 8
Model — WCIS

WAS and WCDAS models, and the knobs on the WCDS-WCDRS-WIAS-WIS and WCIS are chrome plated plastic.

The WIS and WCIS are equipped with a full width fluorescent lamp.

The newly designed polorized harness connector and the pressure fill switch tube connector will allow the cabinet top and console to be removed as an assembly or the console removed independent of the cabinet top. Figure 9.

Cabinet Top:

The cabinet top is finished in porcelain enamel. The top is designed for quick, easy removal for any service required in that area. The top is held in place by two spring clips located at the front corners of cabinet and by two nylon hooks at the rear corners. Figure 9. Quick disconnects in the wiring harness and pressure fill tube are provided so that the complete top may be removed from the washer for service even when the rear of the washer is installed flush to the wall. Figure 9.

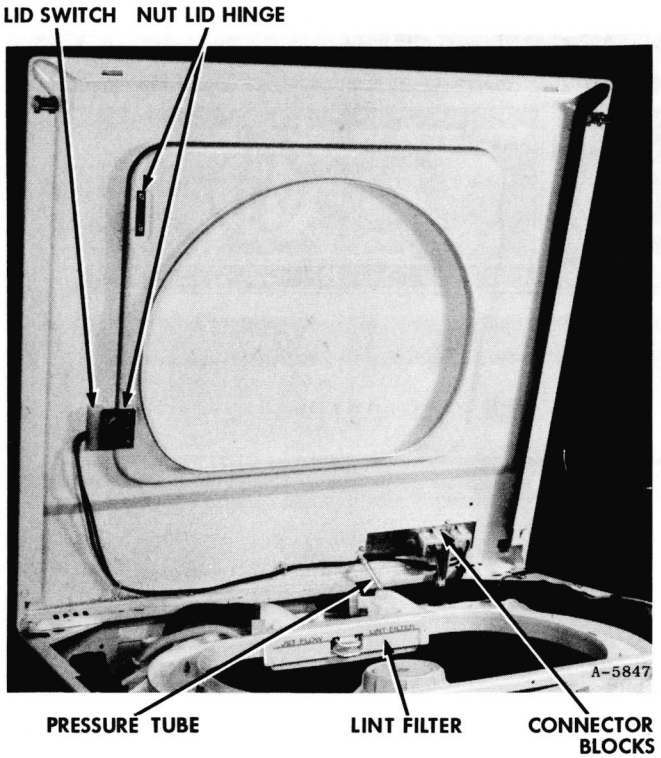


Figure 9
Bottom View Top Detail

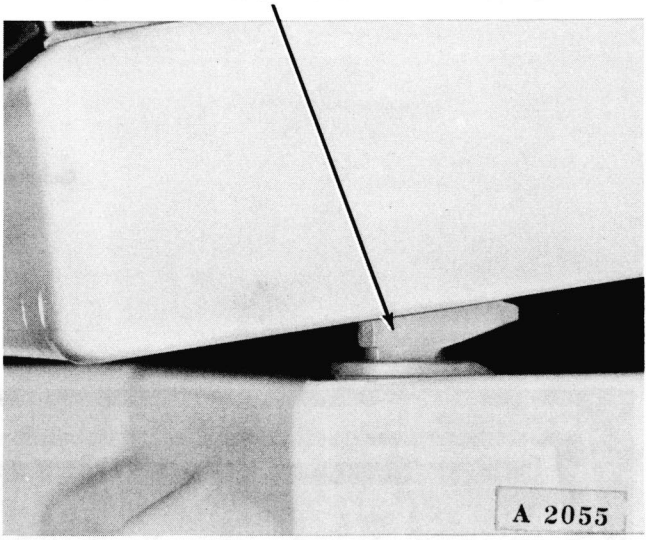


Figure 10
Top Rear Retainer

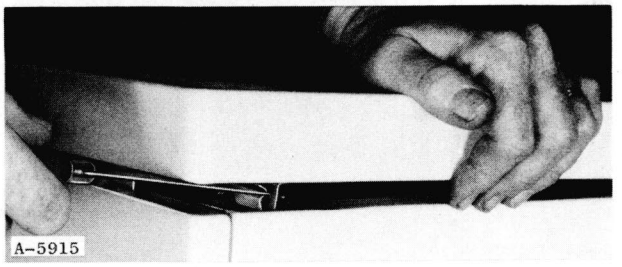


Figure 11
Front Retainer Clip

Lid:

The lid is finished in porcelain enamel on all "S" line models. It is hinged on the left hand side and opens a full 180°. It is mounted by two semi-concealed piano type hinges. The rear hinge has a plunger built onto it to operate the lid safety switch mounted under the top by the hinge screws. Figure 12.

Cabinet:

The washer cabinet is made up of 4 basic parts. A removable top and a removable front panel. A wrap around shell mounted to the product base.

The top is held in place by two spring clips at the front edge of the cabinet, Figure 11. The rear is held in place by two nylon retainers at the rear corners of the cabinet. To remove the top use a putty knife or similar thin bladed tool and depress the spring clips at each front corner of the top. Lift top up and forward to release it. To completely free the top from the cabinet disconnect the electrical plug, Figure 13, and the pressure fill tube.

The front panel is removable to provide front access for leveling or required service operations. Remove the screws along the front bottom edge of panel. Place hands on each edge of panel and push downward, panel will then disengage the lock tabs, allowing it to be removed from product, Figure 14.

Note: The front panel is slightly concave to prevent vibration.

To remove the cabinet completely from the product, proceed as follows. Free the wiring harness from all retainers mounted on the inside of cabinet. Remove the water valve mounting screw and allow the valve to go inside of cabinet. Remove the drain hose connector from the rear of cabinet and allow the hose and connector to fall inside. Remove the screws

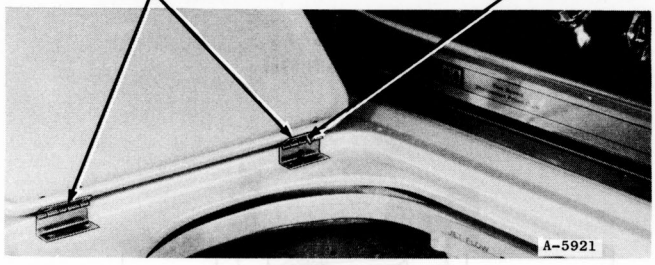


Figure 12
Lid Hinges

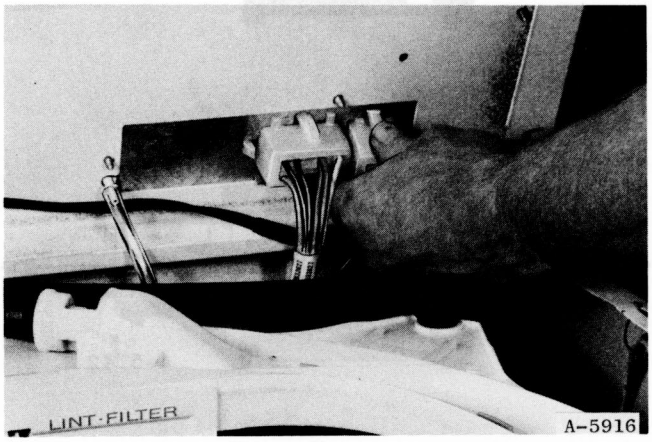


Figure 13
Pressure Tube and Harness Connectors

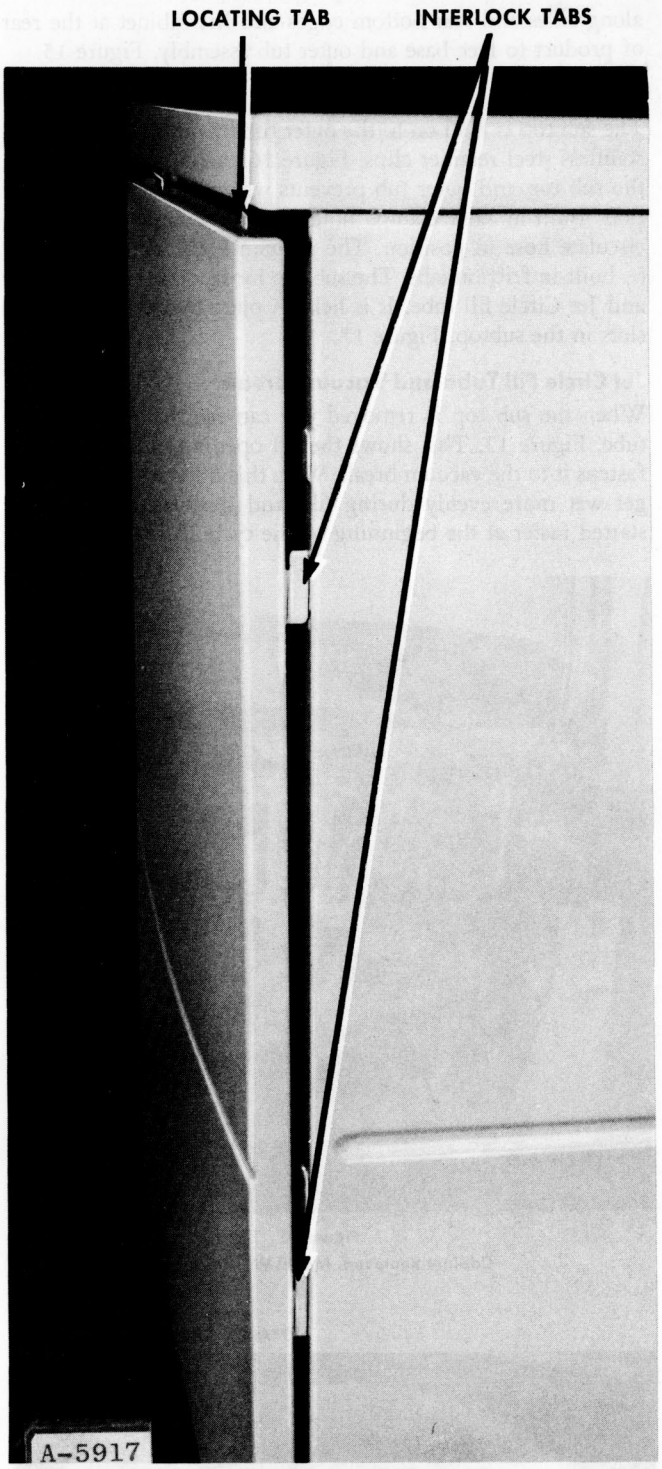


Figure 14
Locking Tabs, Front Panel

along sides and rear bottom edges and lift cabinet at the rear of product to free base and outer tub assembly, Figure 15.

Sub Top:

The sub top is held on to the outer tub by means of seven (7) stainless steel retainer clips, Figure 16. A rubber seal between the sub top and outer tub prevents water leaks during operation. Built-in hose clamps hold the fill, pump vent and recirculate hose in position. The vacuum break is held in place by built-in friction tabs. The sub top incorporates the lint filter and Jet Circle fill tube. It is held in place by tabs pulled thru slots in the subtop, Figure 17.

Jet Circle Fill Tube and Vacuum Break:

When the sub top is removed you can see the Jet Circle fill tube, Figure 17. This shows the fill openings and clamp that fastens it to the vacuum break. With this fill system the clothes get wet more evenly during fill, and the washing action is started faster at the beginning of the cycle.

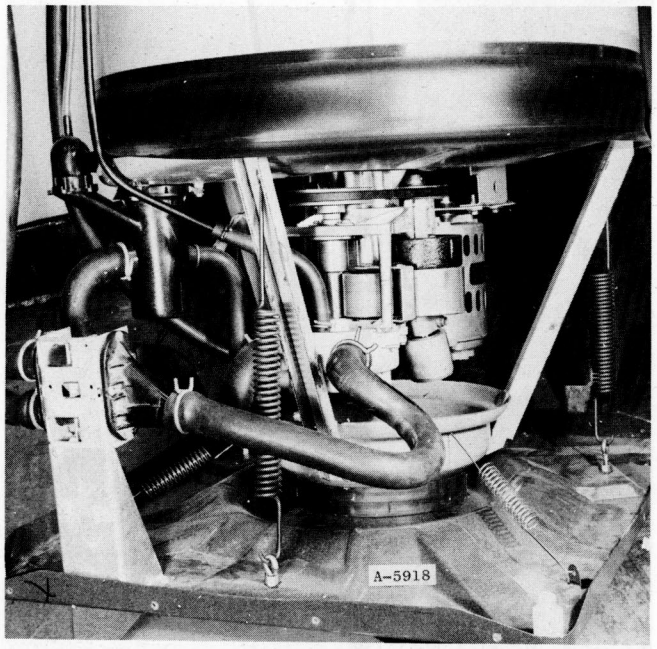


Figure 15
Cabinet Removed, Model WCDRS Shown

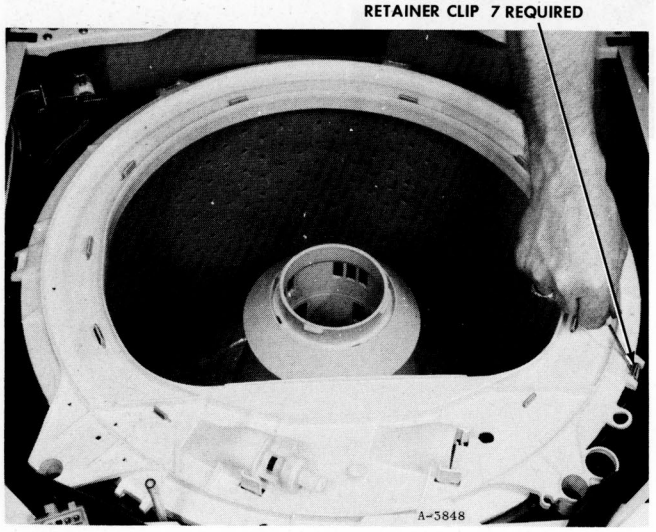


Figure 16
Removing Retainer Clips

Vacuum Break Function:

The vacuum break assembly takes the place of the air gap used on previous models. For detail of operation when water is flowing into washer, see Figure 17A.

As the water enters the vacuum break the anti-syphon seal is forced to expand and allow the water to pass on to the outlet of the assembly. This creates a high pressure stream of water directed into the end of the peripheral fill tube, forcing it the full length of the tube giving a nearly equal pressure to all 12 openings or slots in the Jet Circle tube.

When the flow of water stops, the anti-syphon seal will collapse and seal the end of the assembly. Its unique design is used so that under no circumstances can water be syphoned back into the water supply line.

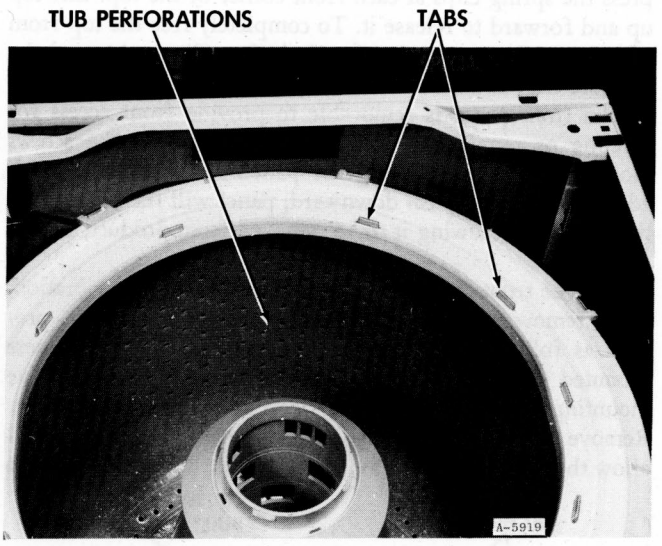


Figure 17
Jet Circle Fill Tube

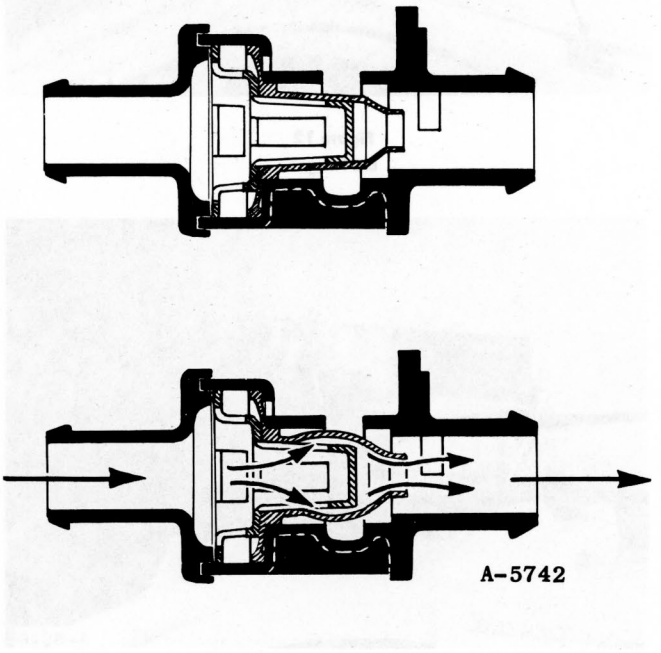


Figure 17A
Vacuum Break

Tub:

The extra large tub for the "S" line of washers is capable of handling from 1 piece to 18 lbs. of dry clothing. The perforations in the tub allow the water to escape from the clothing during the spin dry cycle. Figure 16.

The agitator shaft opening in the bottom of the tub is sealed by a double bellows assembly. The inner bellows prevents water or water vapor from entering the mechanism. The outer bellows keeps the water in the tub. Figure 18.

Bleach Dispenser:

The bleach and dye cup is included on all models except WAS and WCDAS. The bleach cup is installed inside the detergent dispenser of the agitator. The cup has a coil spring which mounts into a groove in the bottom of the cup. The spring contacts the agitator mounting nut and is compressed when the agitator cap is locked on the dispenser. The spring pressure holds the cup securely within the dispenser during the agitate periods. Figure 20.

Bleach is dispensed from the cup during the wash agitation period after the washer tub has filled with water. The openings in the bleach cup are shielded to deflect the bleach downward when it is diluted with water before coming in contact with the clothing.

Agitator:

The Jet Cone Agitator is designed to take care of any load put into the washer. The spacing of the five cones insures maximum washability at any water level from mini to maxi. A single mounting nut allows fast removal or replacement of the agitator, see Figure 19 for complete breakdown.

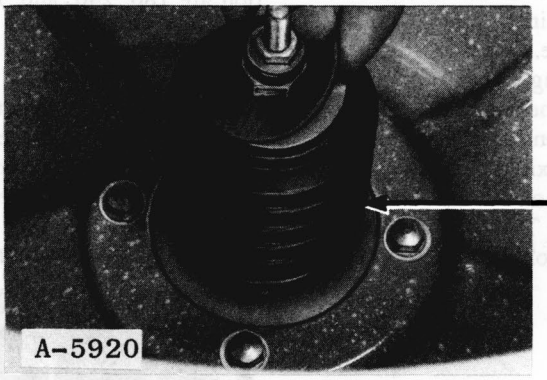


Figure 18
Bellows, Tub Seal

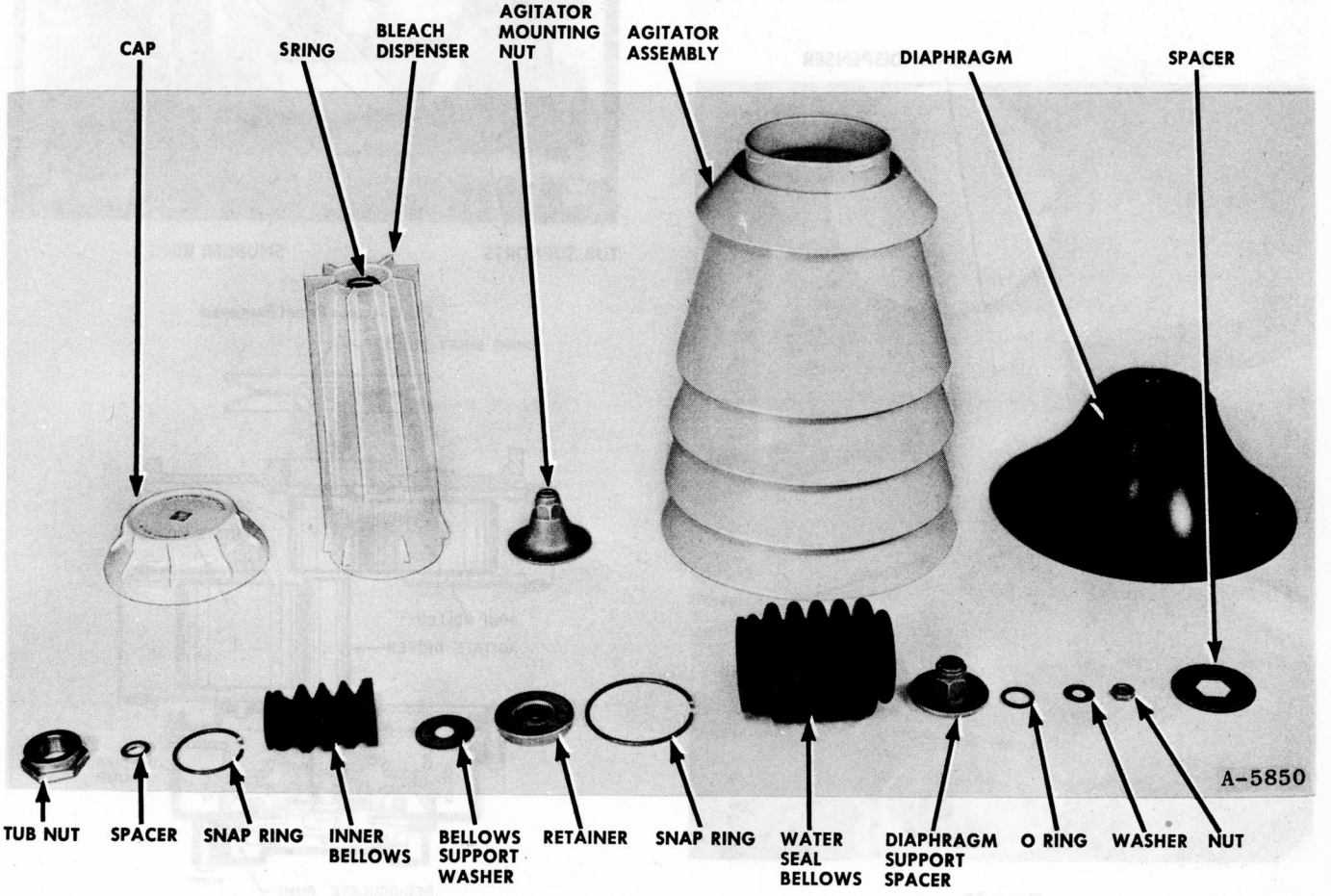


Figure 19
Assembly Mounting Detail

Mechanism:

The mechanism is an all new roller-matic mechanism. The motor and mechanism are separate units linked together by a single V drive belt. It is designed to provide maximum flexibility and operational features with few moving parts. Figure 21. A unique arrangement of idler rollers, drivers and wheels are used to produce "agitation" or "spinning" operation. The same mechanism is used on all models. The mechanism is coupled with a single speed, two speed or three speed motor depending upon the features of the washer in which it is installed.

Mechanism Mounting and Snubber:

The mechanism is mounted to the bottom of the outer tub assembly. The outer tub is supported by three braces extending upward and outward from a bowl shaped steel support, the bottom of which serves as the upper snubber surface. The entire outer tub and support is finished in durable porcelain. This provides a smooth snubbing surface. The outer tub support sets on a polypropylene snubber ring which rests on the base pan. Figure 21. The outer tub and mechanism is centered on the snubber ring by means of 3 suspension springs located at opposing points. Figure 21. The flexible support of the outer tub provides a 3 way stabilization of the outer tub and mechanism during spinning operations. The suspension system also retards transmission of sound of the mechanism to the washer cabinet.

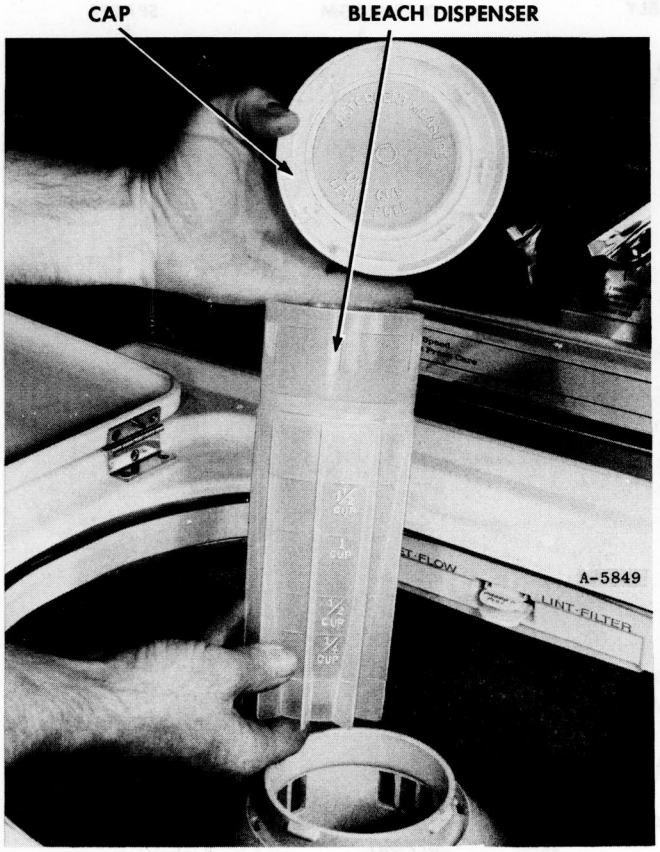


Figure 20
Cap and Bleach Dispenser

Motor to Mechanism Application and Operational Characteristics:

The "S" line of washers use 3 different motors and only one basic mechanism.

SINGLE SPEED: Model "WAS" uses a single speed ½ H.P. split phase, 4 pole 1725 RPM reversible motor. Mechanism operating speed during agitation is 360 strokes per minute. Spin Speed is 630/650 RPM.

TWO SPEED: Models WCDAS, WCDS, WCDRS, WIAS, and WIS are equipped with a ½ HP split phase 4 pole 1725 RPM, 6 pole 1140 RPM reversible motor. Mechanism operating speeds during agitation are 240-360 strokes per min. Spin Speeds are 420/435—630/650 RPM.

THREE SPEED: Model WCIS uses a three speed ½ HP split phase 4 pole 1725 RPM, 1140 6 pole RPM, 8 pole 870 RPM reversible motor. Mechanism Operation Speeds during agitation are 180, 240, and 360 and Spin Speeds are 420/435—630/650 RPM.

Water Pump:

Note: Before removing the pump hoses or disassembling the water pump housing the snubber area must be covered with dry cloths to protect it from the water contained in the pump housing and hoses. The snubber will not operate properly when wet.

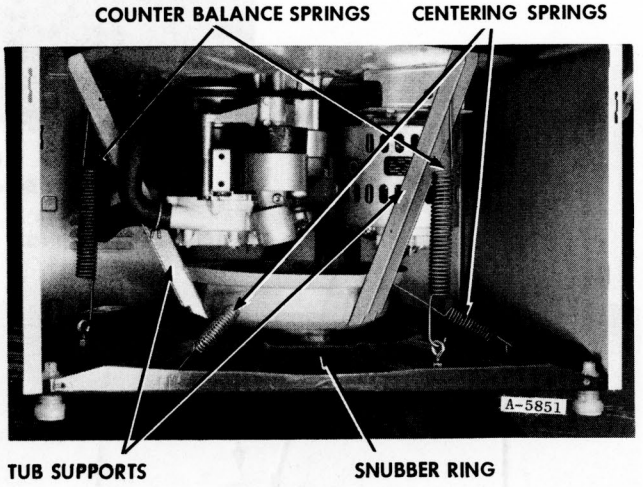


Figure 21
Front Access Panel Removed

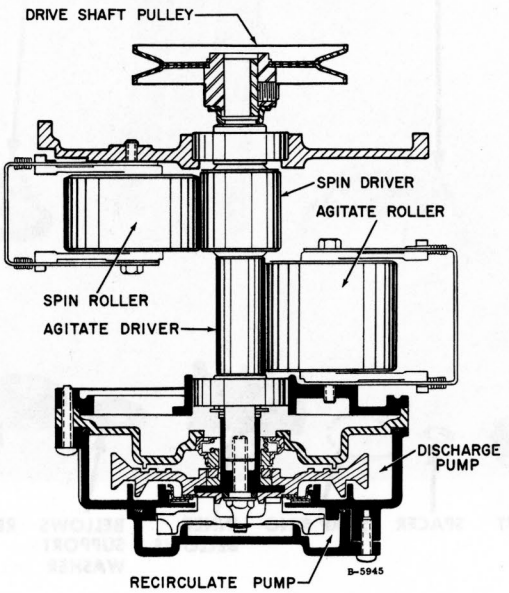


Figure 22
Discharge and Recirculate Pumps

The water pump assembly is actually two pumps, the upper discharge pump and the lower recirculate pump for the filter system. Figure 22.

They are designed so that when washer is in the wash, or agitate cycle the recirculate pump is in action. When the washer is in the spin, or dry cycle, the upper or discharge pump is in action.

The discharge pump, Figure 22, is a high capacity impeller type pump driven directly by the main drive shaft of the mechanism.

A vent tube located in the top of the upper pump housing provides a vent to the atmosphere to eliminate a possible air lock in the discharge pump.

The shaft seal at the top pump cover consists of a spring loaded seal assembly which is pressed into the upper cover. The face of this seal presses against a ceramic seal washer in the top of the impeller to form a very effective seal.

The size of the discharge pump provides satisfactory efficiency where vertical installation of drain hose is required, also provides maximum efficiency when operating at slow speed 1140 RPM. Even at the 1140 RPM speed the drain hose can be at a height of 96" maximum, see diagram in installation data.

Drive Pulley:

The drive pulley is keyed to the top end of the drive shaft and a set screw holds it securely in place. It is operated by the drive belt from the motor.

Drive Shaft:

Agitate and Spin Drivers: The drive shaft is operated by the drive pulley and is supported by two ball bearings, the upper bearings mounted in the mechanism main housing, Figure 23, the lower one in the pump mounting bracket. The agitate and spin drivers are finished metal sleeves with internally formed keys that mate with the keyway cut in the drive shaft, thus giving them a positive drive. The upper sleeve is the spin driver, the lower sleeve is for agitate.

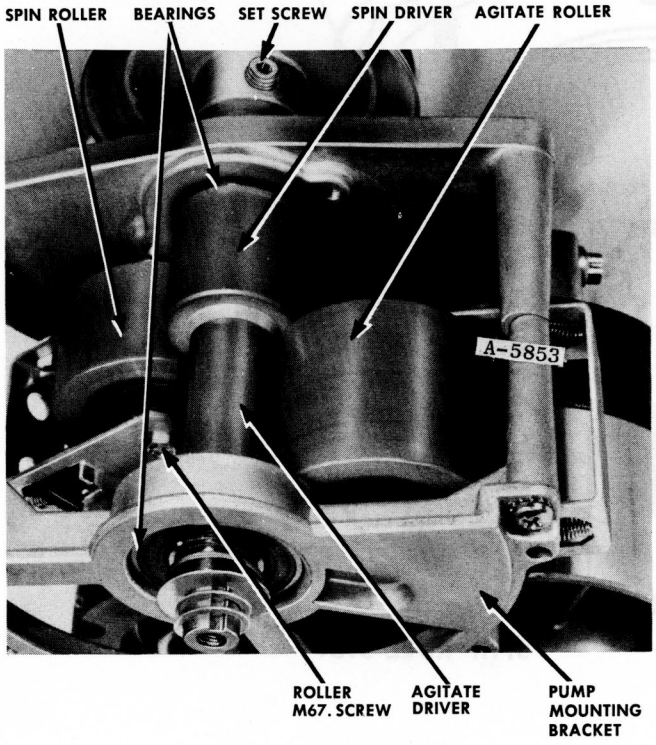


Figure 23
Agitate and Spin Drivers

Rollers, Agitate and Spin:

The rollers are the retractor type made of a polyurethane tire molded to an aluminum insert. A lubricant impregnated hub is pressed into the center of the insert and a metal sleeve is then assembled inside the hub. The sleeve is smaller in diameter than the hub so that the roller will float freely about the sleeve.

The roller retractor assembly consists of two plastic arms, a metal bracket and two springs assembled to the roller, hub and sleeve.

The floating action of the roller and the spring load on the rollers are essential in the overall operation of the mechanism. The rollers are mounted to the lower side of mechanism drive support by means of a screw, Figure 23.

Agitate Wheel and Bearing Assembly:

The agitate wheel assembly, consists of a wheel with a shaft and bearing assembly pressed into its upper hub. The lower hub of the agitate wheel forms an eccentric type clamp socket to mount the shaft of the agitate arm. A cast iron ring is mounted on top of the agitate wheel. This ring adds weight to assure uniform speed of the agitate wheel and the agitate roller. The agitate wheel shaft is fastened into a clamp socket in the mechanism drive support.

Agitate Arm Assembly:

The agitate arm assembly consists of an arm with a shaft and bearing assembly pressed into one end. The shaft is mounted into the hub of the agitate wheel and clamped in the socket. A socket at the opposite end of the agitate arm holds a spherical bearing. A flexible coupling links the spherical bearing with the agitate shaft.

Agitate Shaft:

The agitate shaft is a solid steel shaft threaded on the upper end. It is used to mount the outer and inner bellows and agitator cone assembly. The upper section is slotted and when mounted inside the spin shaft the slots mate with splines in the upper bushing in the spin shaft. This keys the agitate shaft to the spin shaft during the spinning operation. The lower end of the shaft is drilled and tapped to receive the threaded stud of the agitate arm coupling, Figure 24.

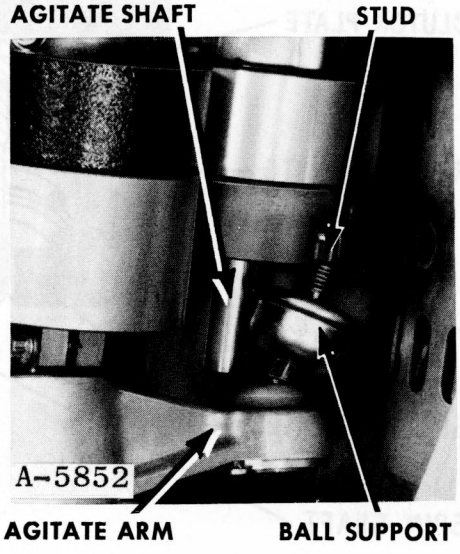


Figure 24
Agitate Arm Coupling

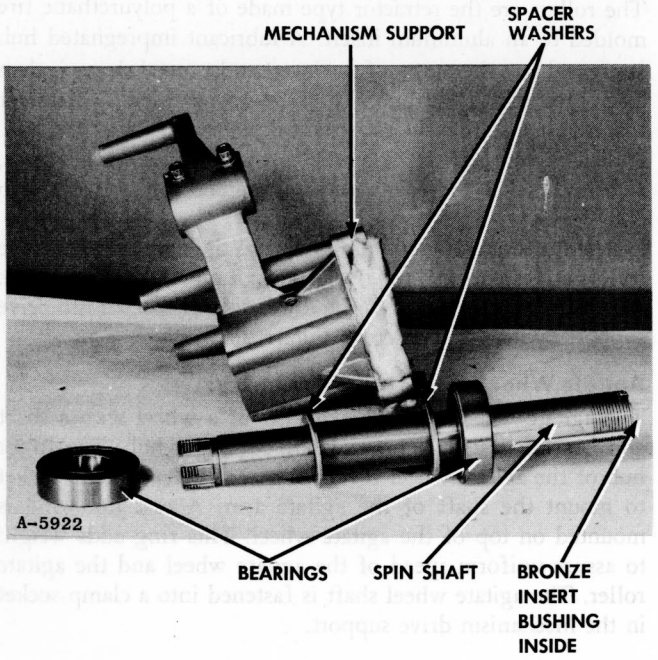


Figure 25
Spin Shaft and Bearings

Spin Shaft and Bearings:

The spin shaft consists of a hollow steel shaft with permanently lubricated shielded ball bearings pressed onto the upper and lower sections of the shaft for support. The shaft and bearings are installed into the mechanism drive support, ('mechanism casting'), Figure 25. Bronze impregnated bushings are pressed into each end of the spin shaft to provide bearing surfaces for the agitate shaft. The bushing pressed into the upper end of the shaft has two splines which are used to key the spin shaft to the agitate shaft. These splines are essential to assure the rotation of the agitate shaft during the spinning operation.

Spin Wheel, Brake and Clutch—Figure 26:
All Models

An assembly consisting of three basic components:

1. Spin Wheel.
2. Brake Components.
3. Clutch Components.

Spin Wheel:

A single aluminum wheel used for driving during all spin periods.

A "Teflon" impregnated bushing. pressed into the upper end only, to provide a suitable bearing surface between the wheel and the spin shaft. This bushing supports the load imposed on the spin wheel by the spin roller.

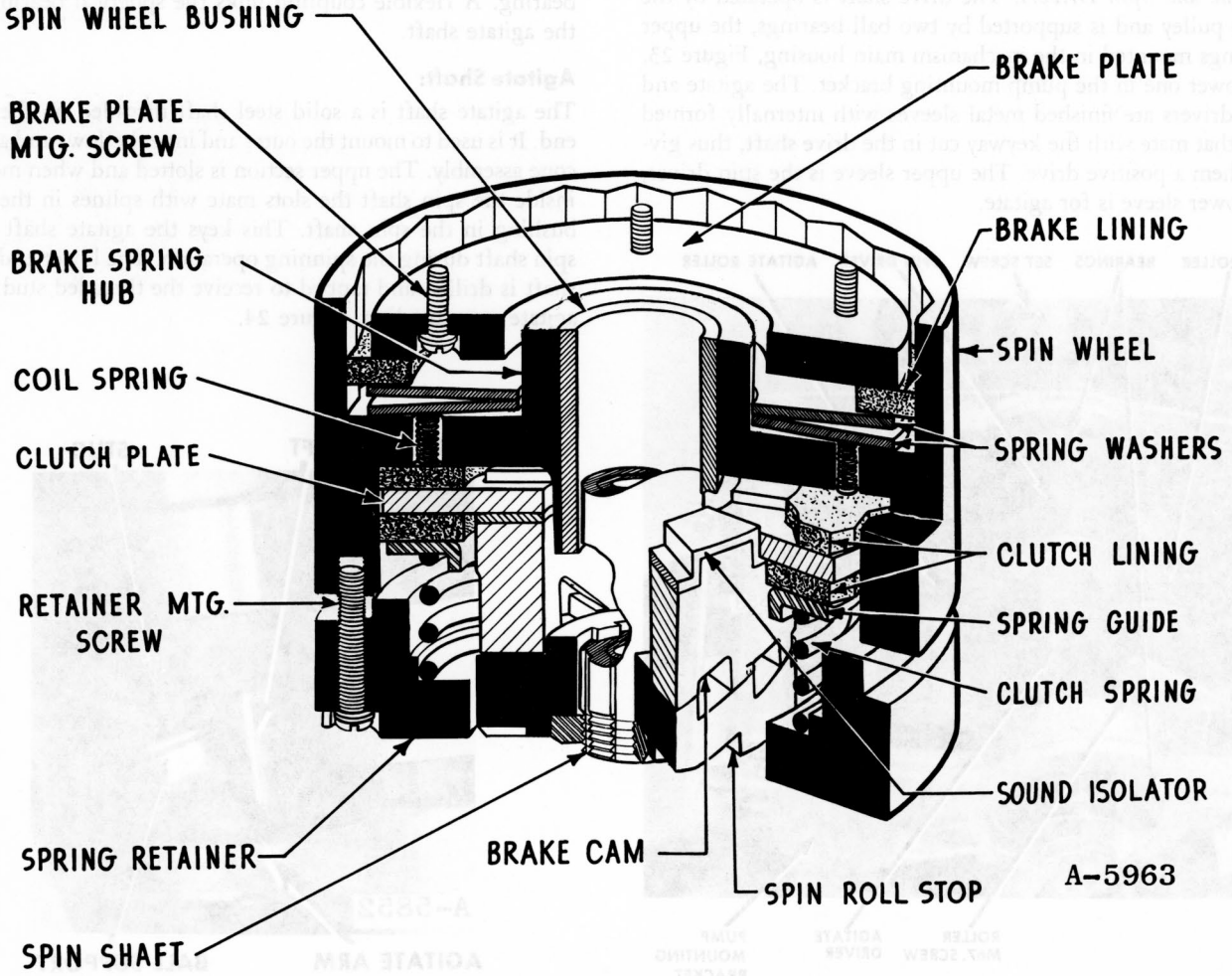


Figure 26
Spin Wheel, Brake & Clutch Components

Brake Components:

Disc type brake mounted inside the top of the upper section of the spin wheel consists of the following:

1. A brake plate mounted on the mechanism drive support which also serves as a retainer for the lower spin shaft bearing.
2. Three, two pound coil teaser springs used to apply a combined constant load of six pounds between the brake plate and brake lining. These springs are mounted inside the top of the spin wheel.
3. Two spring washers used to control the loading between the brake lining and the brake plate during the brake period. These spring washers are mounted inside the spin wheel on top of the three coil springs.
4. A brake lining made of high friction material used as a mating surface with the brake plate. The brake lining is mounted on top of the two spring washers and has teeth which mate with slots inside the upper section of the spin wheel.

Brake Operation:

The motor is de-energized at the completion of the spin period. The motor shaft and rotor assembly, being lighter in weight than the washer tub, decelerate faster than the washer tub.

As the motor and drive shaft decelerate, the spin roller imposes a drag on the spin wheel. This drag, in addition to the constant 6 pound load between the brake lining and the brake plate, causes the spin wheel to decelerate.

Since the washer tub decelerates slower than the spin wheel, the spin shaft turns inside the spin wheel. This causes the spin wheel brake cam to ride up on the inclined surfaces of the spin roll stop, thus moving the spin wheel upward until it is stopped by contact with the inner race of the spin shaft bearing, Figure 26. As the spin wheel stops its upward travel, the action of the brake cam riding up on the spin roll stop serves to apply sufficient pressure on the clutch plate to prevent the clutch plate from slipping during the brake period.

The upward movement of the spin wheel causes an increase in the load between the brake lining and the brake plate. This loading is controlled by the compression of two spring washers in the top of the spin wheel. Thus, a constant maximum load is imposed between the brake lining and the brake plate until the spin shaft and the washer tub are brought to a complete stop.

Sure-Spin Clutch Components:

The Sure-Spin type clutch is mounted inside the bottom of the upper section of the spin wheel consists of the following:

1. A sintered iron clutch plate between two clutch linings. The clutch linings have teeth which mate with slots in the spin wheel.
2. A plastic brake cam with square teeth that mate with slots in the clutch plate. A rubber sound isolator is assembled between the cam and plate to dampen the transmission of sound from the clutch to the spin shaft.
3. A spin roll stop which mates with the brake cam and has splines in its center hole to mate with splines on lower end of spin shaft.
4. A flat steel washer mounted on top of the clutch lining utilized as a bearing surface and retainer for the clutch coil spring.
5. A coil spring mounted on top of the flat washer that applies pressure to the clutch plate when compressed between the two halves of the spin wheel.
6. A metal adjustment plate located over the top coil of the clutch spring. Incorporated three lugs which mate in slots in the lower section of the spin wheel. Used for adjustment of spring pressure on clutch plate.

Complete spin wheel, clutch and brake assembly mounted onto the spin and retained on the shaft by the spin roll stop sleeve and the brake cam mounting nut.

Agitation Operation—Figure 27:

For agitation operation, the motor and drive shaft rotate clockwise. The agitate driver, being keyed to the drive shaft, drives the agitate roller. The agitate roller is pushed into light contact with both the agitate driver and agitate wheel by the agitate roller tension springs.

As the shaft starts to rotate, the floating action of the roller on its spacer permits the roller to be pulled by rotational force into positive contact with the surfaces of the agitate driver and the agitate wheel. Thus the rotational torque of the motor is transmitted through the agitate roller to cause the agitate wheel to rotate clockwise.

As a result of the eccentric mounting of the agitate arm shaft into the hub of the agitate wheel, the arm moves in an arc and reciprocating motion is applied through a flexible coupling to the agitate shaft as the agitate wheel rotates.

During agitation operation the spin roller also rotates, being driven by the spin driver. However, due to the direction of motor rotation and the floating action of the spin roller on its spacer, the rotational force imparted by the spin driver tends to push the spin roller out of contact with the spin wheel. The spin wheel remains stationary during the agitate period.

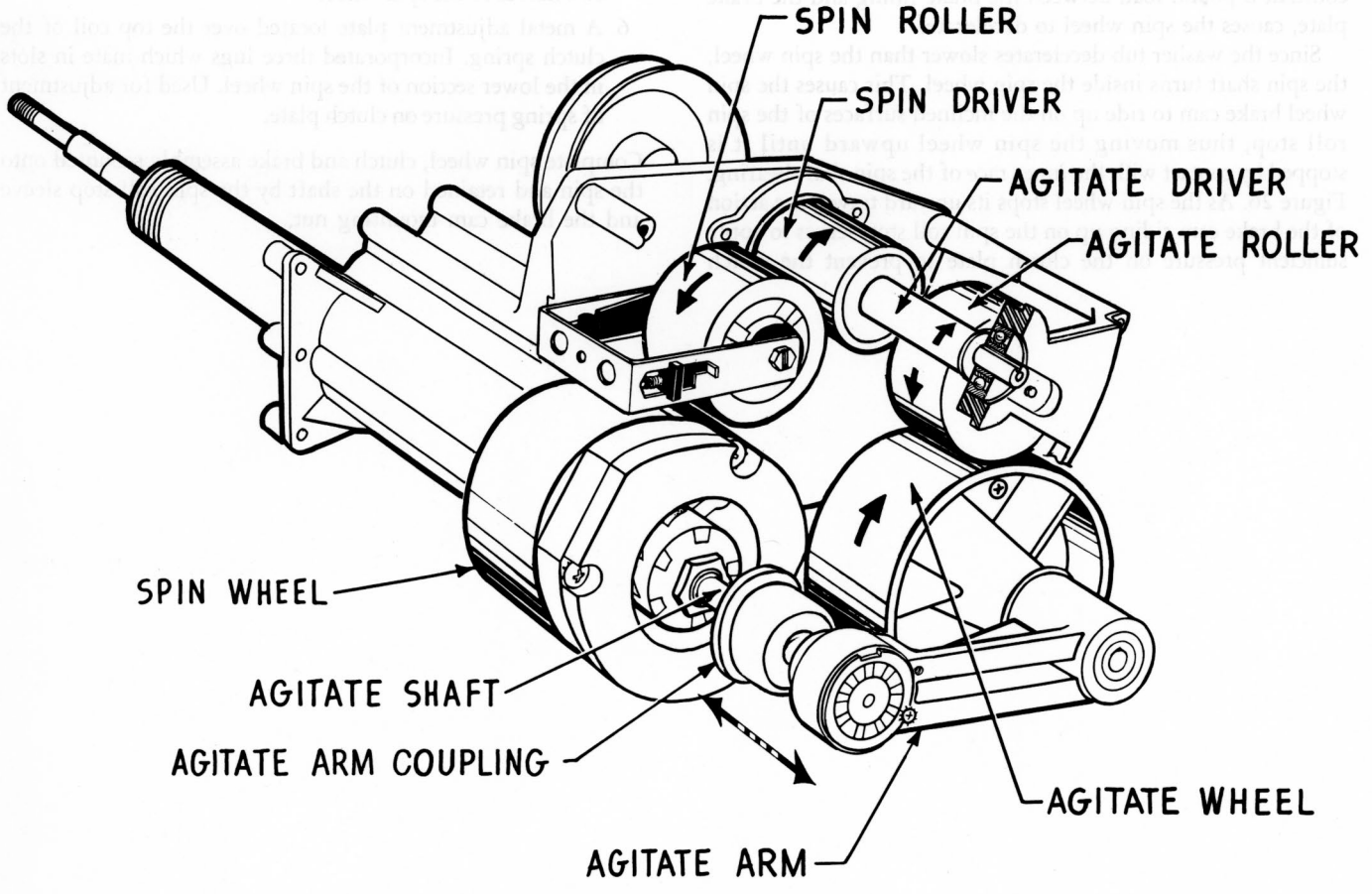


Figure 27
Agitate Operation

Spin Operation—Figure 28:

For spin operation, the motor and drive shaft rotate counterclockwise. The spin driver, being keyed to the drive shaft, drives the spin roller.

The spin roller is pushed into light contact with both the spin driver and the spin wheel by the spin roller tension springs. As the motor starts to rotate, the floating action of the spin roller on its spacer permits the roller to be pulled by rotational force into positive contact with the surfaces of the spin driver and the spin wheel. Thus, rotational torque of the motor is transmitted through the drive shaft and spin roller to cause the spin wheel to rotate counterclockwise.

The clutch assembly rotates with the spin wheel. The brake cam is fastened to the clutch plate and the teeth of the brake cam are engaged with the teeth of the spin roll stop. The spin roll stop is splined to the spin shaft. Thus, the rotational force applied to the spin wheel is transmitted through the sure spin clutch, brake cam and spin roll stop to drive the spin shaft which, in turn, spins the washer tub. During spinning operation, the agitate roller is being driven by the agitate driver. However, due to the direction of rotation of the motor and drive shaft and the floating action of the roller on its spacer, the roller tends to be pushed away from the agitate wheel. Thus, the agitate roller is in extremely light contact with the agitate wheel and the agitate wheel does not rotate.

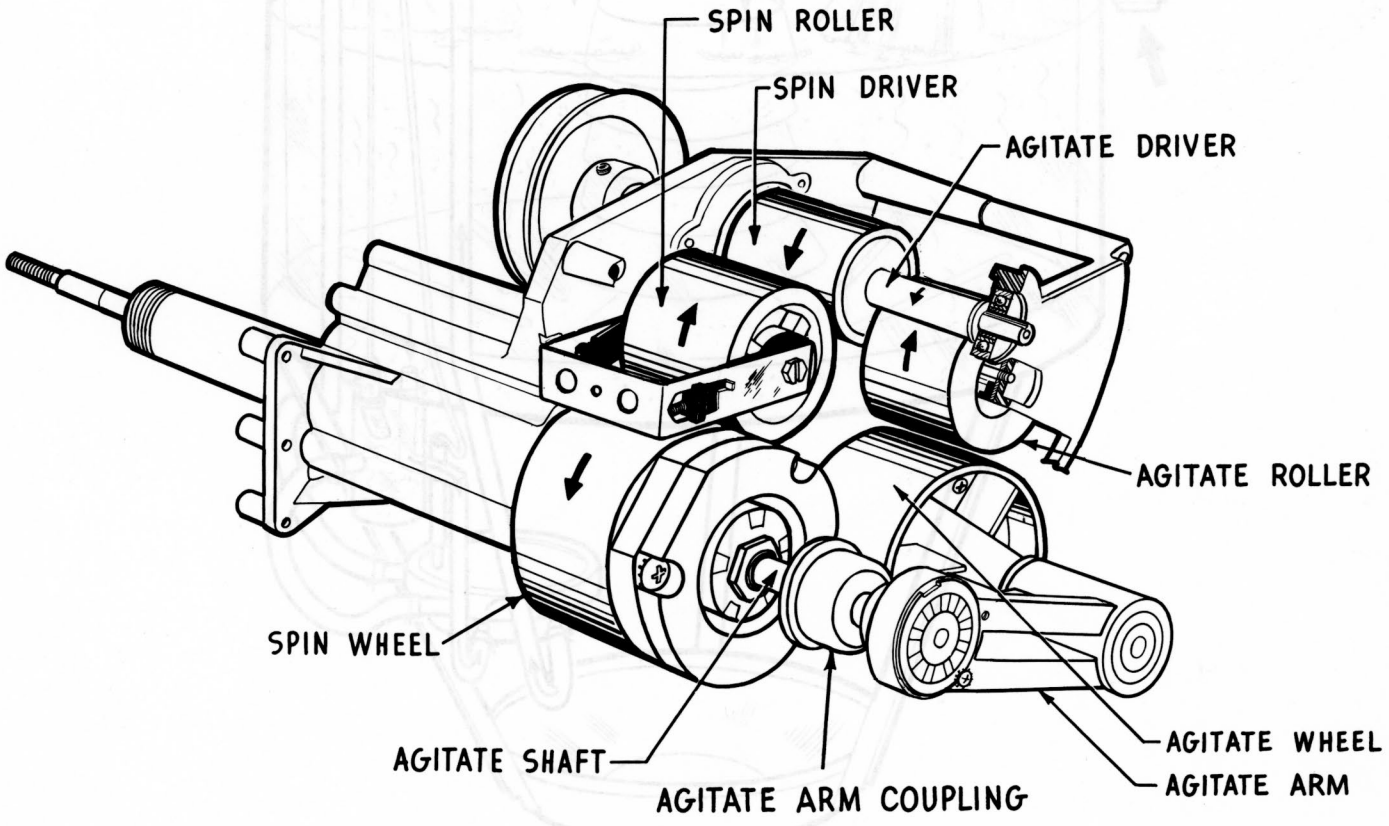


Figure 28
Spin Operation

Recirculate and Filter System

The wash water recirculation system incorporates a pump, Figures 29 and 30, located on the bottom of the discharge pump and a lint filter located in the sub top opening. The water is picked up from the pressure fill sump, then pumped up to the sub top and flows through a lint filter and returns to the tub for recirculation. The pump will only operate during the wash cycle. Figure 31.

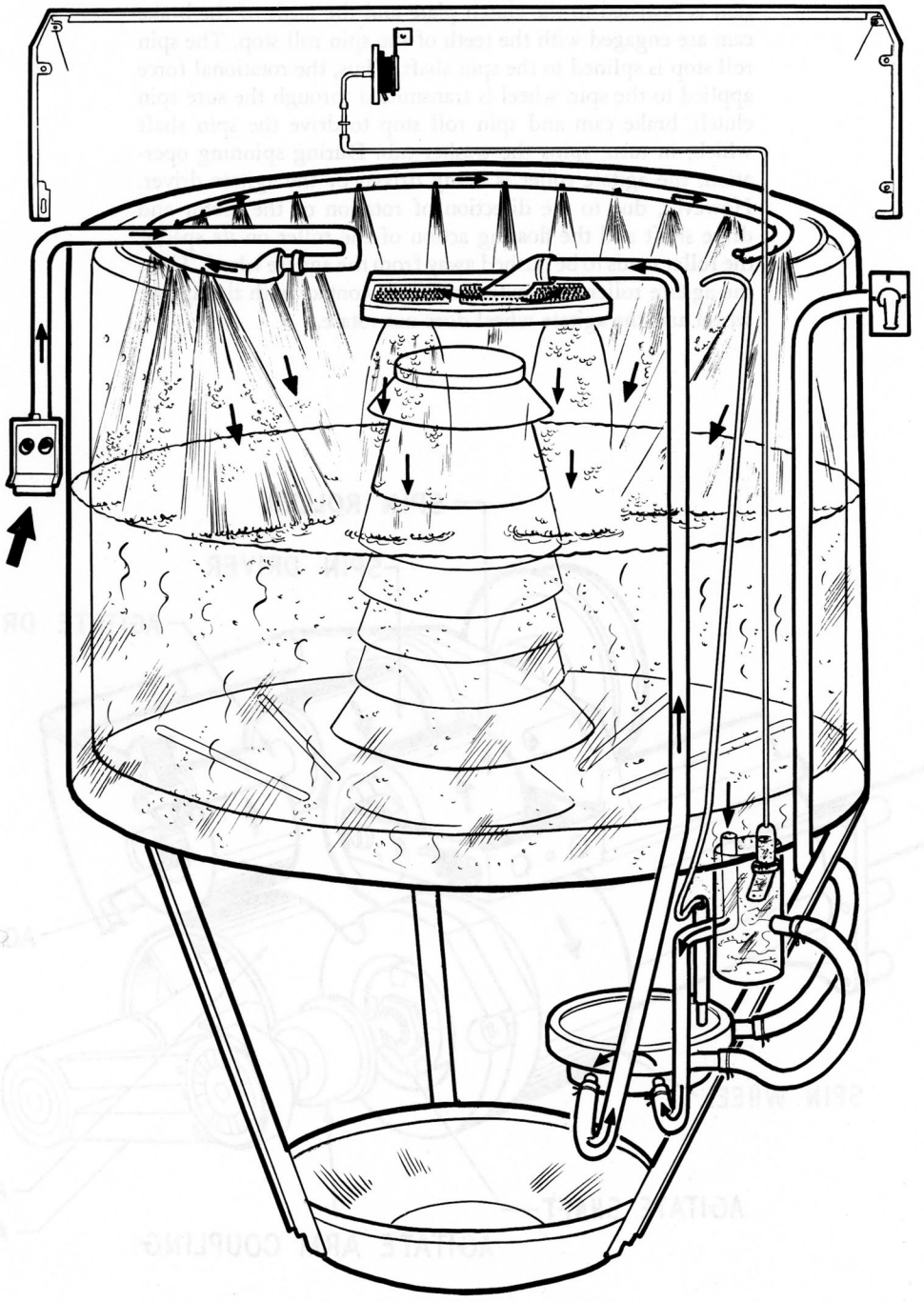


Figure 29
Fill and Recircluate System

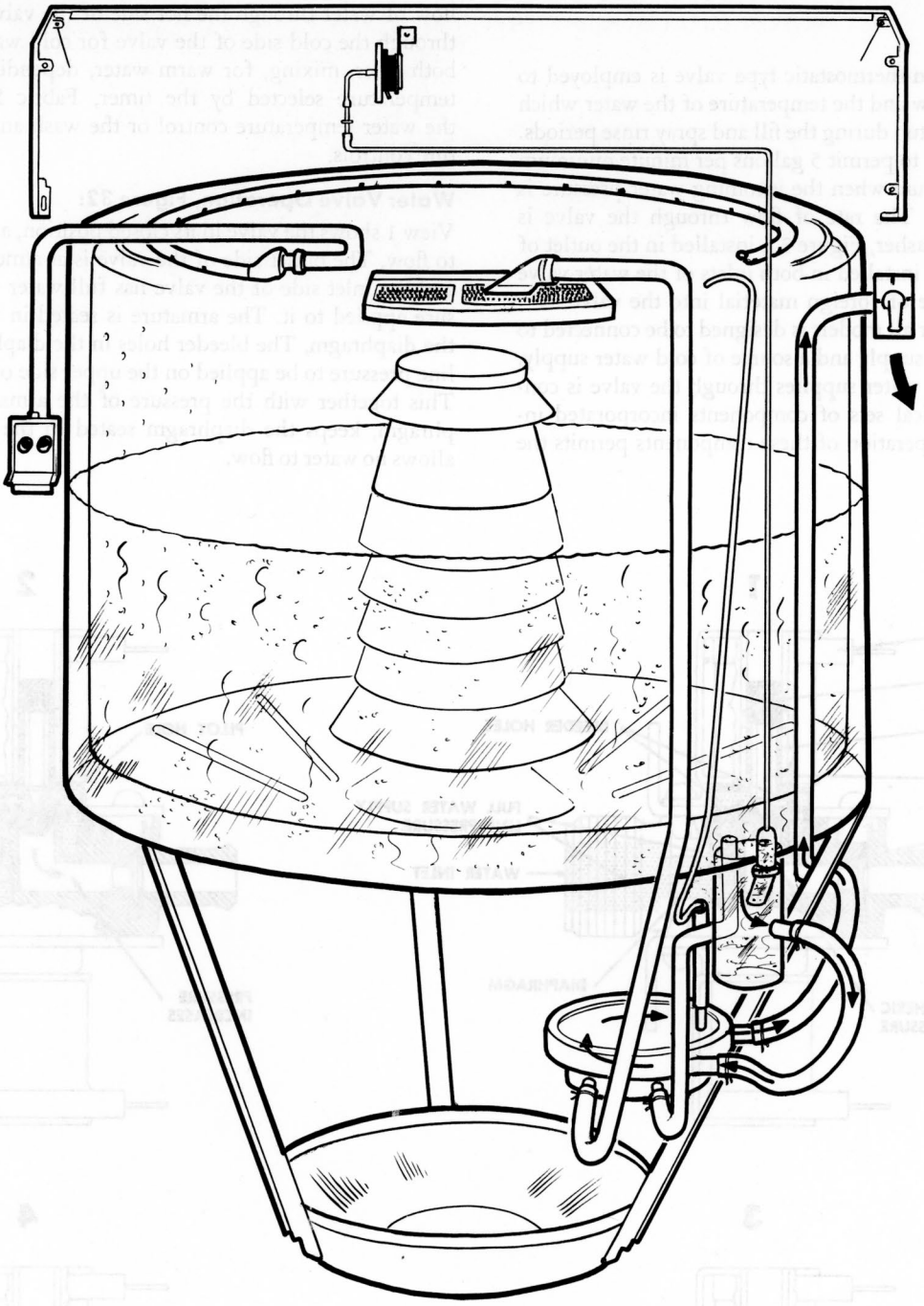


Figure 30
Pump Out

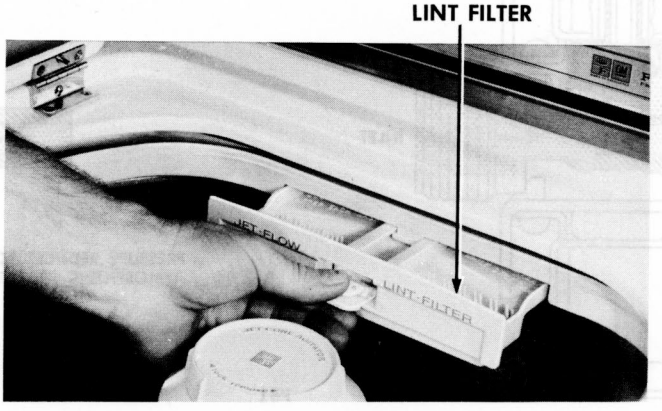


Figure 31
Removing Lint Filter

Water Valve:
All Models

A double shutoff, non-thermostatic type valve is employed to control the rate of flow and the temperature of the water which flows into the washer tub during the fill and spray rinse periods. The valve is designed to permit 5 gallons per minute minimum to 6.5 gallons maximum when the incoming water pressure is from 20 to 120 psi. The rate of flow through the valve is regulated by a flow washer, Figure 32, installed in the outlet of the valve. Screens are installed in both inlets of the water valve to restrict the passage of foreign material into the valve.

The water valve for all models is designed to be connected to a source of hot water supply and a source of cold water supply. The passage of these water supplies through the valve is controlled by two identical sets of components incorporated inside the valve. The operation of these components permits the flow of water through the hot side of the valve for hot water, through the cold side of the valve for cold water and through both sides, mixing, for warm water, depending on the water temperature selected by the timer, Fabric Selector control, the water temperature control or the wash and rinse temperature controls.

Water Valve Operation, Figure 32:

View 1 shows the valve in its closed position, allowing no water to flow. The outlet side of the valve is at atmospheric pressure and the inlet side of the valve has full water supply line pressure applied to it. The armature is seated in the pilot hole in the diaphragm, The bleeder holes in the diaphragm allow full line pressure to be applied on the upper side of the diaphragm. This together with the pressure of the armature on the diaphragm, keeps the diaphragm seated to the valve body and allows no water to flow.

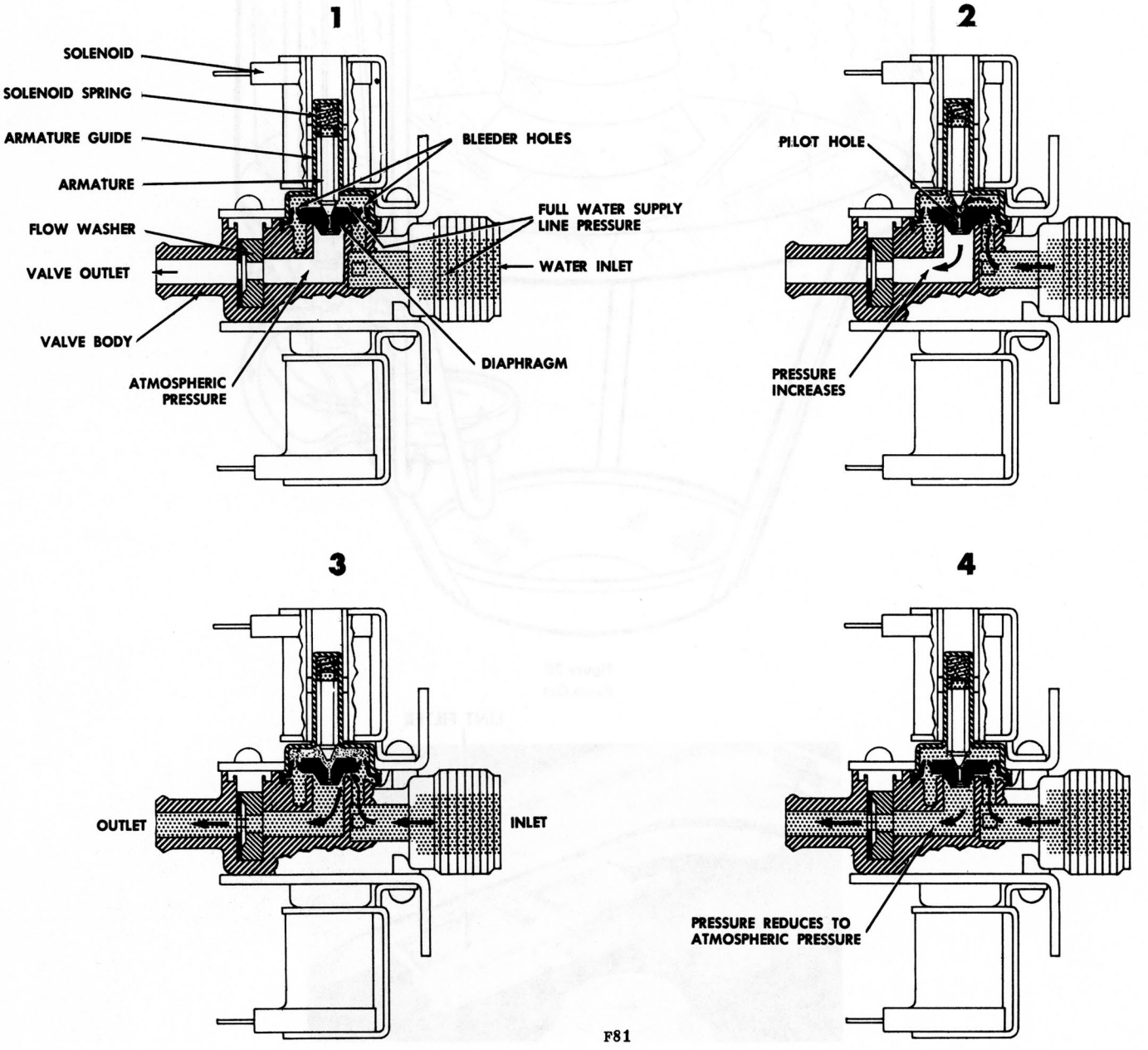


Figure 32
Water Valve — Operational Diagram

View 2 shows the valve as it is in the process of opening to allow water to flow. The solenoid has been energized, the armature has moved up from the pilot hole in the diaphragm and the water above the diaphragm passes through the pilot hole to the outlet side of the valve. As this takes place, pressure below the diaphragm increases to equalize with the pressure above the diaphragm.

View 3 shows the valve in the open position, allowing water to pass from the inlet side through to the outlet side. The solenoid remains energized, the armature remains up, and the diaphragm no longer seats to the valve body. The orifice opening in the flow washer restricts the rate at which water will flow through the valve.

View 4 shows the valve as it is in the process of closing. The solenoid has been de-energized, the spring behind the armature moves the plunger down to close off the pilot hole in the diaphragm and to force the diaphragm down to seat onto the valve body. The pressure above the diaphragm increases when the pilot hole is closed, thus helping the armature to force the diaphragm down. As the diaphragm seats on the valve body, all flow of water ceases and the pressure at the outlet side of the fill valve reduces to atmospheric.

Checking the Water Valve:

Determine the improper condition occurring during the washer operation and check the water valve as follows:

Condition A:
No Fill on Wash and Rinse, Cold Water on Warm Wash or Hot Water on Cold Fill.

1. Check the ohms resistance of the solenoid coil on the inoperative side of the valve as specified in Table VII. If the resistance valve is other than specified, replace the coil.
2. Remove the inlet hoses from the inlet sides of the valve and check the screens for evidence of foreign materials which would restrict the flow of water. Clean or replace the inlet screens.
3. Disassemble the water valve and observe for:
   a. Rough edges on the armature guide which may restrict the movement of the armature.
   b. Clogged bleeder holes in the diaphragm. If the bleeder holes are clogged with foreign material, a sewing needle or similar pointed tool may be used effectively to remove obstructions.

Condition B.
Continues to Fill in Wash and Spin Periods.

1. Check the armature guide for foreign materials or rough surfaces which would restrict armature movement. Correct or replace as necessary. If the armature is at fault, replace it.
2. Check the armature spring to assure it is functional and unbroken. Replace if necessary.
3. Check the diaphragm to assure proper installation. The side having the chamfer around the bleed hole must be installed toward the armature.
4. Check the diaphragm for damage and replace if necessary.

Timer Dial:
All Models

The timer dial is printed upon the control housing escutcheon of all models. The timer indicator is mounted directly to the timer shaft drive hub and includes a pointer which indicates the cycle in which the washer is operating. Figure 33.

Timer Knob:
All Models

The timer knob, Figure 33, is threaded onto the timer shaft. Since the timer knob is not clutched to the timer shaft, it is important that the timer not be rotated when the knob is *pulled out* for operation. Always *push* the timer knob *in* when setting the timer at the beginning of a cycle or when advancing the timer manually during the timed cycle.

Unbalanced Load—Automatic Spin Stop:

All models are equipped with an out-of-balance load relay which serves to stop the spinning action of the washer tub when the wash load in the tub is severely out of balance. The relay is mounted in the upper right corner of the cabinet, Figure 34.

In the event that the load in the tub is severely unbalanced at the start of a spin operation, the tub rotates in an eccentric orbit and thus strikes the trip arm. The resultant movement of the trip arm serves to break the electrical circuit to the motor and completing a circuit through the relay coil. The circuit to the washer motor is held open by magnetic attraction of the relay coil until the coil is de-energized. When the washer lid is opened to redistribute the wash load in the tub, the circuit to the relay coil is broken by the lid safety switch. Thus when the lid is reclosed, the washer will resume normal operation. Also, if the timer knob is pushed in to release the relay

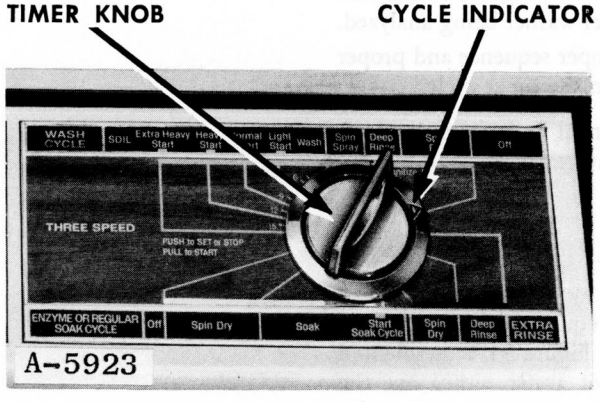


Figure 33
Timer Dial Indicator

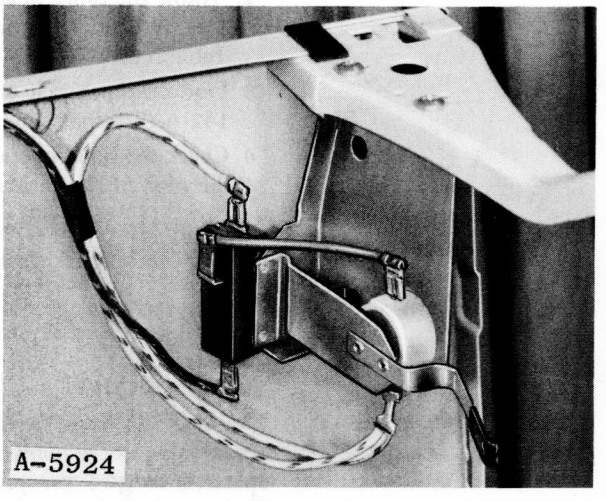


Figure 34
Out of Balance Relay

coil, the wash load must be redistributed before the washer is started again.

The unbalanced load relay buzzes when the coil is energized, signaling the unbalanced condition.

Automatic Variable Wash:
All Models

Soil selection provided on the timer dial.

Wash time is varied automatically by soil selection made in WASH FILL period.

Soil selection does not affect the duration of the WASH FILL period.

Automatic Advance from Soak to Wash: *Model WCIS*

Soak and Wash selection incorporated into options control.

When control is set, the timer motor remains energized through the soak cycle OFF period.

Timer advances automatically into subsequent WASH cycle.

Water temperatures and mechanism speeds remain the same for the wash cycle as those selected for the soak cycle.

Automatic Advance from Wash to Extra Rinse:
Model WCIS

Extra Rinse selection incorporated into Options Control.

When control is set, the timer motor remains energized through the wash cycle OFF period.

Timer advances automatically into subsequent EXTRA RINSE Cycle.

Water temperatures and mechanism speeds remain the same for the extra rinse cycle as those selected for the wash cycle.

Note: It is not necessary to select EXTRA RINSE on the options control when using the extra rinse as a separate cycle.

Checking the Timer:

1. If the timer fails to advance with 115-120 volt, 60 hertz AC power supplied to the timer motor, check for mechanical interference of the shaft, indicator or knob. If no mechanical interference exists, replace the timer motor as applicable.
2. Allow the timer to advance several increments; check the time interval between each advancement to agree with Table II thru V.
3. Find the timer cycle of operation chart, Figures 136-A thru 142-A corresponding to the model washer being analyzed.
4. Check the timer operation for proper sequence and proper duration of the various periods in the timer cycle.

Caution: Always disconnect all electrical leads from the timer prior to checking resistance or continuity.

Suds Saver:
Model WCDRS

The WCDRS Suds Saver model is equipped with a double action valve in the pump out system. Figure 35. It is solenoid operated to give the proper flow of water either out the discharge drain hose or into the stationary tub or container for the suds water. To return the suds water to the washer, set the

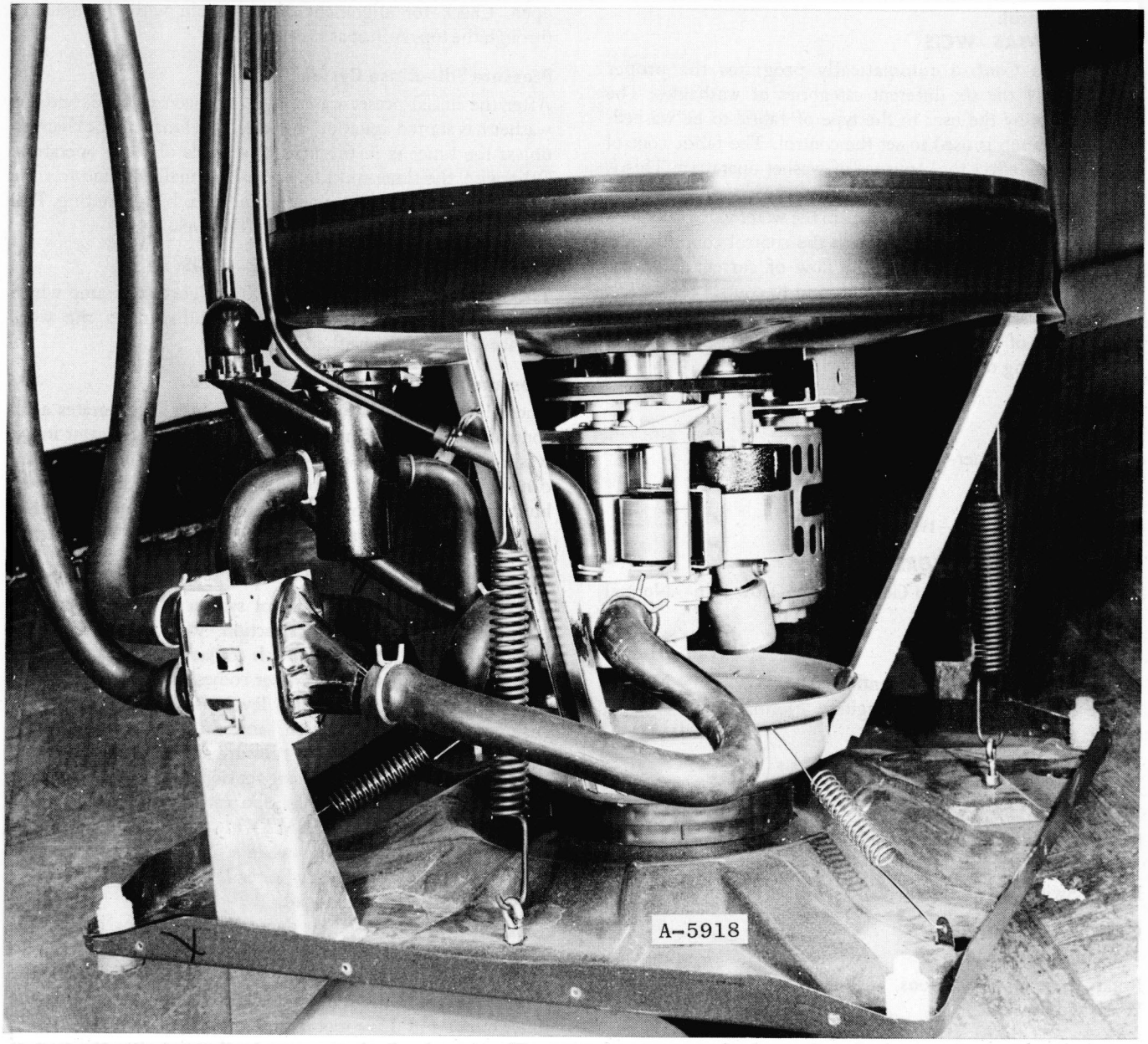


Figure 35
Suds Saver Valve

timer to "suds return" position on the timer dial. Figure 36. The washer will agitate and the washer will flow into the washer up through the sump into the washer tub.
See Figure 37.

Options Control:
Model WCIS

A separate options control is incorporated on the model WCIS. The options control consists of a 5-position switch and rotary knob for selections: Normal, Regular Soak and Wash, Regular Soak Wash and Extra Rinse, Wash and Extra Rinse and Enzyme Soak. Again the options control setting in no way affect the sequence of washer operation. That is governed only by the position of the timer.

Load Selector Control:
All Models

The load selector is used to select the amount of water used during the wash cycle, the selection depends upon the size of load of clothing to be washed.

MAXI	—Extra Large Loads	(19.5 Gals.)
NORMAL	—Regular Load	(15.7 Gals.)
SMALL	—Small Loads	(12 Gals.)
MINI	—For very small loads	(8.3 Gals.)

The control can be set any place between the MAXI and MINI settings. To save water set the control to match the load size.

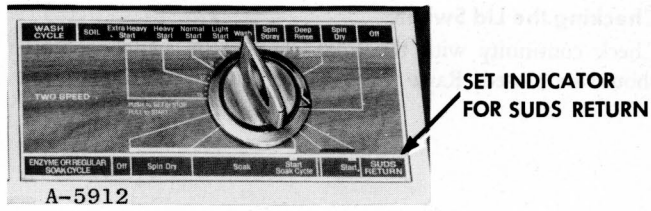


Figure 36
Dial WCDAR — Suds Return Position

Fabrics Control:

Models WIAS - WCIS

The Fabrics Control automatically programs the proper laundering of the six different categories of washables. The control is set by the user to the type of fabric to be washed.

A rotary knob is used to set the control. The fabric control can in no way effect the sequence of washer operation. This is governed only by the position of the contacts of the timer. However, the circuit from the timer to the water valve solenoids and washer motor is wired through the control contacts. The action of these contacts route the flow of current from the timer to the proper electrical component to control the correct water temperature, and agitation and spin speeds, as well as the duration of wash periods of the timed cycle, depending upon the setting of the control.

Speed Control:

Model WAS

Incorporated in timer—single speed.

Model WCDAS

Incorporated in timer— two speed.

Models WCDS - WCDRS

Rotary Switch—2 position Gentle agitate, slow spin—Normal agitate, Normal spin

Model WIS

Rotary Switch—4 position, Gentle agitate, slow spin—Normal agitate Normal spin—Gentle agitate, Normal spin—Normal agitate, slow spin.

Models WIAS - WCIS

Incorporated in Fabrics Selector control automatic.

Rinse and Soak Temperature Control:

Model WIS

Rotary Switch—2 positions, Cold—Warm

Cold Water Control:

Model WIAS - WCIS

Rotary Switch—3 positions, Soak and Rinse, Normal, Soak, Wash and Rinse.

Suds Saving Control:

Model WCDRS

Incorporated in timer cycles.

Lid Safety Switch:

All Models

All models have a lid safety switch, Figure 38, which stops the washer when the lid is raised during any period of the time cycle. The lid switch is mounted on the underneath side of the top and incorporates a button which extends just behind an opening in the top. A plunger on the lid hinge extends through this opening, thus activating the switch plunger when the lid is closed.

Checking the Lid Switch:

Check continuity with the door closed, the switch contacts should be closed. Raise lid and check to see if the contacts open. Check for alignment of hinge pin with the opening through the top. Adjust as necessary.

Pressure Fill—Rinse Cycle:

After the initial preset water level has been reached, and the washer has started agitation the water level may not be changed unless the timer is in the first 72 seconds of wash operation. Otherwise, the timer must be rotated manually around to rinse fill and the water level control changed to higher setting. Pull the timer dial and let it complete the cycle.

Fluorescent Lamp—Models WIS - WCIS:

These models incorporate a full width fluorescent lamp which back lights the control housing and illuminates the work surface or tub of the washer. Figure 39.

Pressure Fill System and Components:

The S line of Frigidaire automatic washers incorporates a fill control system which insures a positive volume of water in the washer tub during the wash and rinse periods. The pressure fill control system consists of the pressure switch, drain sump with built on air pressure chamber. A plastic tube connects the pressure chamber to the pressure switch. Figures 29 and 30.

Operation of Pressure Fill Control System:

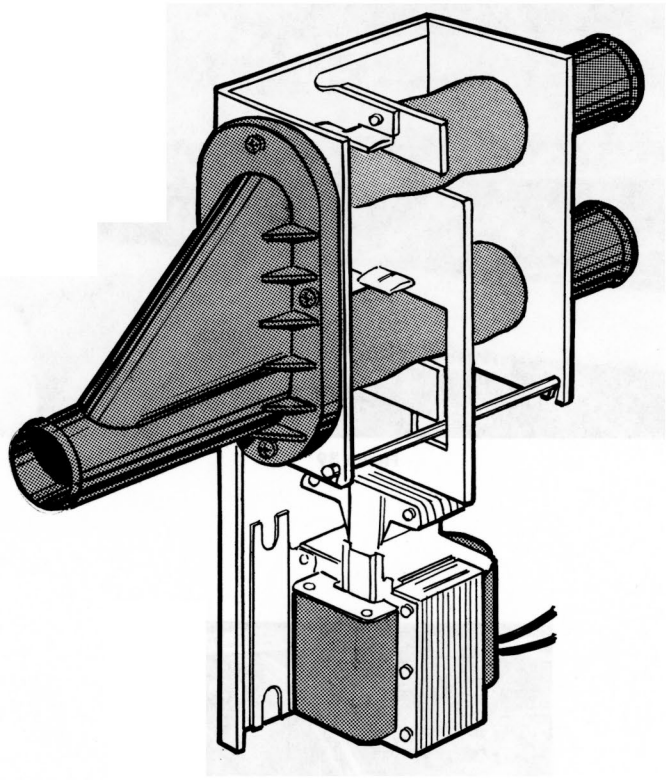
The operation of the fill control system is accomplished by both electrical and mechanical action. With the timer set in, Wash-Fill period, pressure switch contacts Y-B to OR-W are closed and remain so as the water comes into the tub and fills the drain sump. As the water level rises the air in the air chamber becomes compressed, and the compressed air acts against the diaphragm in the pressure switch. As the pressure increases it overcomes the spring tension being applied against the diaphragm. The spring tension varies with the setting of the water level desired. For a MAXI load the tension is greater against the diaphragm than when a MINI load selection is made. With this control any water level may be selected according to the size of the load.

When the compressed air overcomes the spring tension the switch activates. This causes the contacts in the switch to transfer from Y-B and OR-W to Y-B to PK. This breaks the flow of current to the water valve and makes the circuit to the timer motor and drive motor for agitate operation.

The water level selection may be changed after the start of the fill cycle by rotating the selector dial to the "Reset" position and then set at the desired position. To stop wash fill and start agitation, turn selector to the *right* (toward MINI setting) until fill stops. Washer will then start agitating.

To lengthen fill on partial load settings after agitation has started, turn water level control to "Reset"; then set control to desired setting. Agitation will stop and additional water will be added. If agitation has not started, turn water level control toward "MAXI" load setting. Agitation will not start until desired water level is reached.

During the rinse fill, the water level can be changed only before the agitation cycle begins or during the first increment of the timer. The rinse cycle can be reset at the timer and the water level control set to desired setting. Pull timer dial and restart fill cycle. When the desired level is reached the washer will continue on thru the cycles.



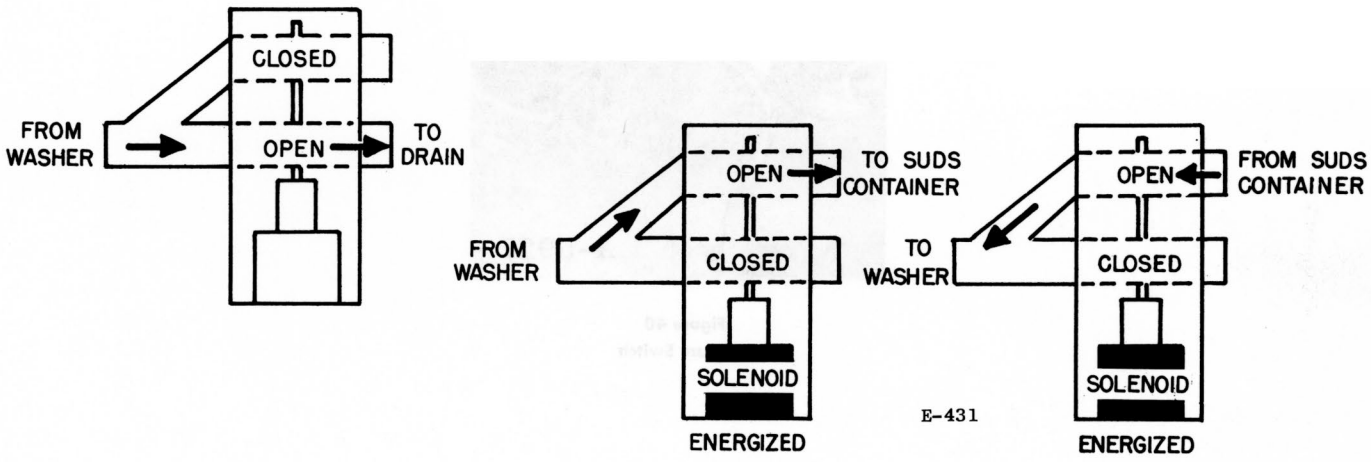


Figure 37
Water Flow — Suds Saver Diagram

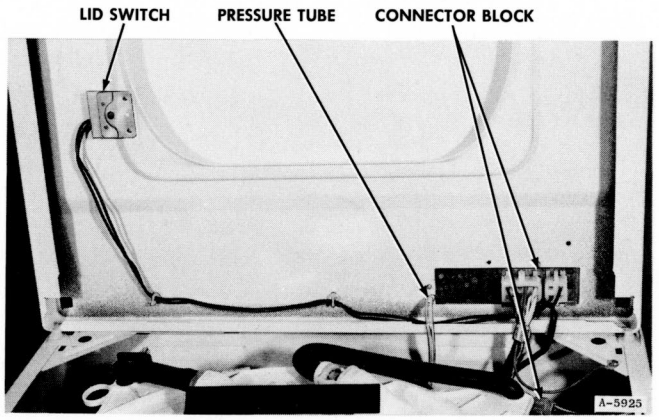


Figure 38
Lid Switch

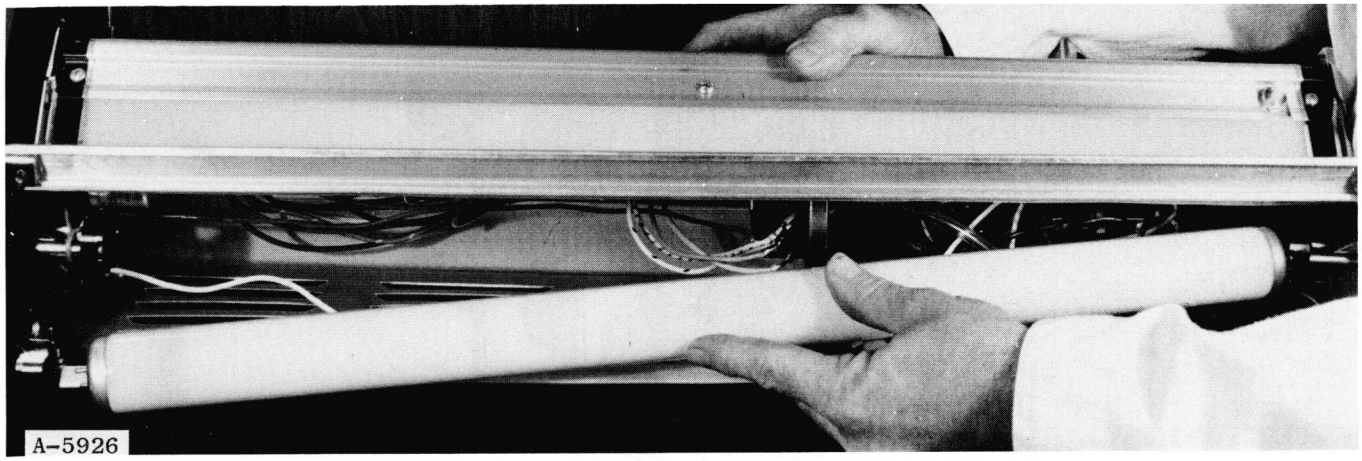


Figure 39

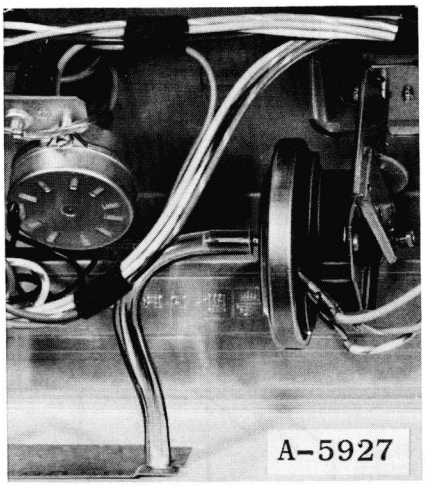


Figure 40
Pressure Switch

INSTALLATION INSTRUCTIONS FOR "S" MODEL FRIGIDAIRE AUTOMATIC DOMESTIC WASHERS

IMPORTANT

BEFORE YOU LEAVE: Always check:

- ☐ Washer properly grounded
- ☐ Drain hose and suds water return hose properly installed (no kinks, clamped and proper length)
- ☐ Hose washers installed in hose couplings
- ☐ Hose installed correctly on water valve (hot on hot—cold on cold—tightened securely no kinks)
- ☐ Washer level. Firm on all 4 leveling legs.
- ☐ Mechanism shipping spacer bolt and washer removed
- ☐ Washer operates properly in all cycles
- ☐ Customer instructed on operation
- ☐ Hot and cold water valves shut off
- ☐ Customer has been advised name and phone number of authorized Frigidaire service agency.

FACILITIES REQUIRED

It is the user's responsibility to provide the necessary electrical and plumbing facilities.

WATER SUPPLY

Hot Water Temperature ..... 140°F.—160°F.
Water Pressure (Flowing) ..... 20 PSI—120 PSI
Maximum Unbalance Press. (Hot VS. Cold—Flowing) 10 PSI
Hose Faucets: .....¾"—Hot and Cold

Note: Plumbing must conform to national and local plumbing codes.

ELECTRICAL SUPPLY

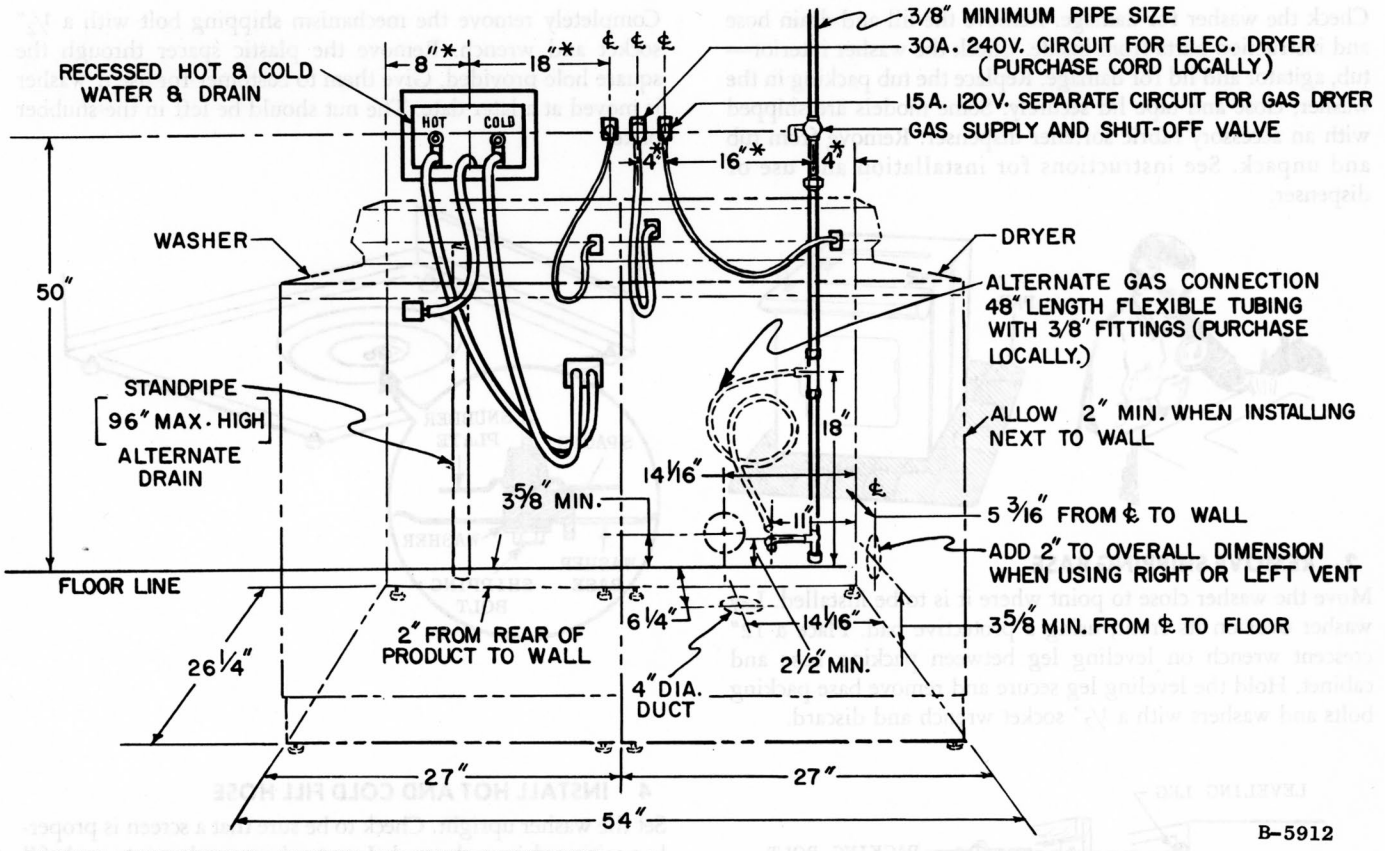
CAUTION: THE WASHER MUST BE GROUNDED.
USE ELECTRICAL FACILITIES THAT CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES WITH THE FOLLOWING:

1. The electrical components of the washer operate on 120 volt, 60 cycle, single phase, AC electrical service and the washer should be installed on a suitable, separately fused branch circuit. The supply circuit should be protected with a 15 amp. time delay fuse. Extension cords should not be used.
2. Plug in the 3-wire service cord which is equipped with a 3-prong plug. The round plug of the supply cord provides a ground. A *grounded receptacle* for receiving the 3-prong plug must be used.

Note: If any doubt exists as to whether the wall receptacle is grounded, consult a qualified electrician.

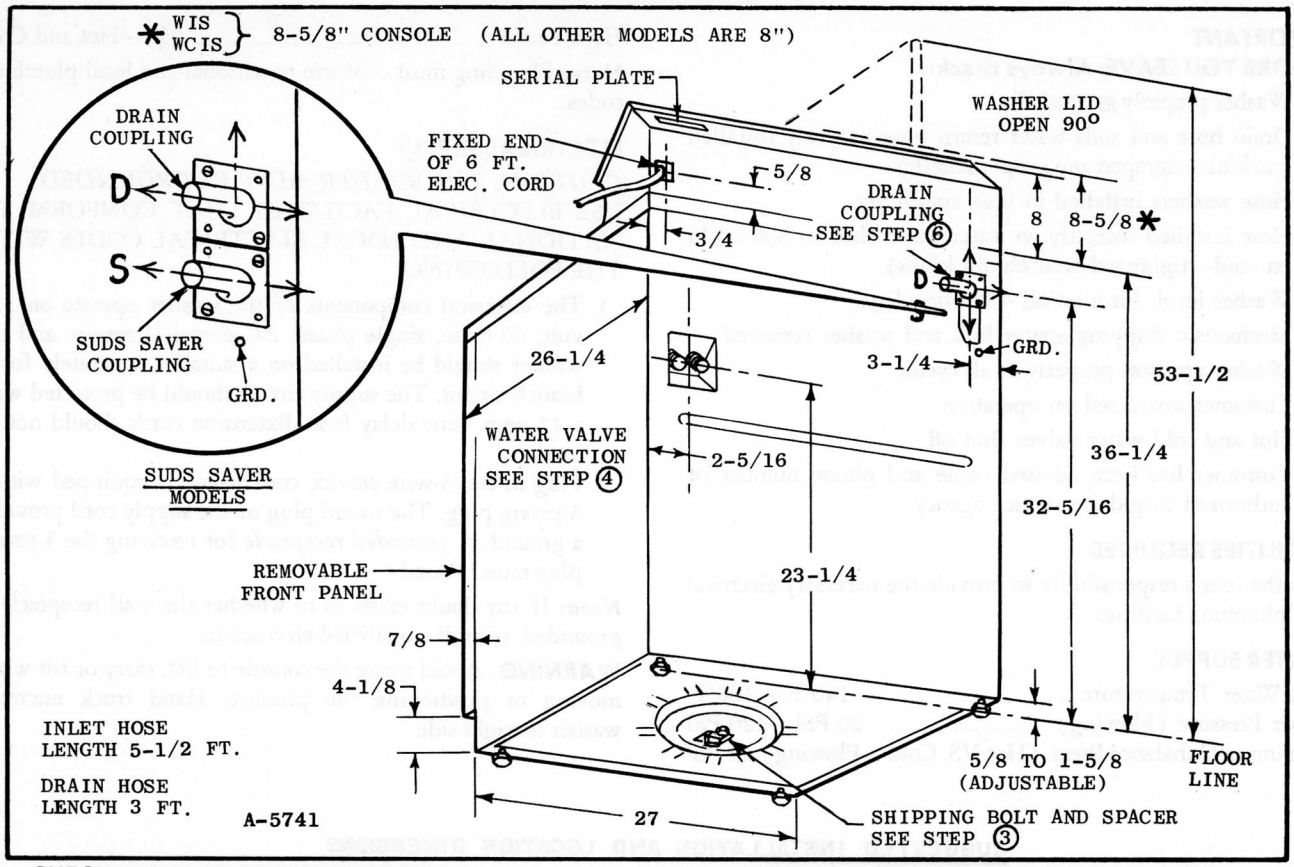
WARNING: Avoid using the console to lift, carry or tilt when moving or positioning the product. Hand truck uncrated washer on right side.

SUGGESTED INSTALLATION AND LOCATION DIMENSIONS



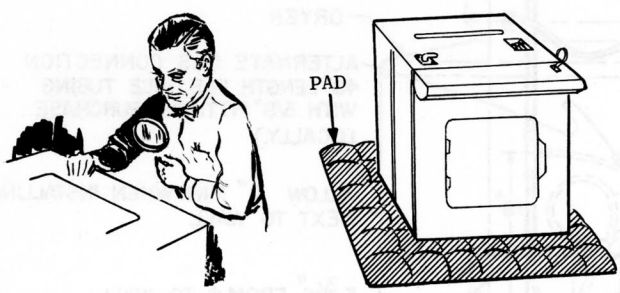
* APPROX. DIMENSIONS DEPEND ON STUD LOCATIONS

PRODUCT DIMENSIONS



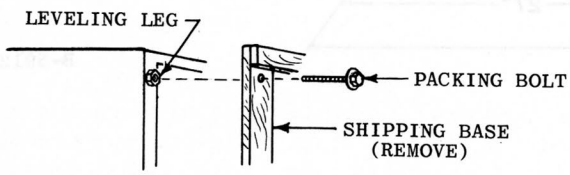
1 CHECK PRODUCT BEFORE INSTALLING

Check the washer for damage. Remove the fill and drain hose and instruction parts from inside. Check the washer interior—tub, agitator and lid for damage. Replace the tub packing in the washer, close and tape lid securely. Some models are shipped with an accessory fabric softener dispenser. Remove from tub and unpack. See instructions for installation and use of dispenser.



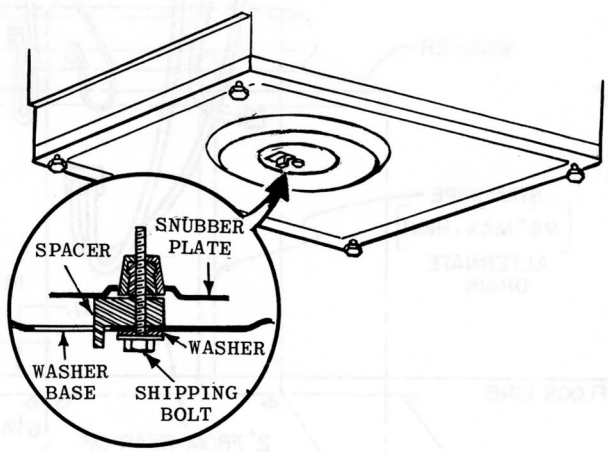
2 REMOVE SHIPPING BASE

Move the washer close to point where it is to be installed. Lay washer over on its front, using a protective pad. Place a 12" crescent wrench on leveling leg between packing base and cabinet. Hold the leveling leg secure and remove base packing bolts and washers with a 1/2" socket wrench and discard.



3 REMOVE MECH. SHIPPING BOLT & SPACER

Completely remove the mechanism shipping bolt with a 1/2" socket and wrench. Remove the plastic spacer through the square hole provided. Give them to customer for use if washer is moved at a later date. The nut should be left in the snubber plate.

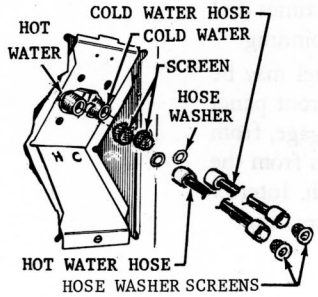


4 INSTALL HOT AND COLD FILL HOSE

Set the washer upright. Check to be sure that a screen is properly positioned in each spud. Insert a hose washer into each fill hose coupling at the water valve end. Insert a hose washer and screen assembly into each fill hose coupling at the water supply end. Connect the Hot water hose to the hot water supply and to the water valve spud with the letter H underneath it.

Connect the Cold water hose to the cold water supply and to the water valve spud with the letter C underneath it.

Tighten couplings securely—avoid overtightening as valve body may crack.



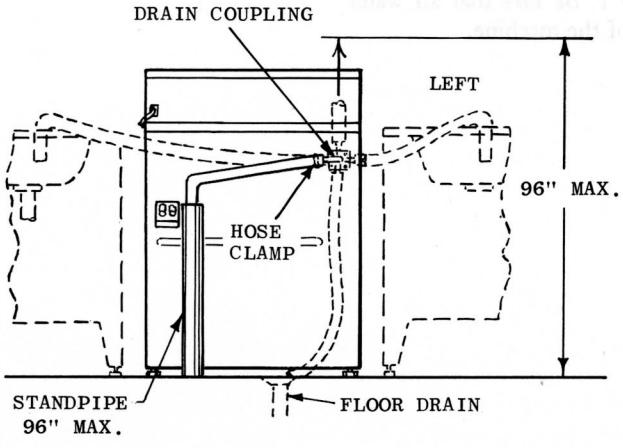
5 GROUNDING

GROUNDING IMPORTANT. For personal safety this product is provided with an additional external grounding kit located in the miscellaneous parts package. One end of the bare #14 external grounding wire is to be securely fastened to the rear of the cabinet shell at the hole provided marked *GRD* below the drain hose connection. Use the screw and nut supplied. The other end should be securely fastened to a bare *COLD* water pipe using the grounding strap, screw and nut provided. The wire should be wrapped around the screw under the head before tightening.

6 INSTALL DRAIN & SUDS WATER RETURN HOSE

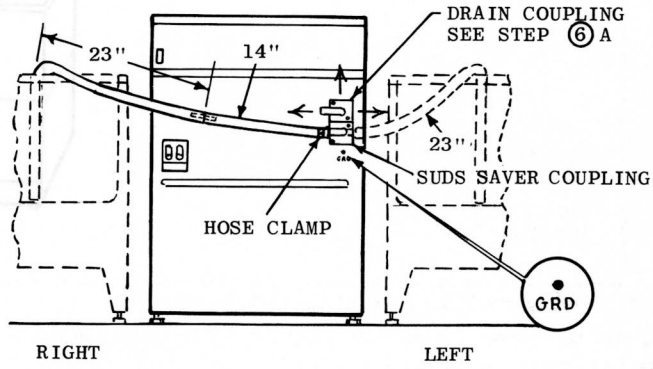
a. Install Drain Hose—To Standpipe, Tubs, or Floor Drain. The drain coupling can be mounted in four different directions as illustrated. Determine if the drain, standpipe, or tubs will be left, right or directly behind the washer. In shipment the drain coupling is taped to interior of cabinet, and *must* be mounted to the cabinet during installation. Pull the drain coupling through the mounting hole, loosen clamp (Tool #12289) and rotate it in the direction of the drain. Install on exterior of cabinet with two #10 screws provided in the miscellaneous parts package in the tub. A drain hose 36″ long to a 90° bend with an 8″ extension is provided for installation. Put the 90° extension of the drain hose into standpipe or over tub as illustrated. Cut off excess hose or loop and support it in a manner that it will not later become kinked. Connect the straight end to the drain coupling with clamp provided. *Do Not* connect the drain hose rigidly to the drain facility.

REMEMBER—HOSE KINKS AND COILED HOSE DUE TO EXCESS HOSE CAN CAUSE DRAIN RESTRICTIONS.



b. *Install Drain and Suds Water Return Hose Suds Saver Model*

The suds saver coupling is shipped in the same position as the drain coupling described in 6a. Remove both couplers from the inside of the cabinet and determine which coupling is for drain and suds saver. (A tag will identify the suds saver coupling.)



Determine how the machine will be located in relation to the drain and tub facilities. Loosen clamp (Tool #12289) and rotate each coupler to the desired position for proper drain and suds return hose installation. Avoid kinking hose while rotating the couplers.

Mount the drain hose coupler in the top position, with a possibility of three directions. Mount the suds saver coupler in the lower position, with a possibility of two directions as illustrated. The #10 mounting screws will be found in the miscellaneous parts package.

To install the drain hose, refer to Section 6a. The only variation on suds saver models is the absence of the downward mounting possibility of the drain coupler.

Suds Water Return Hose is supplied in two pieces and a straight hose coupling to join them if necessary for additional length. One hose is 23″ long to a 90° bend with a 15½″ extension. The other hose is straight and 14″ long. For a left hand (facing front of washer) suds water saver facility the 23″ hose will be sufficient. For a right hand facility the additional 14″ hose must be used as illustrated. Use 6567223 hose and 6568088 coupler if additional length is required.

Note: The Sudswater return hose must not be coiled and must not sag below the level of the nozzle of the sudswater saver coupling. A continual rise from the valve to the water storage container will assure proper return of water.

7 LEVEL WASHER

Move washer into its installed position. Remove the tub packing. Determine which washer leveling foot rests on the highest point of the floor. Screw this foot all the way into the washer base. Adjust the remaining three feet until the washer is solid and level side to side and front to back. Use a level on the washer top to check. Also, plug in service cord, put timer dial at "Dry" and check and adjust washer feet while spinning.

Note: In close clearance installations the front panel may be removed by removing 3 screws at bottom edge of front panel and sliding it down so that tabs on panel edge disengage, from shell and top. This allows access to the leveling legs from the cabinet interior. To adjust, use ½" socket or wrench. Interior adjustment *must not* be made with the product operating.

8 CHECK WASHER OPERATION

OPERATE THE WASHER IN ALL CYCLES CHECKING FOR:

1. Proper speed in all agitate and spin cycles.
2. Proper water temperature.
3. Proper water drainage.
4. Presence of water leaks.

Clean exterior of surfaces of washer, instruct user on proper operation and check items on Page 1. *Be sure* that all water used to test the washer is spun out of the machine.

Instructions for Washer Analyzer 14387

The analyzer is designed to work with the "S" line of Frigidaire automatic washers. Its purpose is to help the serviceman make a fast and accurate diagnosis of components of the washer.

The analyzer is designed so that the console and cabinet may be checked independent of each other. See Figure 41.

The upper section of the analyzer is used to check the console control operations. The indicator lights respond to the control circuits selected in the various control settings. A failure to respond indicates a defect in the circuit being tested.

The lower section is used to check the cabinet operations, motor, water valve, etc. See Figure 41.

Read operating instructions before trying to use the analyzer.

Checking Cabinet Mounted Components:

1. Disconnect the product from the electrical supply.
2. Remove the two screws mounting the console to the cabinet top.
3. Pull the console forward and tilt back to release the rear hold down tabs from the top.
4. Remove the console harness connector block from the cabinet connector block in the cabinet top.
5. Connect the dual, 14 hole analyzer connector block into the cabinet top connector block.
6. Connect the alligator clip of the analyzer grounding wire to the bare copper product grounding wire, see Figure 42.
7. Set the analyzer selector switch to the "OFF" position.
8. Plug the analyzer power supply cord into a 120 volt supply line. The "POWER ON" light should be lit.

   Note: If the "POWER ON" light does not come on, check the power supply and/or the analyzer fuse, Figure 41.
9. Check washer console at the timer dial location to determine if the washer is a single speed, two speed or three speed machine.

   SINGLE SPEED—High agitation, 360 strokes per minute. High spin, 630/650 RPM.

   TWO SPEED—Medium agitation, 240 strokes per minute. High agitation, 360 strokes per minute. Medium spin speed, 420/435 RPM. High spin speed, 630/650 RPM.

   THREE SPEED—Low agitation 180 strokes per minute.
10. Rotate the selector switch knob to the appropriate switch position to check for proper motor and mechanism function.

    If the motor fails to operate and the "MOTOR OVERLOAD—OPEN" indicator light is on or comes on during test, check components energized for winding resistances, shorts or grounded conditions. Chcek motor and mechanism for binding conditions.
11. To check the water valve functions, be sure the water supply is turned on. Turn the analyzer selector switch to the "COLD" position and raise the lid and physically check the water temperature. Place the selector switch on "hot" position and check the water fill to be hot.

Console Component and Lid Switch Check:

1. Disconnect the analyzer power cord while making the analyzer connections.
2. Connect the analyzer 10 and 4 hole connector plugs to the console connectors.
3. Connect the analyzer 14 hole connector into the cabinet connector block. "Lid should be closed during this check."
4. Attach the alligator clip ground wire to the bare cabinet grounding copper wire.
5. Plug the console power supply cord into a 120 volt power supply.
6. Push timer dial in and rotate indicator to wash cycle "start" position and pull the knob out. The water temperature indicator lights should correspond to the water temperature selector switch setting.

Models having a fabric selector switch, the indicator lights should correspond with the water temperature listed on the washer lid instructions for that fabric selection setting. Rotate the fabric selector switch or water temperature selector to the various settings and observe the analyzer indicator lights to indicate the corresponding water temperatures.

Note: If no indicator lights are observed to light, an open lid switch, out of balance relay switch or lack of power to the console is indicated.

1. Check the power supply outlet.
2. To verify the suspected lid switch or open out of balance relay contacts, remove the console power supply cord from outlet.

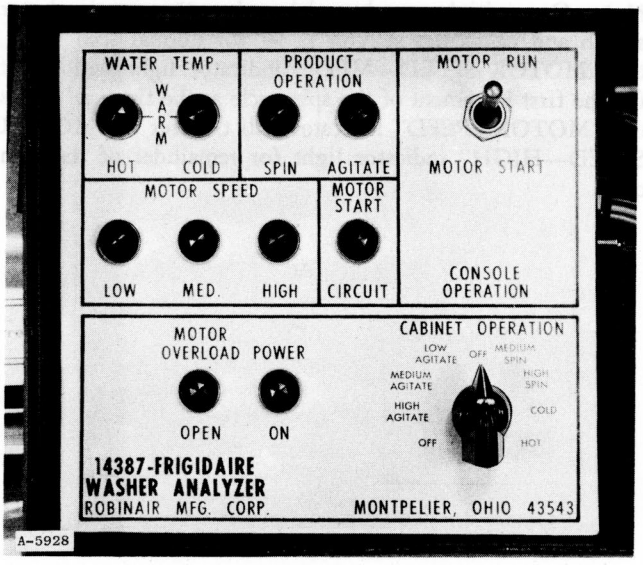


Figure 41
Washer Analyzer

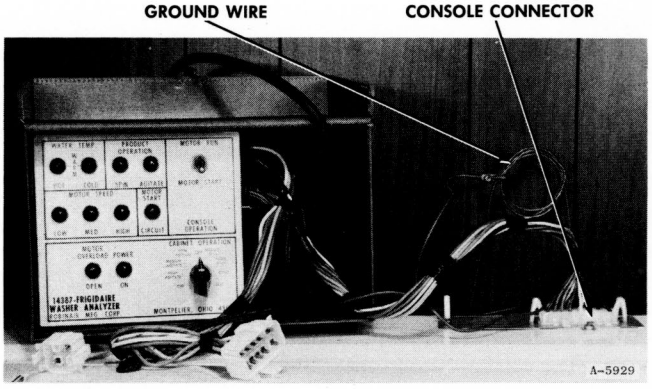


Figure 42
Checking Washer Cabinet

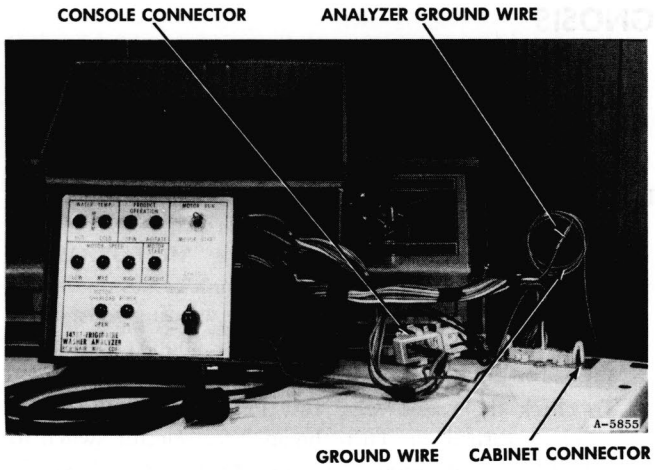


Figure 42a
Checking Washer Console

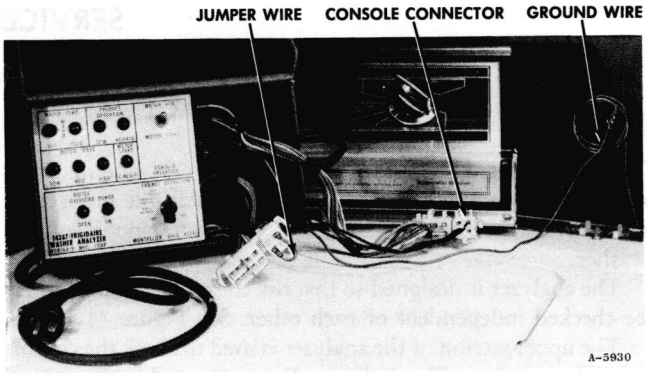


Figure 43
Lid Switch By-Pass Jumper Installed

3. Remove the analyzer connector block from the cabinet connector block.
4. Install the "lid switch jumper wire" into the lid and out of balance terminals located in cavities 12 and 13 of the analyzer connector block, Figure 43.
5. Plug the console supply cord into the supply outlet. If the indicator light circuits are normal with the jumper wire in place, check the lid switch and out of balance relay switch circuits.

   If the console is being checked away from the cabinet, the lid switch circuit must be bypassed. Use the lid switch jumper wire as described above.

Pressure Switch Check:

To check the pressure fill switch a quick check can be made as follows.

1. Remove console back panel.
2. Set toggle switch to motor start position.
3. With normal fill indicated on the analyzer, pressure switch operation may be simulated by applying air pressure by blowing into the pressure switch tube.

Caution: Pressure should be only enough to activate the switch to change from fill to motor start circuit.

If motor start indicator lights indicate a complete circuit as pressure is increased and an open circuit as pressure decreases the pressure switch is operative.

Motor Start and Speed Control Circuits:

To check the motor start and speed control circuits.

1. Push the timer in, and advance through the fill cycle to the last two increments of the wash cycle.
2. Pull the timer dial out. With the toggle switch set to "MOTOR START" position, the "MOTOR START CIRCUIT" indicator light—"PRODUCT OPERATION —AGITATE" indicator light—and "MOTOR SPEED—HIGH" indicator lights should be lit.

   Transfer the toggle switch to "MOTOR RUN" position and the "MOTOR SPEED" indicator light should be lit corresponding with the console speed selector switch or fabric selector switch setting as indicated on the lid instructions.

Note: The timer will advance automatically into the pause between agitate and spin cycles. All indicator lights will go out during the pause period.

3. During pause cycle, transfer the toggle switch to "MOTOR START" position. As the timer advances into the spin cycle the "PRODUCT OPERATION—SPIN" indicator light, "MOTOR START CIRCUIT" indicator light and "MOTOR SPEED—HIGH" indicator light should be lit.

   Transfer the toggle switch to "MOTOR RUN" position and the "MOTOR SPEED" indicator light should correspond to the console "speed selector" switch setting or fabric selector switch setting as indicated on the lid operating instructions.

Note: On multiple speed models, when the speed selector switch and/or fabrics selector is set for normal spin speed, the "MOTOR SPEED—MED." indicator light will be lit for the first increment of the spin cycle as the timer advances the "MOTOR SPEED" indicator will transfer to "MOTOR SPEED—HIGH" indicator light for remainder of the spin cycle.

CONDITION—NO OPERATION: Possible Cause	Remedy
Motor Protector (In Motor) Kicks out.	Check for cause of overload on motor and correct. Protector will reset automatically when motor temperature is reduced to a safe level, allow a reasonable length of time. If protector does not reset, replace the motor.
Improper Fuse—Blown.	Replace fuse with a 15 amp time-delay fuse.
Overloaded circuit to the washer (fuses blow and/or motor protector kicks out).	Check the circuit to the washer for possible overloads due to other appliances on the same circuit.
Wire size too small or run of wire too long in circuit to the washer.	Check for excessive voltage drop in the washer in both agitation and spin periods. Voltage should be 108 volts or above. If lower, advise user to provide a proper circuit for the washer.
Short circuit in the internal wiring of the washer. (Fuse blows.)	Check for cause of short circuit and correct. Replace the fuse.

CONDITION—VIBRATION DURING FULL SPEED SPIN:	
Washer not level.	Level the washer from side to side and from front to rear.
Oil and dirt causing snubber ring to stick to snubber surfaces.	Check snubber operation. Observe the action of the snubber. The snubber ring should move in a smooth orbit on the snubber. If the snubber is found to be operating improperly, thoroughly clean the snubber ring and snubber surfaces using a non-greasy solvent.
Sure-Spin Clutch out of adjustment; torque is not correct. Over 30 inch pounds.	If the snubber is operating properly, replace the spin wheel and clutch assembly.

CONDITION—CHATTERING SOUND DURING SPIN ACCELERATION:	
Loss of Drive resulting from water or other foreign material on spin roller or spin wheel.	Check for source of water leak or other foreign material. Clean the spin drive system thoroughly with a high grade of lighter fluid.
Sure-Spin Clutch out of adjustment; torque below low limit.	Check the torque of the Sure-Spin Clutch, Procedure JJ. Adjust or replace spin wheel and clutch as necessary.
Loose drive belt—motor switch flashing in and out.	Tighten drive belt, Procedure DD.

CONDITION—CHATTERING AND/OR HIGH SOUND LEVEL DURING FULL SPEED SPIN OR DURING AGITATE:	
Rough bearing surfaces on agitate or spin roller hub and/or roller retractor arms.	Replace the agitate and/or the spin roller assembly. **Do not attempt to correct condition by adding oil or other material between arm and roller hub.**
Agitate and/or Spin roller not engaging or retracting properly due to bent mounting bracket.	Replace the agitate and/or the spin roller assembly. **Do not attempt to straighten the mounting bracket.**
Defective Motor Bearing.	Replace the motor.
Rough bearing surface between pump seal in pump cover and seal ring in pump impeller.	Check both seals for damaged surfaces. Replace if necessary. Be sure impeller is spaced properly on reassembly.
Dirty or oily spin wheel, roller or driver.	Clean the drive system with a high grade of lighter fluid.
Loose pulley on motor or drive shaft.	Determine proper location and tighten set screw in pulley.
Loose motor mounting bolts in mounting plate or mounting bracket.	Determine proper location and tighten the bolts.
Damaged upper or lower spin shaft bearings.	Replace the bearings, procedures MM and PP.
Worn spin roller.	Replace spin roller, Procedure EE.
Worn agitate roller.	Replace agitate roller.
Tub seal squeal during spin.	Replace tub seal and seal ring on tub.

CONDITION—KNOCKING OR THUMPING SOUND DURING AGITATE: Possible Cause	Remedy
Agitate arm or agitate wheel improperly spaced—Arm hitting bottom of spin wheel.	Check arm and wheel for damage. Replace if necessary. Replace arm or wheel as needed Procedure R-10.
Rough agitate arm or agitate wheel bearing or bearing and shaft pulled out of wheel or arm.	Replace the agitate arm and/or wheel assembly as necessary. **Do not reassemble bearing and shaft into wheel or arm.**
Loose cast iron ring on top of agitate wheel.	Tighten the two ring mounting screws securely.
Damaged agitate arm coupling or coupling pulled out of agitate shaft.	Replace the agitate arm assembly. Make sure that the arm coupling is tightened properly into the agitate shaft.
Worn ball joint in agitate arm. Lower bushing in spin shaft worn.	Replace agitate arm. Replace spin shaft assembly, Procedure PP.

CONDITION—NO WATER, WASH AND RINSE FILL PERIODS:	
Open solenoid on water valve.	Check the resistance of solenoid, replace the solenoid, Procedure N, if necessary.
Open internal timer contact.	Check timer continuity, replace timer, Procedure B, if necessary.
Open internal water control contacts.	Check continuity of switch, replace switch, Procedure D, if required.
Electrical lead off, loose or broken.	Determine area of difficulty by continuity check. Connect or replace electrical lead or terminal as required.

CONDITION—NO WATER, WASH AND RINSE FILL PERIOD, WASHER AGITATES AND TIMER MOTOR RUNS:	
Pressure switch not reset for fill period due to stuck contacts.	Replace switch.
Collapsed pressure tube.	Replace tube.

CONDITION—CONTINUOUS FILL DURING WASH OR SPIN PERIOD:	
Timer contacts not opening or closing properly. Water Valve diaphragm armature or guide defective. Short in electrical wiring.	Pull the electrical supply cord from the electrical outlet and observe the action of washer. If water fill stops, trouble is indicated in timer or electrical connections. If water fill continues, trouble is indicated in water valve. Repair or replace as necessary.

CONDITION—CONTINUOUS FILL—TIMER MOTOR WILL NOT RUN—IMPROPER WATER FILL LEVEL:	
Pressure Switch not actuating properly to provide electrical circuit to timer motor and/or washer motor due to:	
Inoperative Switch.	Check pressure switch; replace Procedure A, if necessary.
Pressure fill tube off sump tank air chamber or pressure switch.	Check tube for being off or damaged. Reinstall or replace tube as necessary.
Air leak in Pressure Fill tube at sump air chamber.	To check for air leak. Remove tube from pressure fill switch. Apply a soap film around the pressure fill tube at air chamber. Blow into the switch end of the tube and observe for bubbles at the tube connection. Replace the tube or sump as necessary.

CONDITION—WASH WATER NOT HOT ENOUGH, CONTROLS SET FOR HOT WASH:	
Water from water heater not hot enough or water heater not of sufficient capacity.	Check the temperature of the water at the water heater. Best washing results are obtained with water temperature at 140° to 160°F. If the water temperature at the heater is below 140°, inform the user. If the water temperature at the heater is correct, check for exceptionally long run of water pipe between heater and washer. Advise the user to have plumbing corrections made.

CONDITION—WASH WATER NOT HOT ENOUGH, CONTROLS SET FOR HOT WASH: (Cont.)

Possible Cause	Remedy
Cold water leaking through the water valve.	Make necessary repairs to the water valve.
Inoperative Fabrics Control or Cold water switch.	Check switch continuity. Replace the faulty switch if necessary.
Hot and Cold inlet hose reversed.	Connect hose to water valve correctly.
Fabrics Control, Cold Water Selector or water valve solenoids wired incorrectly.	Check wiring to be as shown in wiring diagram for the model being checked.

CONDITION—COLD WATER ONLY ON "WARM" WASH AND/OR RINSE PERIODS:

Screen in the hot water hose connection of the water valve stopped up.	Clean the valve inlet screens.
Faulty Fabrics Control.	Replace the Control, Procedure A.
Inoperative hot water solenoid on the water valve.	Replace the solenoid, Procedure M.
Dirty or damaged plunger or diaphragm in the hot side of the water valve.	Clean or replace the diaphragm and plunger, Procedure M.

CONDITION—NO SPIN AND/OR AGITATE OR SLOW SPIN AND/OR AGITATE SPEED WITH MOTOR OPERATING:

Broken or loose drive belt.	Adjust or replace, as necessary.
Loss of Drive resulting from defective spin and/or agitate rollers.	Check for foreign materials on drive system. Replace rollers as necessary.
Timer or Selector Switch Contacts not opening or closing properly.	Check switch continuity and replace as necessary.
Low Voltage on Electrical supply line.	Advise user to provide adequate electrical circuit for washers.
Sure-Spin clutch torque set too low. (Spin only).	Check torque, Procedure JJ. Replace or make necessary adjustments as required.

CONDITION—MOTOR WILL NOT RUN:

No electrical current to motor due to: Electrical leads off, loose, broken, etc.	Disconnect plug connector at motor. Using a test cord, determine if motor will operate properly in both directions. If the motor operates correctly, trouble is indicated in electrical supply to motor, or in timer and/or selector switches. Make necessary repairs or replacements as required. Use 14387 washer analyzer to make a complete diagnosis.
Timer and/or selector switch contacts not opening or closing properly.	
Defective motor due to: Electrical leads loose or broken in connector or inside motor. Inoperative Switch. Internal Motor Trouble. Windings, etc.	If motor does not operate properly with separate test cord, trouble is indicated in the motor. Check the wiring at the motor plug and switch; check the switch for proper operation. Repair or replace motor as required. Procedure A.

CONDITION—NO BRAKE OR LONG BRAKE TIME:

Spin wheel and clutch—tight on spin shaft.	Clean the spin shaft and spin wheel bearing or replace the spin wheel and clutch assembly, Procedure JJ.
Rough surface on spin roll stop.	Replace the spin roll stop, Procedure E.
Brake adjusted improperly.	Make necessary brake adjustment, Procedure LL.
Brake lining damaged.	Replace the brake lining, Procedure LL.
Brake cam damaged.	Replace the spin wheel and clutch assembly, Procedure JJ.

CONDITION—WATER LEAKS:

Water leaks from tub assembly resulting from:	
Water seal bellows torn or damaged.	Replace damaged bellows. Procedure Q.
Hole in outer tub.	Replace the damaged tub, Procedure R.
Water in Mechanism or on floor resulting from:	
Leak at the sub top seal.	Replace seal as needed or reposition water container top, Procedure N.
Leak at hose connection.	Tighten hose clamp or replace hose.
Leak at Mechanism Support to outer tub mounting.	Replace gasket or tub, if damaged, Procedure V, or tighten screws.
Leak at Mechanism top seal.	Check top seal and tub bronze seal for damage. Check seal retainer to be tight on mechanism. Check for proper positioning of top seal in seal retainer. Repair or replace as required.
Leak at vacuum break.	Check fill hose and check for proper positioning of vacuum break in sub top.
Leak at Sump Tank.	Check sump tank seal, tank and hose connections for leaks. Repair or replace as required, Procedure TT.
Torn gasket between pump housing and cover.	Replace gasket, Procedure HH.
Pump seal leaks.	Replace the seal, Procedure HH.
Loose impeller mounting screw.	Tighten screw, Procedure HH.
Broken pump housing or loose housing screws.	Check housing and screws. Repair or replace as required.

CONDITION—CLOTHING TOO WET AFTER "DRY" SPIN PERIOD:

Binding condition.	Check for binding condition in other locations in washer such as mechanism top seal bearings.
Sure-Spin Clutch Torque is not correct—less than 18 inch pounds.	Check for possibility of snubber sticking to snubber surfaces. Start the washer in "Spin." Observe the action of the snubber. The snubber ring should move in a smooth orbit on the snubber surfaces during the acceleration of the tub. The tub should accelerate to full speed. If the snubber is found to be sticking, clean the snubber. If the snubber is operating properly and there is no indication of binding at any other location in the washer, replace the spin wheel and clutch assembly.
Belt Loose, Slipping.	Check belt for tightness, adjust as Procedure D.

CONDITION—MISCELLANEOUS:

Odor in Washer Cabinet. Soap scum accumulation on walls and bottom of container from use of soap in hard water.	Remove washer tub and use stiff brush to remove scum from the walls of the outer tub. Install tub in washer and dissolve one pound of Calgon in a full tub of water. Stop washer and after a period of one hour, set timer to rinse and permit washer to go through a normal cycle.
Water Not Expelled from Cabinet. Clogged drain.	Remove obstruction from pump and drain hose.
Inoperative Suds Water-Saver valve assembly, including the solenoid (WCDRS ony).	Replace valve assembly or solenoid, Procedure UU. An inoperative valve solenoid will allow wash water to pass through the wrong drain hose.
Clothes Tangling. Small water fill.	Check Pressure Switch operation. Also refer to insufficient volume of water on FILL in this section.
Improper agitator diaphragm clearance.	Set Diaphragm to proper clearance from tub bottom Procedure J.
Torn clothing. Improper use of bleach.	Review with use the proper use of bleach in the washer.
Burrs on tub to tub support mounting bolts.	Check all tub mounting bolts for possible burrs on screws and replace if necessary.

CONDITION—MISCELLANEOUS: (CONT'D.)

Possible Cause	Remedy
Agitator Clearance Set Too Low.	Set the clearance on the lower agitator cone in accordance with Procedure P.
Porcelain Chipped in Tub or rough spots on tub or agitator.	Use a nylon hose and rub over entire inner surface of tub. If any snagging is evident, determine area of trouble and correct.
Burrs or sharp edges on Water Seal Bellows Snap Ring.	Check snap ring for burr or sharp edge where ring clamps together. Replace or file smooth as required.
Check top surface of Washer or Dryer.	Check top surfaces of washer and/or dryer for sharp edges in control panel area, which may snag clothing that is laid on these surfaces prior to loading or after unloading.

Service Procedures

Always disconnect the service cord when service to be performed involves the replacement of any electrical component. After an electrical component has been replaced, always double check all electrical connections to be certain that they are tight. Be sure all ground wires are installed before operating the washer. When performing any service operation that involves moving the washer, *do not* handle the washer by the console.

Unless otherwise stated, all reassembly is in reverse of disassembly.

A. Console—Removal:

1. Remove the two hold down screws located at each end of console.
2. Lift front edge of console and pull forward to release the rear hold down tabs, Figure 44.
3. Release the wiring connector block by pressing in on the locking tabs on the ends of the connector block.
4. Remove the pressure fill switch tube from the connector which is fastened into the top. Use a screwdriver under the end of the tube and pry upward, this will break the seal between the two parts, allowing them to be easily separated.

With console removed or when working from the rear of product, all components can be checked with an analyzer or by continuity check as desired. Figure 42.

B. Timer—Replacement:

1. Remove the timer knob by turning counterclockwise.
2. Remove the indicator and hub from the timer shaft in order to get to the mounting screws, Figure 46.

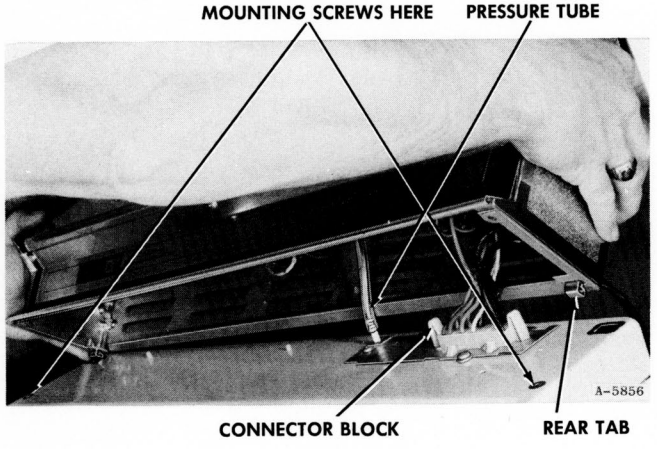


Figure 44
Removing the Console

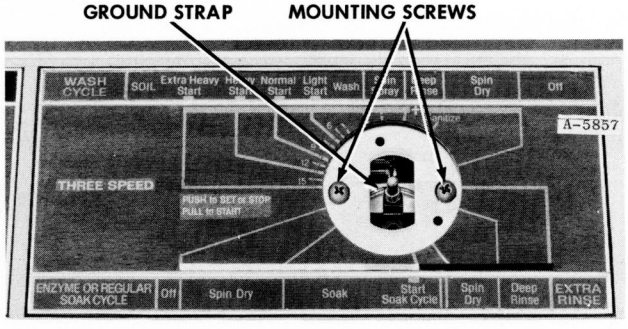


Figure 45
Timer Mounting Screws

3. Transfer all wires to new timer.
4. Be sure timer grounding strap is positioned correctly before mounting timer into housing, Figure 45.

Timer Dial Procedures

Setting and Checking Timer Dial Indicator
Models WAS, WCDS, WCDRS, WIAS, WIS

1. To set:
   With timer in *pulled out* position and rotated to the *mechanical stop* on the timer after the soak cycle, the indicator pointer should be 6° or approximately 1/8 inch counterclockwise as shown in Figure 47.
2. To check:
   Push timer in and rotate clockwise to the line in middle of SPIN SPRAY. Pull out timer knob, this will start spin spray.
3. Adjust as required, see Figure 50.

Model—WCDAS

1. To set:
   With the timer in *pulled out* position and rotated clockwise to the *mechanical stop* on the timer after the Sanitize cycle, the indicator pointer should be 6° or approximately 1/8 inch counterclockwise as shown in Figure 48.
2. To check:
   Push timer in and rotate clockwise to line in middle of spin spray. Pull out timer knob, this will start spin spray.
3. Adjust as required, see Figure 50.

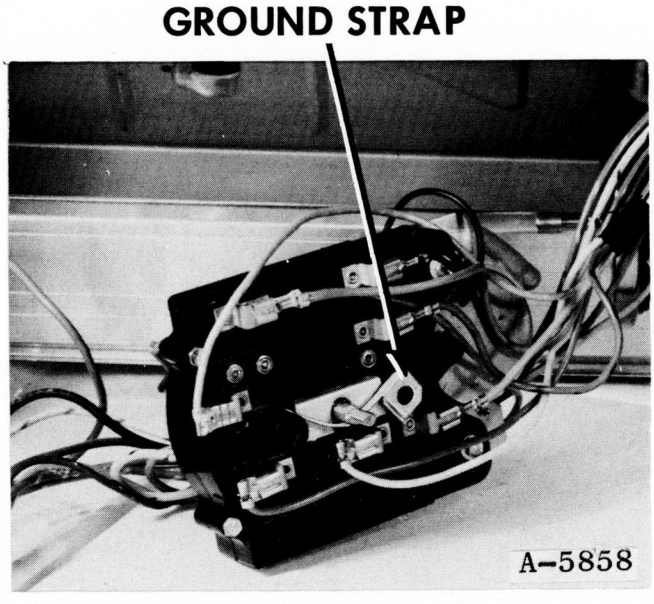


Figure 46
Timer Shaft Ground Strap

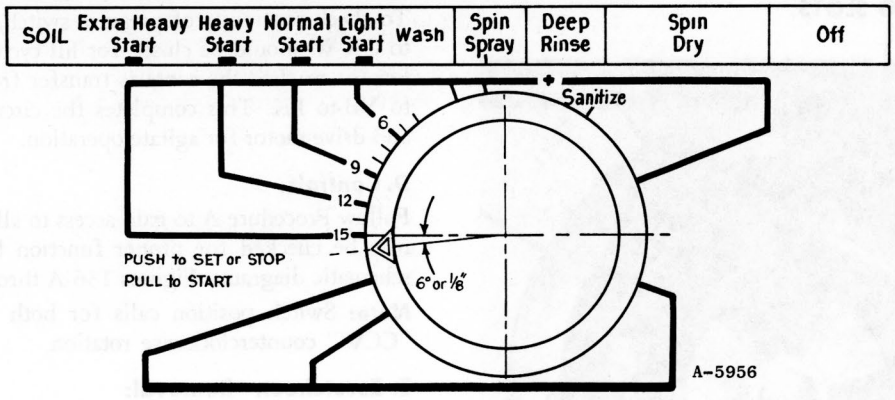


Figure 47
Setting and Checking Timer Dial
Models WAS, WSDS, WCDRS, WIAS, WIS

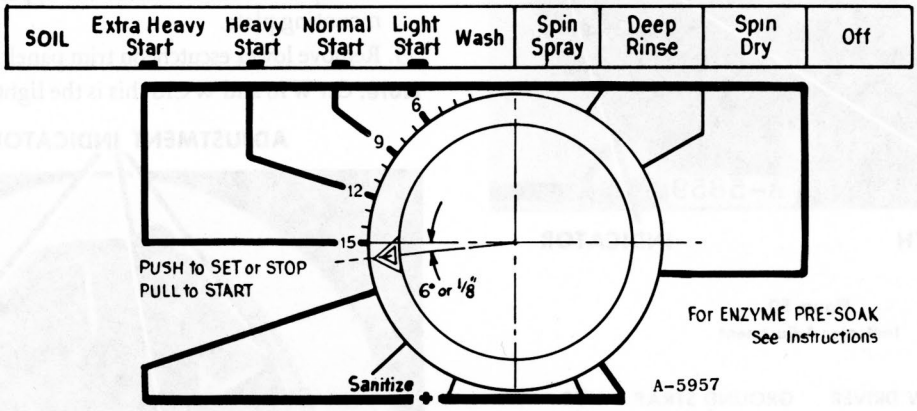


Figure 48
Setting and Checking Timer Dial Model WCDAS

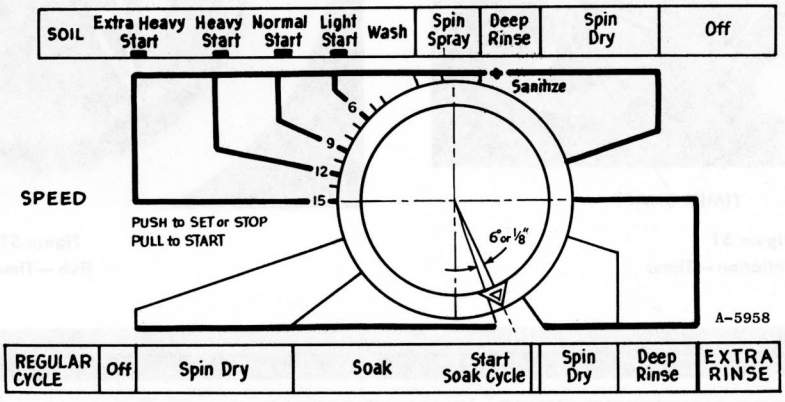


Figure 49
Setting and Checking Timer Dial Model WCIS

Model—WCIS

1. To set:
   With dial in the *pulled out* position and rotated clockwise to the *mechanical stop* on the timer *after extra rinse* cycle, the indicator pointer should be 6° or approximately 1/8 inch counterclockwise as shown in Figure 49.
2. To check:
   Push timer knob in and rotate clockwise to line in middle of spin spray. Pull out timer knob, this will start spin spray.
3. Adjust as required, see Figure 50.

C. Pressure Switch—Removal:
All Models:

1. Follow Procedure A.
2. Remove knob from shaft.
3. Remove mounting screws.
4. Remove pressure tube.
5. Transfer wiring.

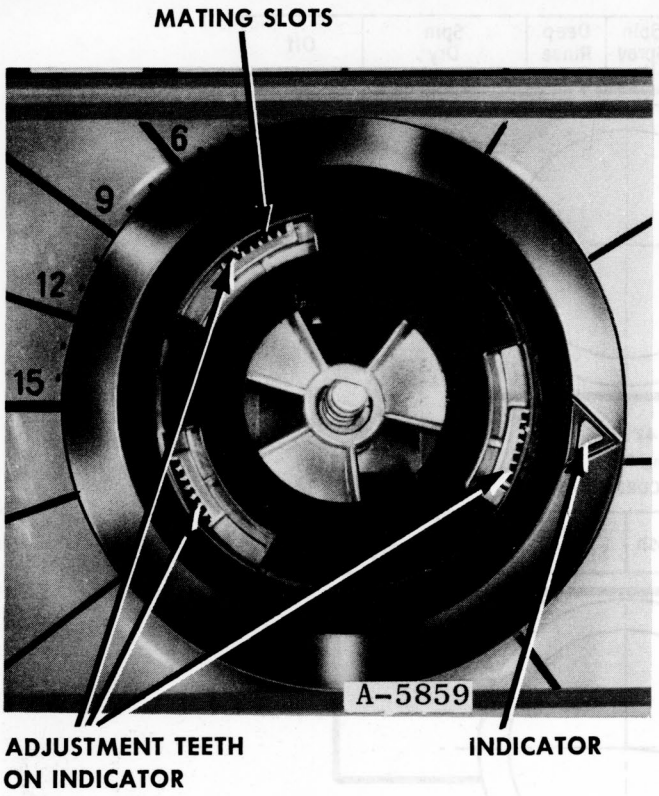


Figure 50
Indicator Adjustment

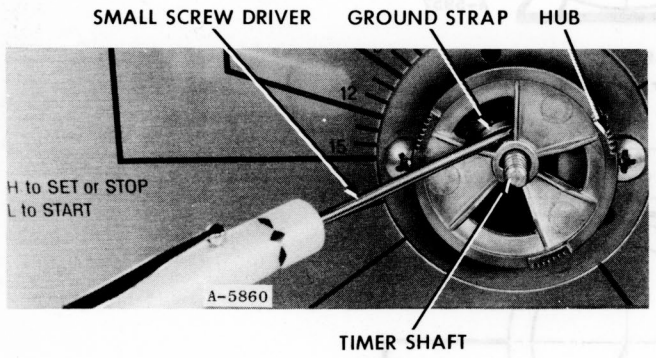


Figure 51
Hub Installation — Timer

To check continuity of pressure switch, the contacts from YB to OR-W should be closed for fill cycle. When desired water level is reached the contacts transfer from YB to OR-W over to YB-to PK. This completes the circuit to the timer motor and drive motor for agitate operation.

D. Controls:

Follow Procedure A to gain access to all controls. Each control may be checked for proper function by referring to switch schematic diagrams. Figures 136-A through142-A.

Note: Switch position calls for both "CW" clockwise and "CCW" counterclockwise rotation.

E. Escutcheon—Removal:

1. Remove the three screws along the bottom of the escutcheon.
2. Lift up and back to release the upper edge from the switch mounting plate.
3. Remove lower escutcheon trim panel.

Note: On WIS and WCIS this is the light shield.

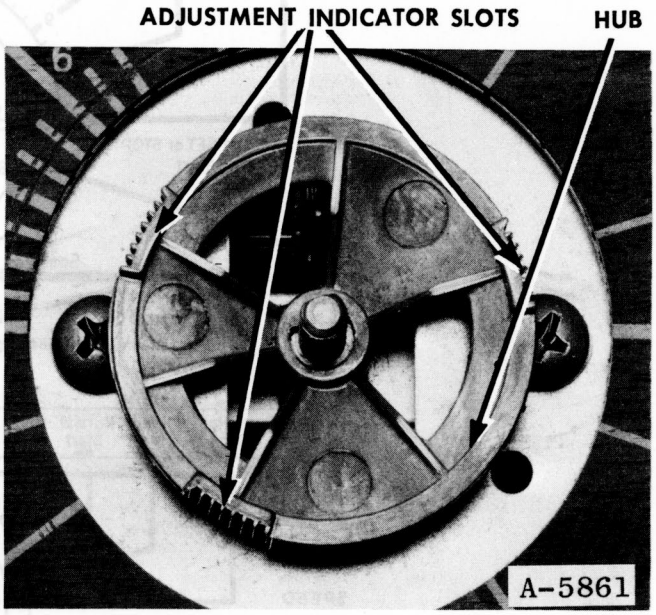


Figure 52
Hub — Timer

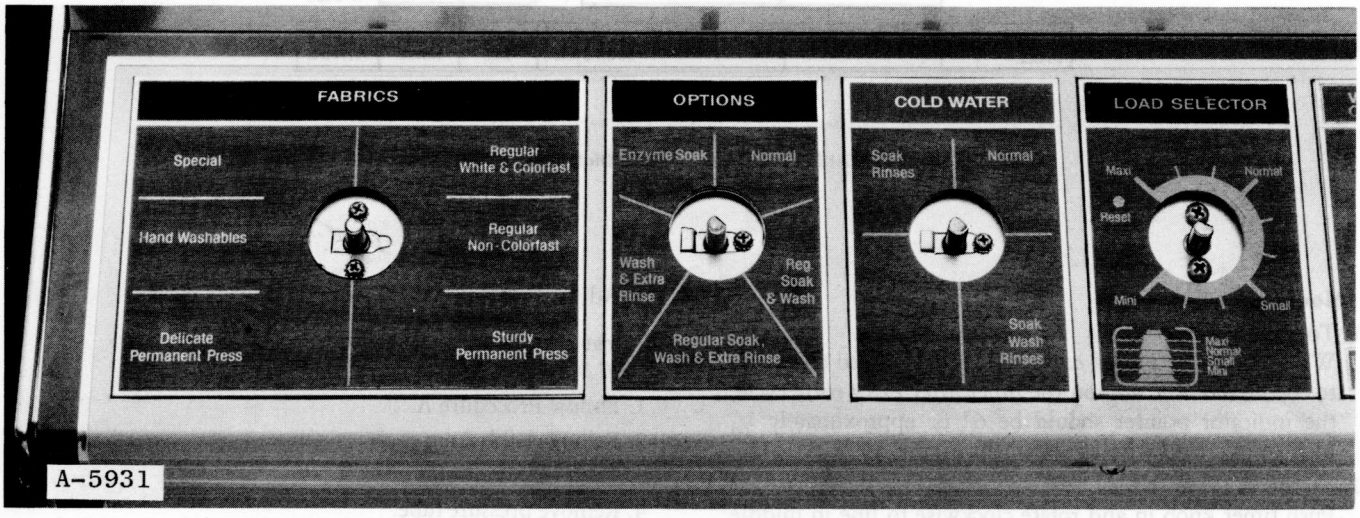


Figure 53
Control Mounting Screws

F. End Panel and Switch Mounting Plate—Removal:

1. Follow Procedure A & E.
2. Remove the screw mounting the ground wire for the wiring harness.
3. Remove the screws mounting the switch mounting plate. Figure 54.

Fluorescent Lamp:
Models WIS, WCIS

These models incorporate a full width fluorescent lamp which back lights the control housing and illuminates the work surface or tub of the washer.

G. Lamp Removal:

1. Follow Procedure A, steps 1 and 2.
2. Take bulb from mounting socket.

Note: This may be taken from the rear of product by removing the control housing cover panel.

Checking Fluorescent Lamp Operation: Figure 55

When ends of lamp light but will not light fully—

1. With power on, remove starter from its base. If lamp lights, the starter is inoperative.
2. Check all wiring for improper connection or ground.

When blinking occurs in the lamp, check for—

1. Possible faulty lamp. Replace, using a good one.
2. Possible inoperative starter. Replace, using a good one.
3. Low temperature below 50°F.
4. Low voltage. (Usually below 110 volts.)
5. Loose connection at the lamp sockets.

When lamp gives one big flash, then no action—

1. Check lamp for faulty ballast or wiring which has destroyed the lamp. Do not try another lamp until defect is found and corrected.

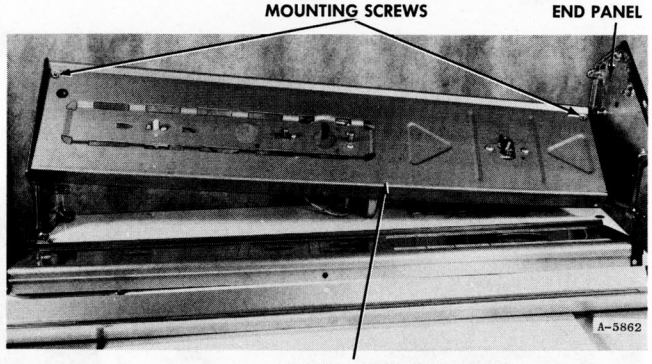


Figure 54
Control Mounting Plate

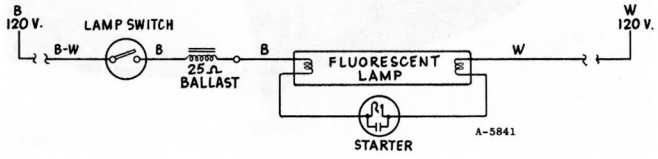


Figure 55
Fluorescent Light Diagram

When humming sound is emitted, check for—

1. Ballast mounting screws loose.
2. Ballast overheated. Overheating can result from:
   a. Prolonged blinking.
   b. A short in the starter capacitor.
   c. A short in the leads to the ballast.

When lamp does not attempt to start—

1. Check the lamp to see that it is properly mounted in its sockets.
2. Check to insure that the lamp pins are not bent, and that

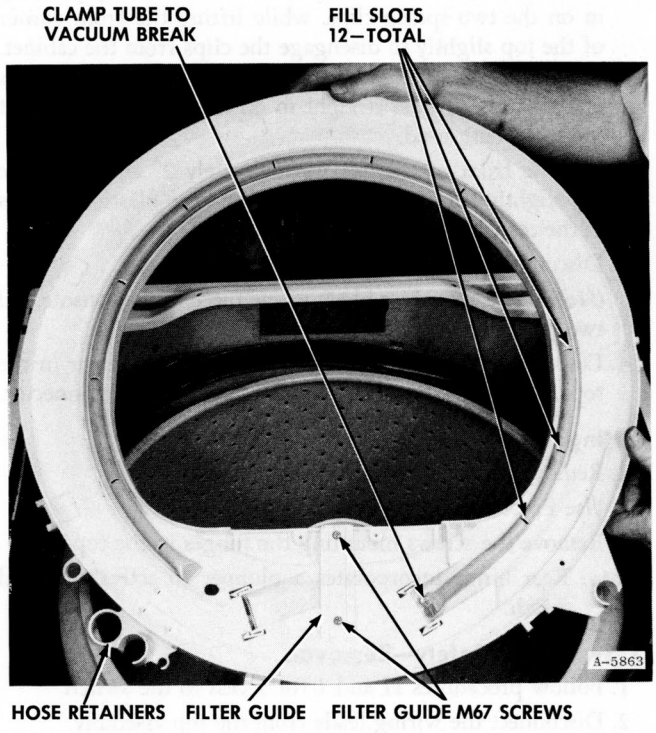


Figure 56
Jet Circle Fill Tube

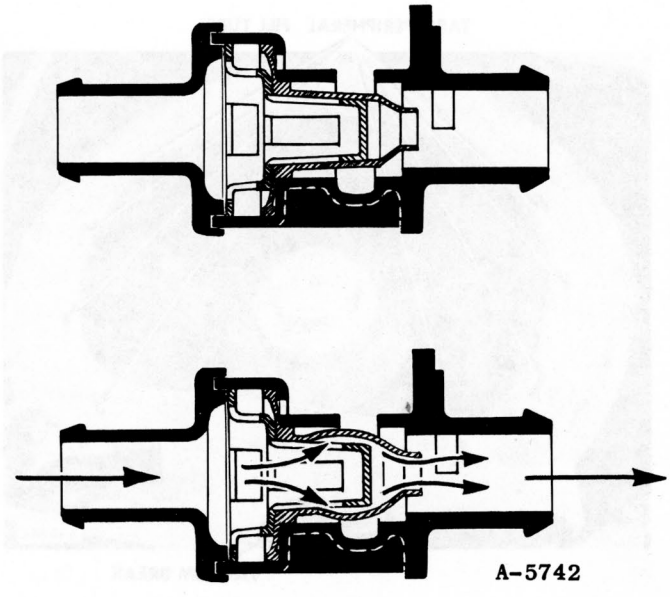


Figure 57
Cutaway View — Vacuum Break

they are clean. (Free of corrosion.)

3. Replace the lamp with one that is known to be good.
4. Replace the starter with one that is known to be good.
5. Check for continuity of the ballast and all wiring.
6. When the inoperative part is found, replace the test parts with the original good parts.

H. Top—Removal:

CAUTION: To protect the finish of the washer, use a thin bladed screwdriver or putty knife to release the spring clips.

1. Release the front of the top from the cabinet by pressing in on the two spring clips, while lifting the front corner of the top slightly to disengage the clips from the cabinet, Figure 11. These clips are located ½" in from the sides of the washer. Press straight in on the clip—do not twist the tool being used.
2. Lift the front of the top approximately 2" and move the top slightly forward to release it from the plastic retainers at the rear, Figure 10.
3. Disconnect the connector blocks from the top.

   (Note: The connector block is one piece in the console and two pieces in the top.)
4. Disconnect the pressure switch from the connector in the top. Use a screwdriver and pry the tube from the connector.

I. Hinges, Lid—Adjust and Replace:

1. Remove the screws in each hinge.
2. Use Procedure H to raise top.
3. Remove the screws mounting the hinges to the top.

Note: Rear hinge incorporates a plunger to activate the lid safety switch.

J. Switch, Lid Safety—Removal:

1. Follow procedures H and I for access to the switch.
2. Disconnect the wiring leads from the top assembly.
3. Disconnect the two lead connector. See Figure 38.

To Check:

1. Raise and lower the lid while in operation. Machine should stop at any time lid is raised approximately 2".
2. Continuity must be checked with the switch in its normal operating position to assure that the switch will open when the lid is raised.

K. Switch, Out of Balance—Replacement:

The out of balance switch is located in the right front corner of the cabinet to replace see Figure 34.

1. Remove the cabinet top. Procedure H.
2. Remove the two mounting screws.
3. Transfer wires to new switch.

L. Jet Circle Fill Tube and Vacuum Break—Replacement:

The Jet Circle tube is mounted to the sub top by 10 tabs pulled up through slots in the sub top. Figure 58.

VACUUM BREAK REMOVAL—FIGURE 59.

1. Remove top assembly, Procedure H.
2. Remove fill tube from valve to vacuum break assembly.
3. Release at least 3 tabs from the sub top.

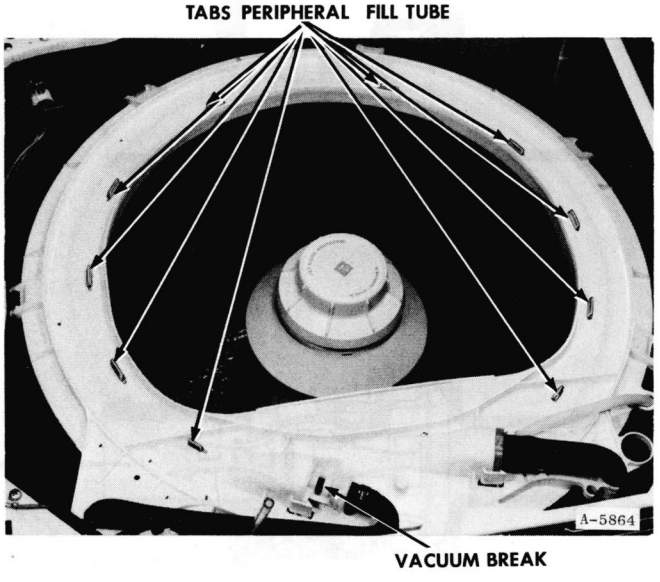


Figure 58
Tabs Fill Tube

Figure 59
Removing Vacuum Break Assembly

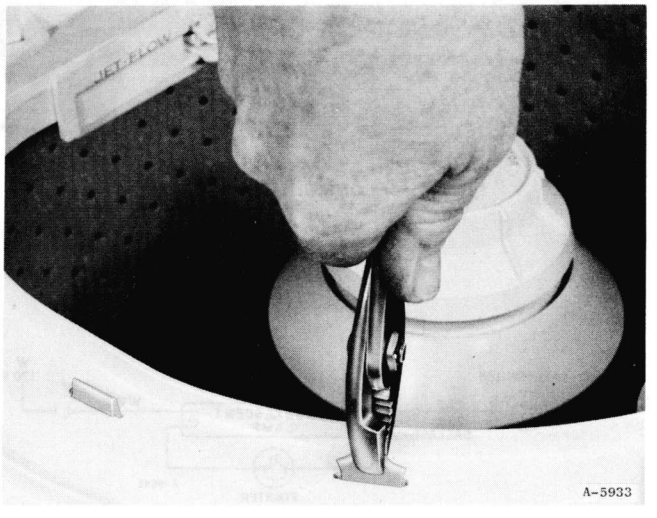


Figure 60
Replacing Fill Tube

4. Release vacuum break from sub top and pull enough of the Jet Circle fill tube to allow the clamp to be removed. Figure 59.

JET CIRCLE TUBE—REPLACEMENT

1. Follow the above procedures.

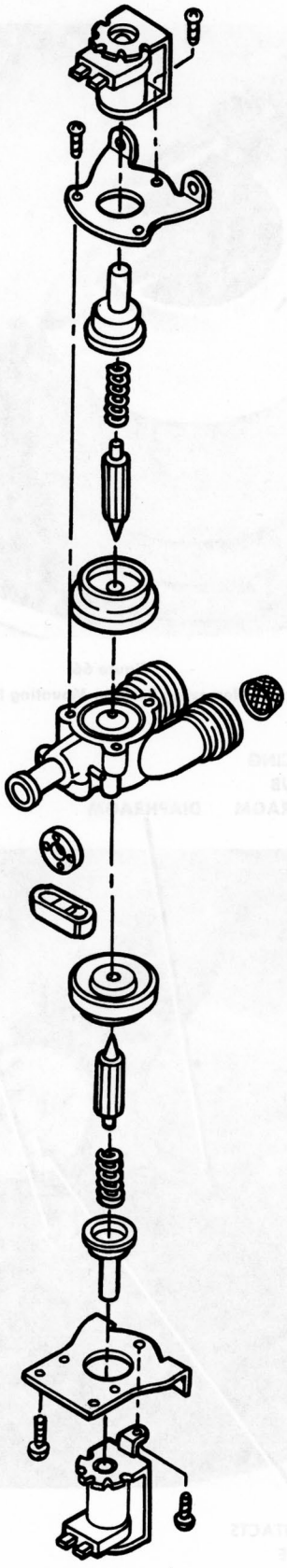


Figure 61
Exploded View — Water Valve

2. Remove all 10 tabs from the sub top and pull tube free of washer.

M. Valve, Water—Repair and Replacement:

(See Figure 61 for assembly sequence of all parts.)

1. To remove the valve from the washer, remove the screw from the lower edge of bracket. Figure 62.
2. Lift the lower end of bracket and pull from washer.
3. Loosen the hose clamp on the water valve outlet and disconnect hose from the valve.
4. Disconnect the electrical leads from the valve solenoids.
5. Remove the valve from its mounting bracket and repair or replace valve as necessary.

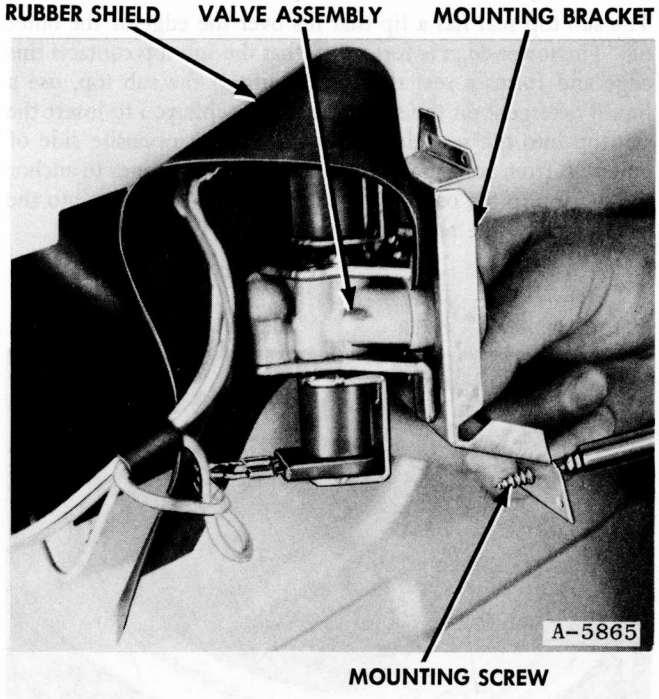


Figure 62
Water Valve Removal

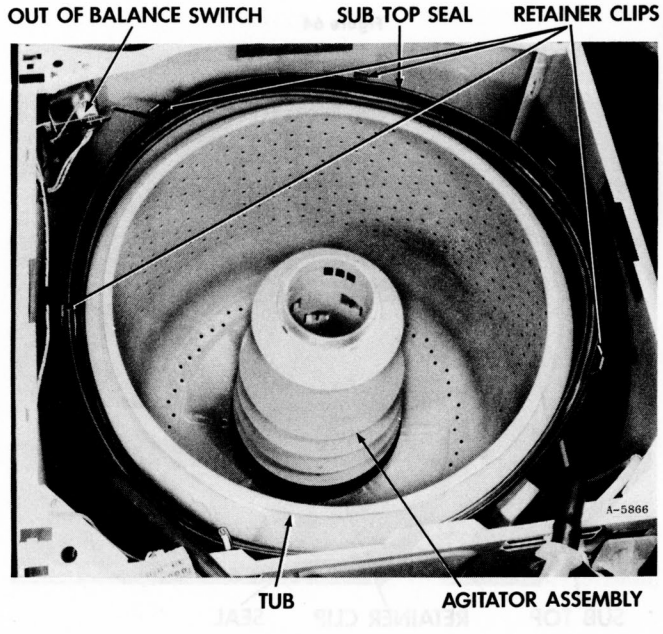


Figure 63
Sub Top Removed

N. Sub Top—Removal:

1. Remove the top completely from the washer and set aside. Procedure H.
2. Release the fill hose from the vacuum break.
3. Remove the recirculate hose from the retainer.
4. Remove the pump vent tube.
5. Remove hoses from the retainer on sub top.
6. Remove the 7 stainless steel clips holding the sub top to the outer tub.
7. Use both hands to remove sub top from outer tub.
8. Transfer sub top Retainer to new sub top, Figure 64.

O. Sub Top Seal, Sub Top—Replacement:

The sub top seal has a lip that fits over the edge of the outer tub. The lower edge is formed so that the sub top contacts this edge and forms a seal surface. To install the sub top, use a liquid detergent on the seal surface to enable you to insert the sub top into the seal. Insert the sub top on opposite side of outer tub from you, attach one of the sub top retainer to anchor the sub top to the outer tub. Work the sub top down into the seal, attaching the retainers as you go. See Figure 65.

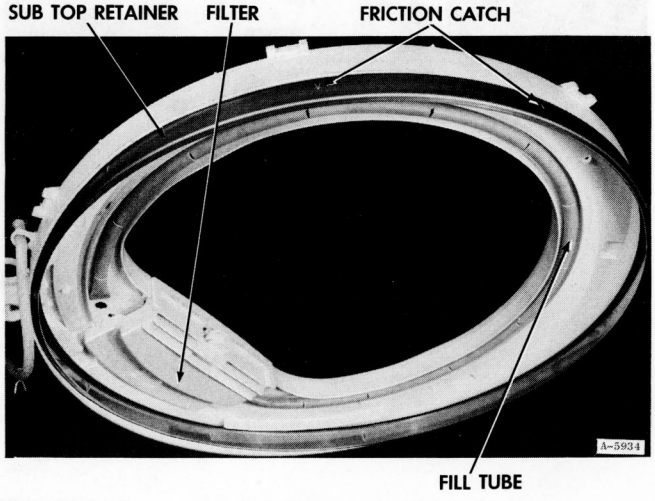


Figure 64
Sub Top Reinforcing Ring

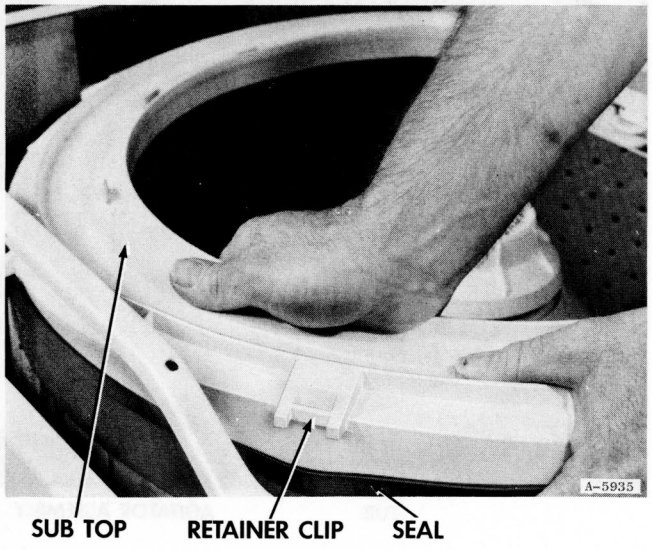


Figure 65
Replacing Sub Top

P. Agitator—Replacement:

See Figure 20 for assembly sequence of all parts.

1. Turn the agitator cap or fabric softener dispenser counter-clockwise and remove it from the circulator column.
2. Remove the bleach cup, where used, from inside the upper cone.

Figure 66
Removing Pulsator Mounting Nut

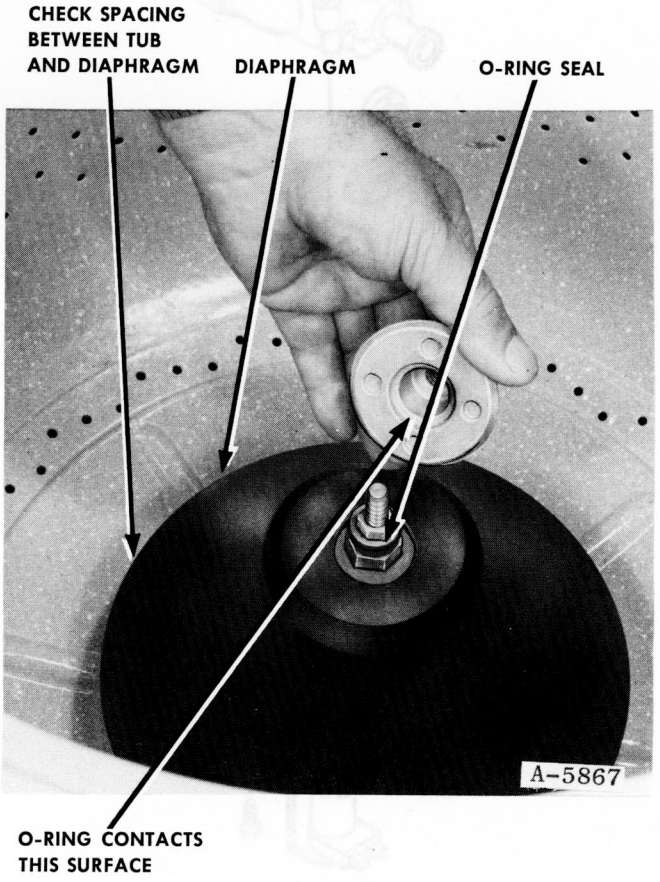


Figure 67
Diaphragm and Mounting Detail

3. Remove the agitator mounting nut, Figure 66, from the agitate shaft, using a ⅜" drive extension, 10 inches long and a ¾" hex or 12 point deep socket.

Caution: When removing the agitator mounting nut, do not hit the wrench with a hammer or other object. This impact could result in damage to the splined bushing in the upper end of the mechanism spin shaft. The nut can be loosened by holding the washer agitator fin with one hand and applying a steady force to the wrench with the other hand.

4. Remove the agitator assembly from the agitate shaft.
5. Remove diaphragm from the agitate shaft.

Note—Reassembly:

Tighten the agitator mounting nut on the agitator shaft as follows:

The nut should be tightened to a minimum torque of 120 inch pounds. The 12934-7 Torque Wrench with a ⅜-in. drive extension, 10 inches long, and a ¾-in. hex or 12 point socket can be used as shown in Figure 68.

Wait approximately ½ minute and check tightening torque again. This second tightening will assure compression of the diaphragm mounting gasket and permit the true tightening of the agitator nut to a minimum of 120 inch pounds.

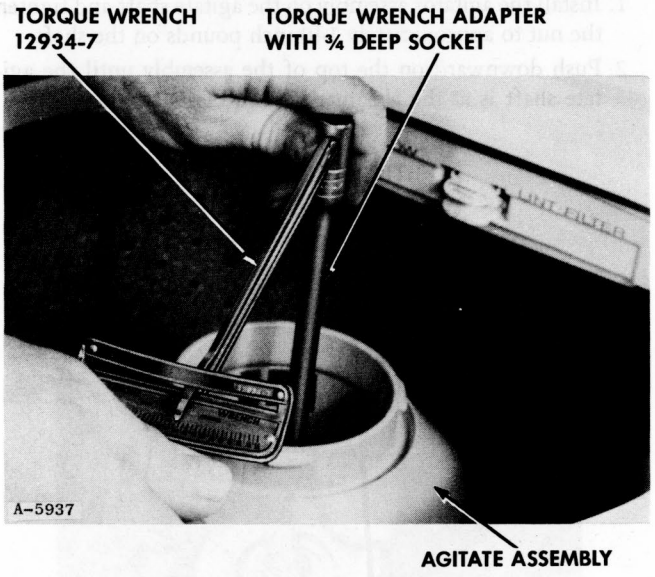


Figure 68
Torqueing Pulsator Nut

Diaphragm Replacement:

1. Follow Procedure P for agitator replacement.
2. With agitator removed, lift the diaphragm from the diaphragm support.
3. See Procedure Q, Agitator Mounting Nut, Temporary and Permanent Installation, for reassembly.

Bleach Cup:

Install the bleach cup, spring end down, inside the circulator column. Should the two parts become separated prior to installation in the column, they should be reassembled as follows:

Assemble the bleach cup spring to the bleach cup by inserting the widest coil of the spring in the groove in the lower end of the bleach cup.

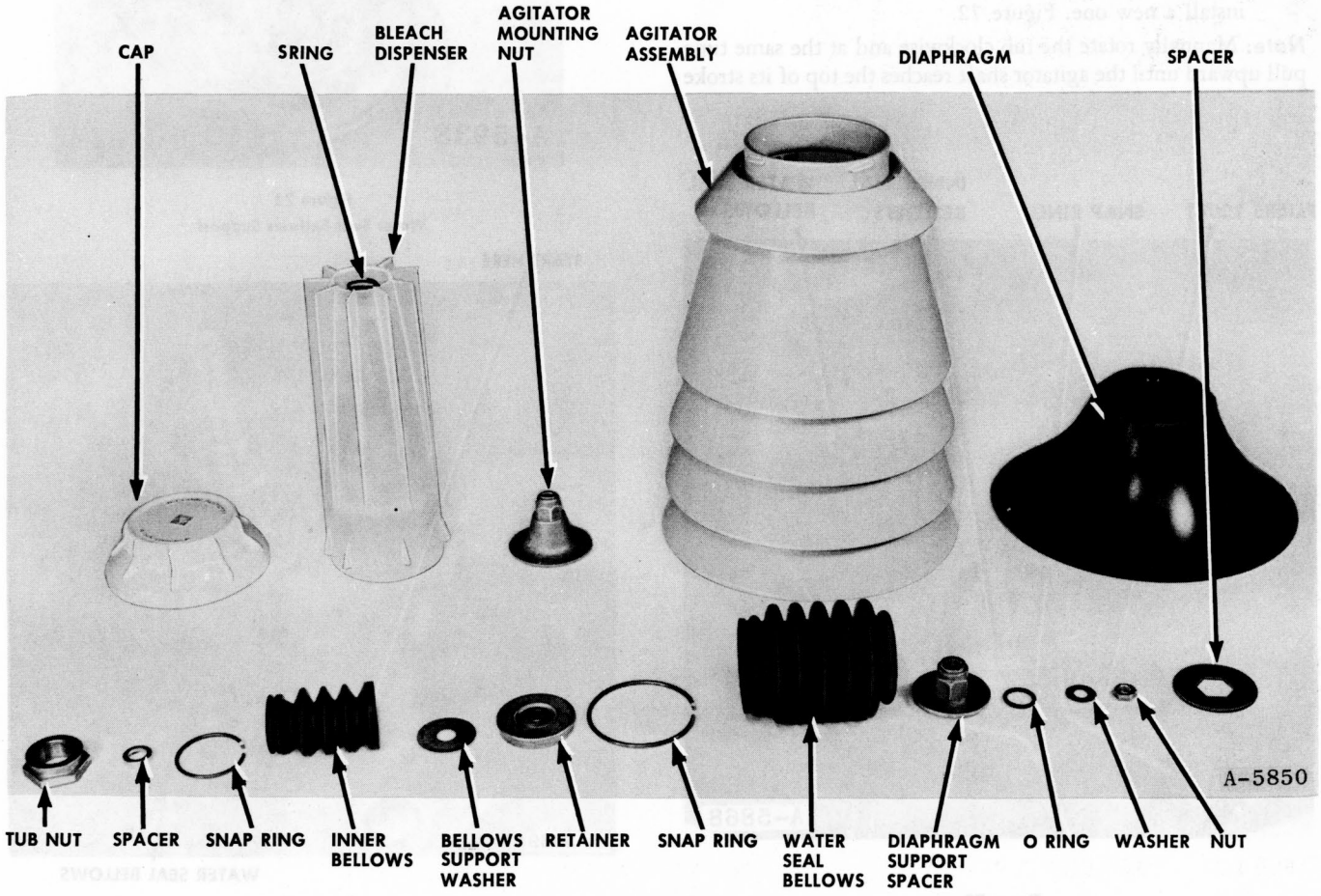


Figure 69
Assembly Mounting Detail

Q. Bellows—Replacement:

1. Follow Procedure P.
2. Disengage the snap ring, Figure 70, that retains the water seal bellows on the tub, using 12071 pliers; remove the bellows.
3. Remove the retainer from the top of the inner bellows:

   Note: The inner bellows retainer sometimes sticks in the top of the water seal bellows and comes off with the water seal bellows. The retainer must be removed from the water seal bellows for proper reassembly.
4. Disengage the snap ring that retains the inner bellows on the tub mounting nut. Use 12168 Tool.

   Important Reassembly Notes

   a. Inner Bellows:

      1. If the removed bellows is to be reinstalled, stretch the bellows and check between each fold for holes or wear. Check the formation at the top of the bellows for distortion. If the bellows is not perfect, discard it and install a new one. Figure 72.

         Note: Manually rotate the tub clockwise and at the same time pull upward until the agitator shaft reaches the top of its stroke to facilitate bellows installation.
      2. Inner bellows retainer: Place the retainer on the top of the inner bellows and work the top of the inner bellows up into the flanged bottom of the retainer, Figure 71.

   b. Water Seal Bellows:

      If the removed bellows is to be reinstalled, stretch the bellows and check between each fold for holes and wear. If the bellows is not in perfect condition, discard it and install a new one. Figure 72.

Note: Manually rotate the tub clockwise and at the same time pull upward until the agitator shaft reaches the top of its stroke to facilitate bellows installation. Install the diaphragm support spacer and tighten the hold down nut to 80″ lb. torque. See Figure

Note: Install the same number of 0638863 spacers between the bottom of the diaphragm and diaphragm support spacer as were installed originally.

Agitator Mounting Nut—Temporary Installation:

1. Install the agitator assembly on the agitate shaft and tighten the nut to approximately 140 inch pounds on the shaft.
2. Push downward on the top of the assembly until the agitate shaft is at the absolute bottom of its stroke.

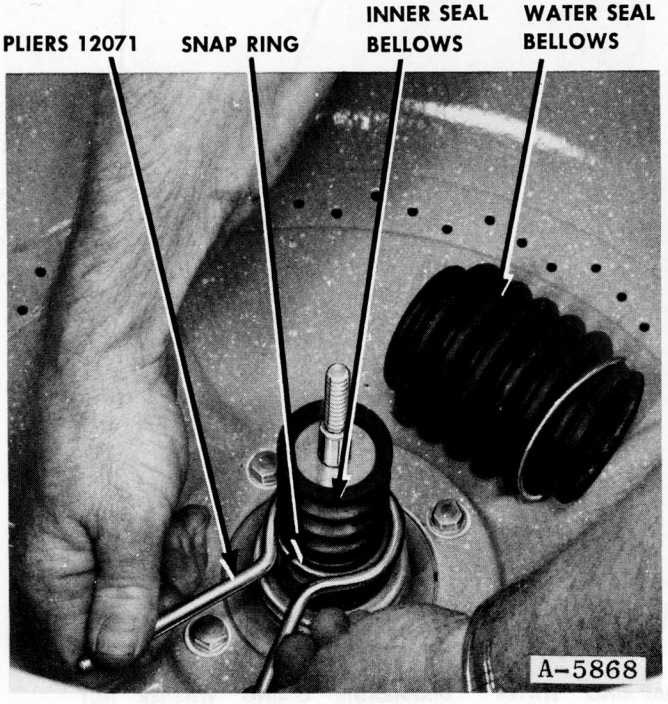


Figure 70
Removing Inner Bellows

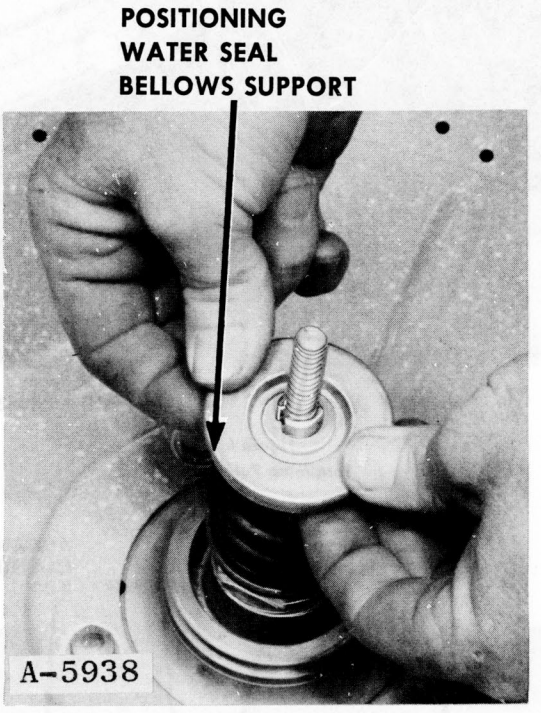


Figure 71
Water Seal Bellows Support

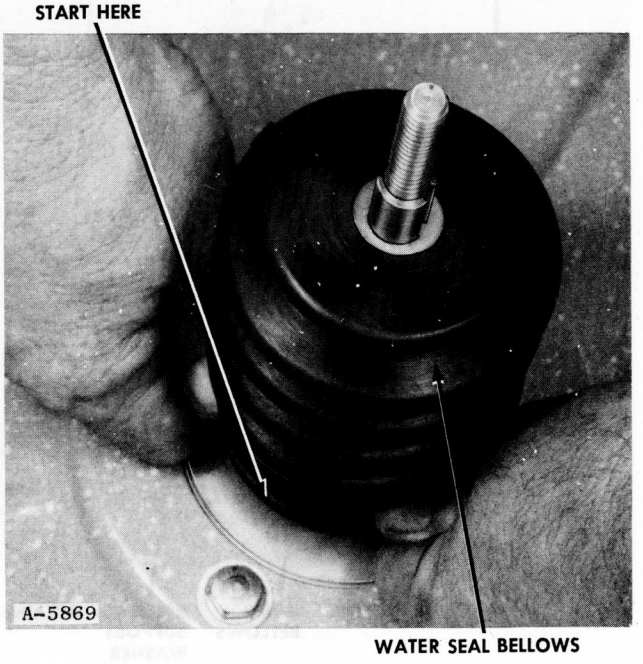


Figure 72
Installing Bellows

3. Observe the clearance between the bottom edge of the diaphragm and the bottom of the washer tub.
4. ***Important***—This clearance between the bottom of the diaphragm and washer tub must not be less than $21/32$" or more than $23/32$" when measured between the ribs in the bottom of the tub. The diameter of a dime may be used to gauge minimum clearance and a penny can be used to gauge maximum clearance.
5. The clearance can be adjusted by adding or removing 0638863 spacer washers between the bottom of the cone and the top of the water seal bellows.

Cleaning Agitate Shaft Threads:

Remove any remaining Loctite or other foreign material from the agitate shaft threads, using a wire brush and a clean dry cloth.

Agitator Mounting Nut—Permanent Installation:

Apply two drops of "Blue" Loctite to the upper threads of the agitator mounting nut.

Caution: Care must be exercised when applying Loctite to the nut. It is important that *NO* Loctite come in contact with the cones as Loctite can cause damage to these parts. Be sure the O-Ring seal is not damaged or twisted. If damaged, replace it with new one. The "O" ring should be lubricated on installation with soap solution to assure proper sealing.

R. Tub—Replacement:

1. Disassemble washer as in Procedures H, N, P, and Q. Top —sub top, agitator and bellows.
2. Remove the four bolts that hold the tub to the tub support, see Figure 75.
3. Lift tub from washer and install replacement.

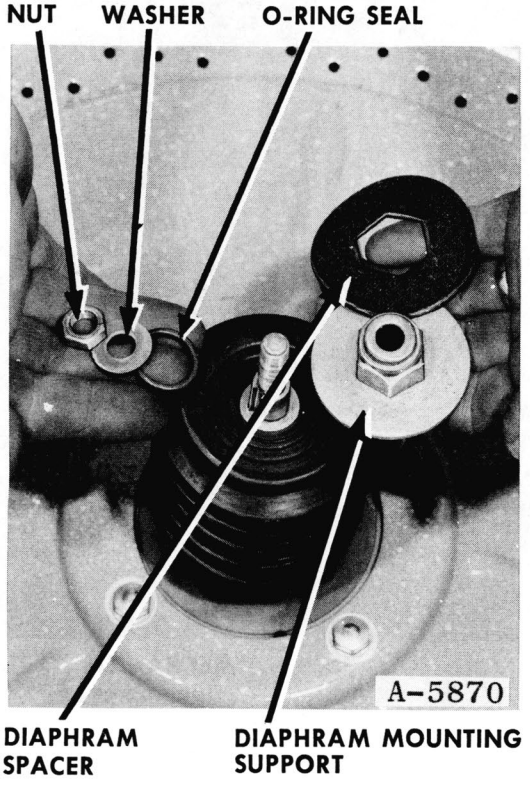


Figure 73
Diaphragm Mounting Support

S. Tub Suport and Seal—Replacement:

1. Follow Steps 1 through 3 of tub replacement procedure.
2. Remove the nut from the pulsate shaft holding the diaphragm support, Figure 73.

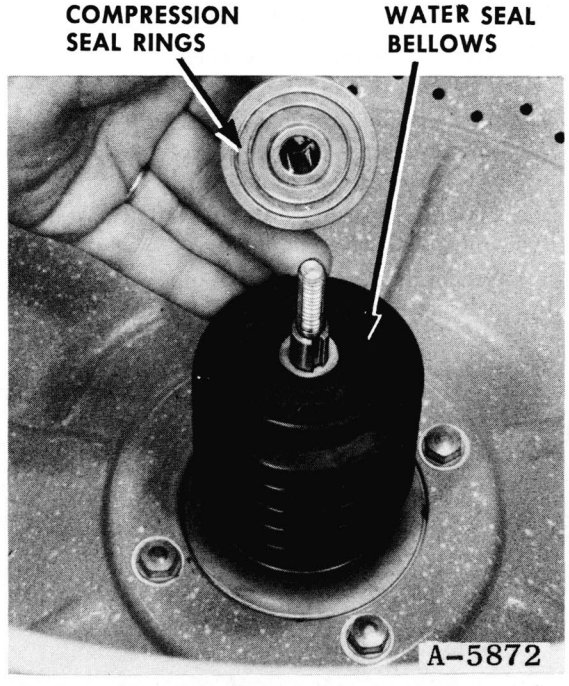


Figure 74
Diaphragm Support Seal Rings

Figure 75
Removing Tub Mounting Bolts

3. Remove both water seal and inner seal bellows. Figure 72.
4. Remove the tub nut using tub nut wrench 12171, Figure 76.
5. Lift the tub off of the spin shaft and out of the washer.
6. Remove the spin shaft key from the spin shaft keyway or tub support keyway.
7. If tub support is to be replaced, remove the four bolts holding the tub to the support, Figure 75.
8. See Figure 77 for seal removal from tub support.

IMPORTANT REASSEMBLY NOTES:

A. TUB SUPPORT TO MECHANISM SEAL

1. Inspect the seal assembly. If seal appears to be worn or damaged, replace it. See Figure 78. Install new seal into the seal retainer as follows:
   a. Lubricate the surface that contacts the seal retainer with liquid detergent.
   b. When inserting into seal retainer, apply downward pressure as shown in Figure 78.

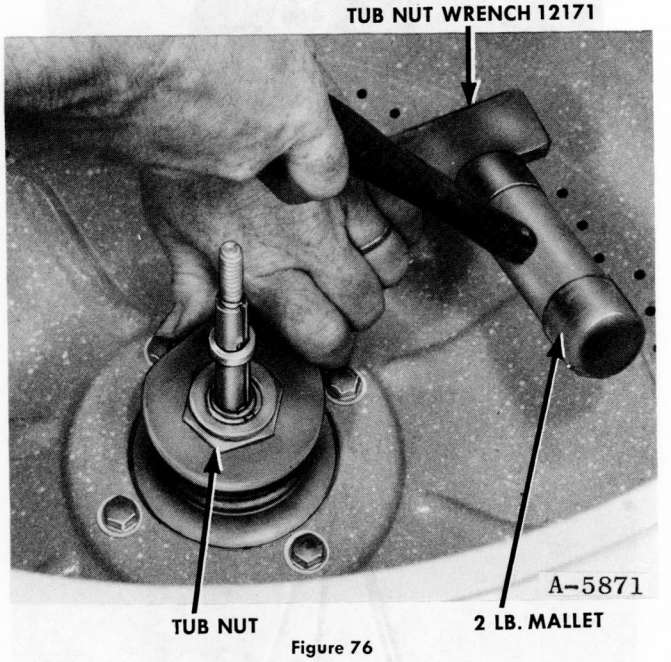


Figure 76
Removing Tub Support Nut

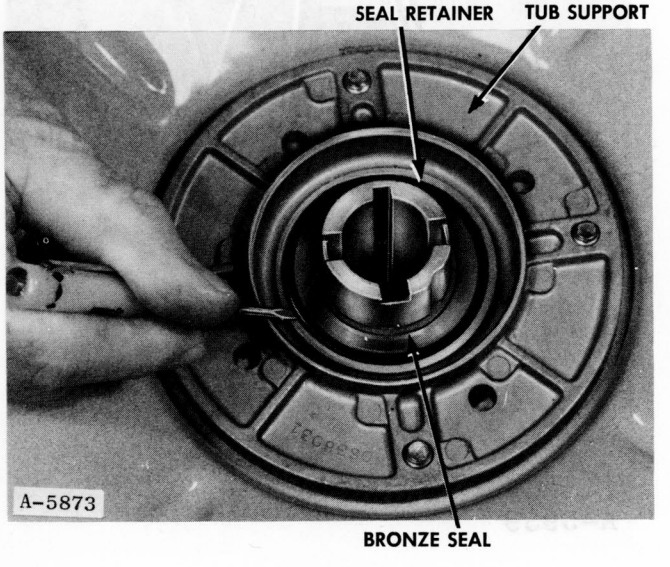


Figure 77
Removing Tub Support Seal

   c. Inspect for proper positioning when installed.
2. Remove the seal ring and seal ring retainer from the tub support Figure 77. Thoroughly clean the surface of tub support that contacts the seal ring retainer before reassembly.

   Do Not apply oil to seal surface.
3. Install the tub on the spin shaft, making sure that the seal ring and retainer on the tub support are in place.
4. Install key in keyway of spin shaft and tub support.

B. TUB MOUNTING NUT:

1. The "S" line of washers does not incorporate a tub mounting lockwasher. Use 2 drops of yellow Loctite when reinstalling.
2. Manually tighten the nut as tight as possible, using 12171 wrench, then tighten the nut an additional 1/8 turn by impacts of a 2 lb. rawhide mallet on the wrench. Figure 76.

C. BELLOWS REPLACEMENT

Use Procedure Q.

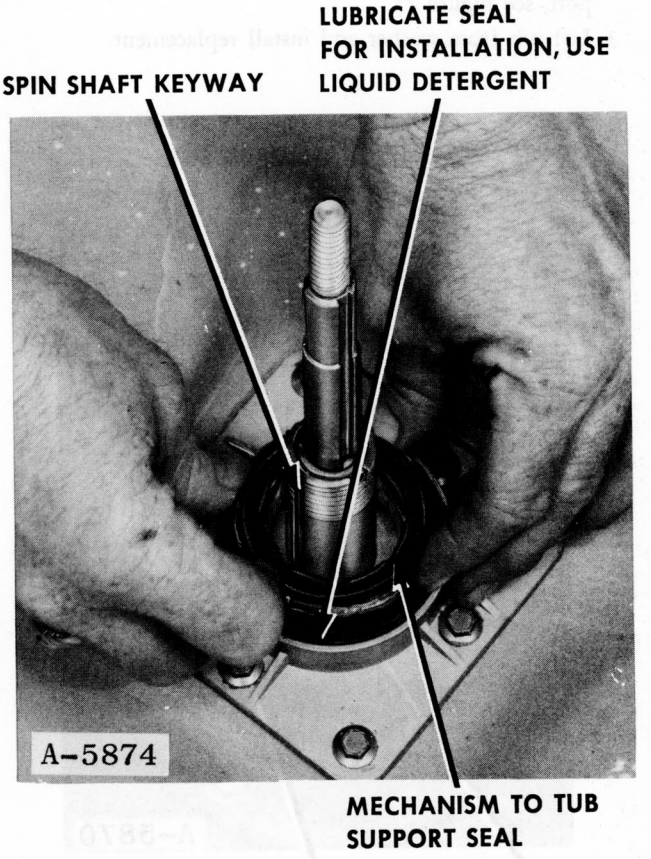


Figure 78
Installing Seal

T. Front Access Panel—Removal:

See Figures 79 and 80 for locking tab detail.

1. Remove the three screws along the bottom edge of panel.
2. Place hands on each outer edge and push down to release the inner locking tabs, Figure 79. You may also strike the edges of the panel in a downward motion to release the tabs. The panel will drop approximately ½".
3. Remove panel from washer. Figure 79.

Note: Many service operations are performed by removing the front of the washer, thus moving the machine from the installed position is necessary only for a few service operations.

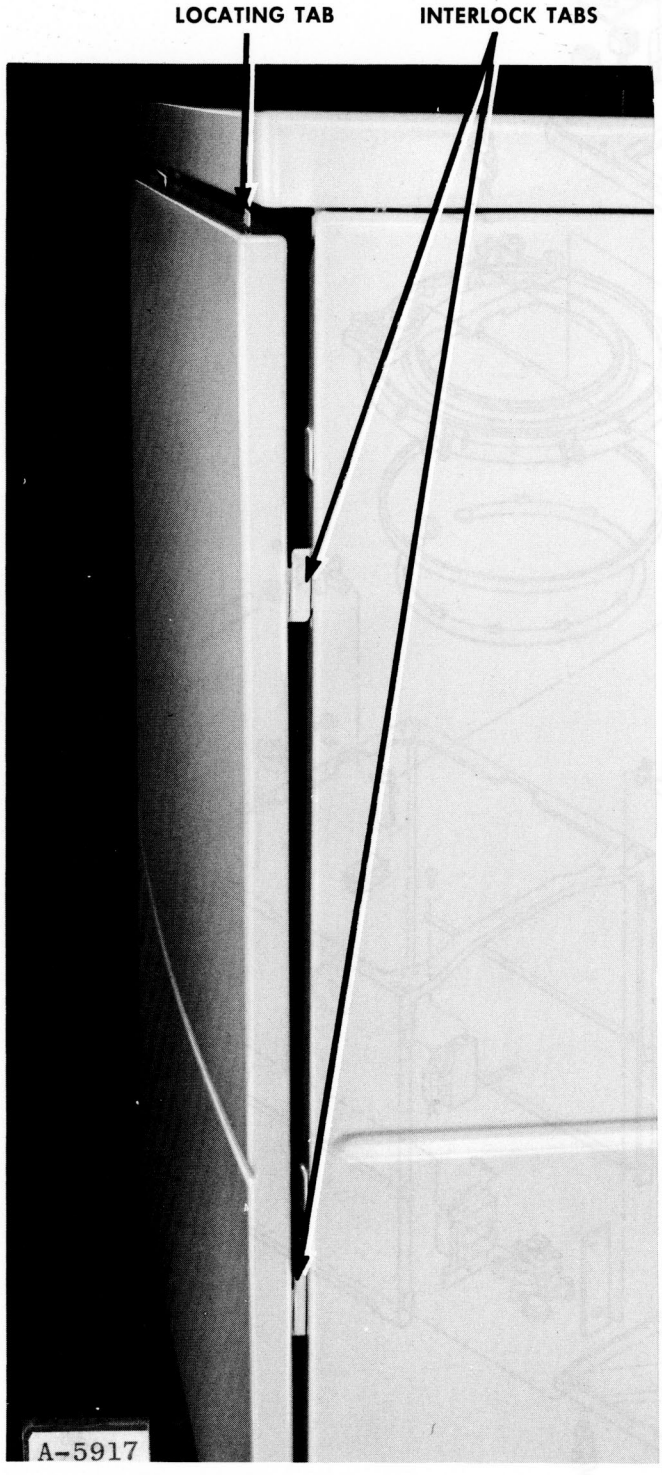


Figure 79
Locking Tabs, Front Panel

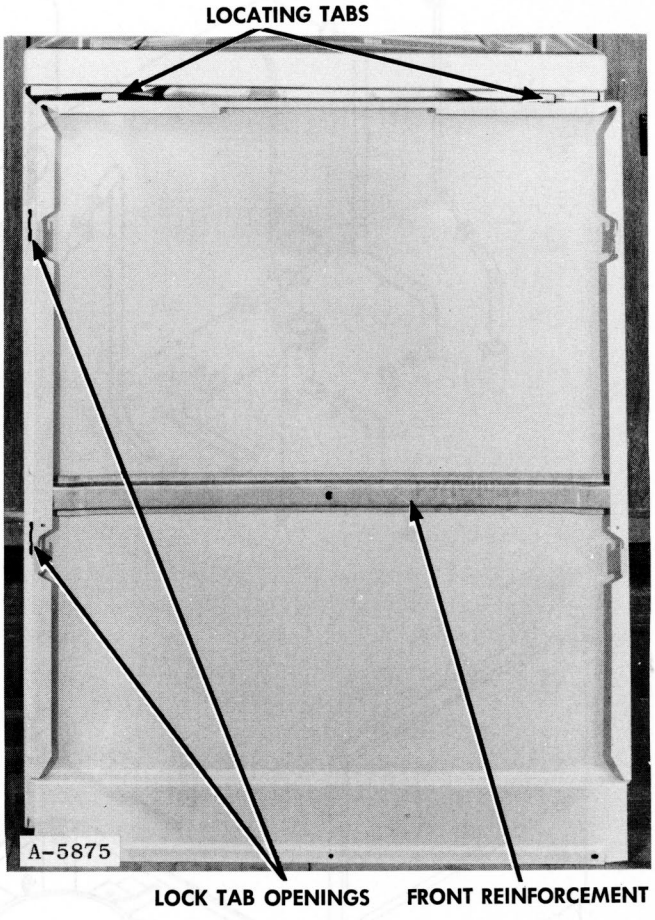


Figure 80
Rear View — Front Panel

U. Cabinet—Replacement or Removal:

See Figure 81 for parts assembly sequence and service nomenclature of all parts.

1. Remove the top of washer. Procedure H.
2. Remove the front access panel. Procedure T.
3. Remove the water valve and drop inside of shell.
4. Remove the screws from the drain hose connector and push

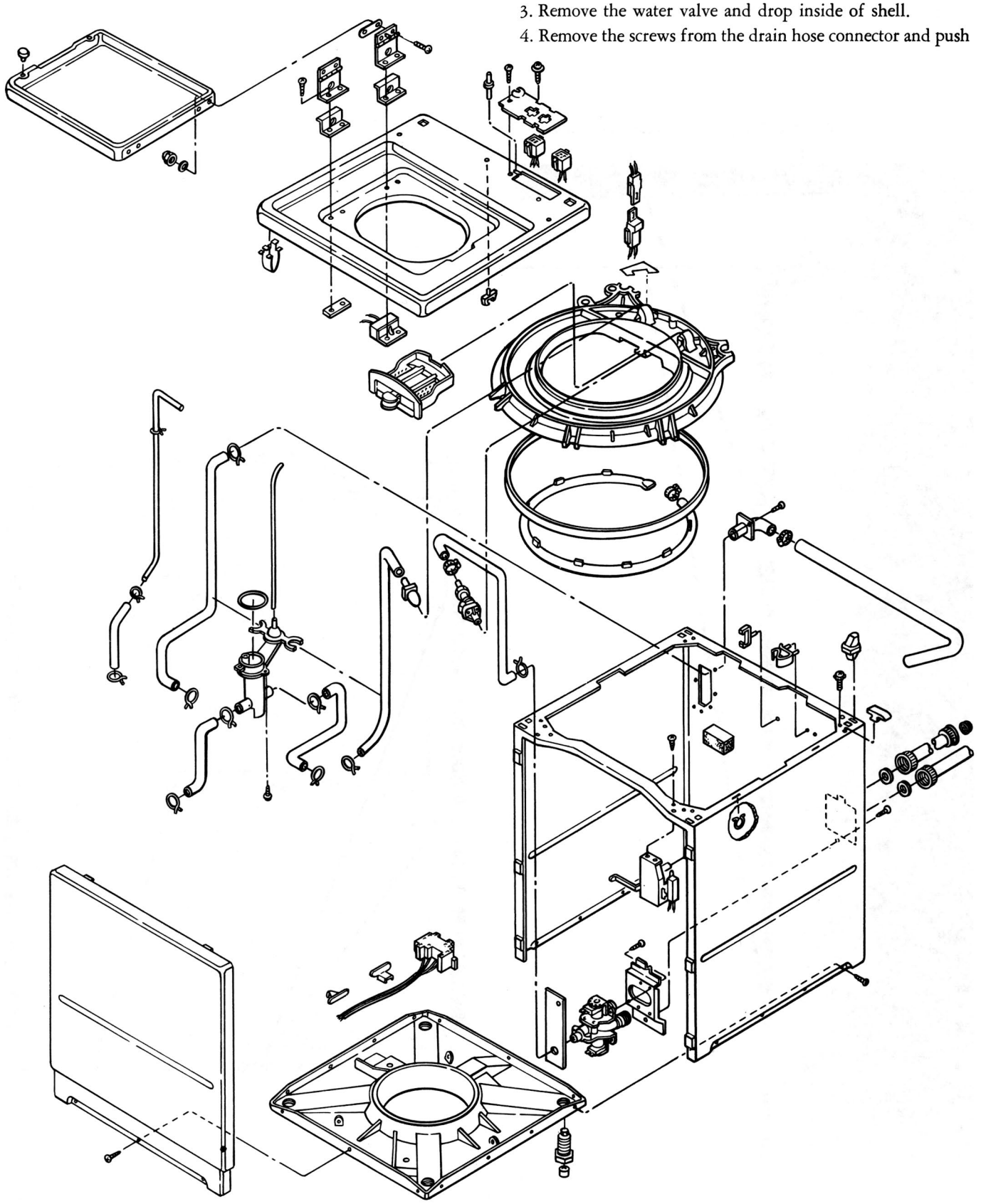


Figure 81
Exploded View — Cabinet

into cabinet.

5. Remove out of balance switch mounting screws.
6. Remove the four screws along each side of cabinet and three screws along the rear bottom edge of cabinet.
7. Pull cabinet to rear of washer to disconnect all wiring harness retainers from cabinet.
8. Pull cabinet away from washer.

V. Sudswater Saver Components—Replacement:

Access for the removal and replacement of the components of the Sudswater Saver system is gained thru the front access panel.

1. Remove the front access panel, Procedure T.
2. Remove the three hoses from the valve assembly.
3. Remove the two screws from the valve assembly mounting bracket.
4. Replace component required; solenoid, return spring or valve body parts. See Figure 82.

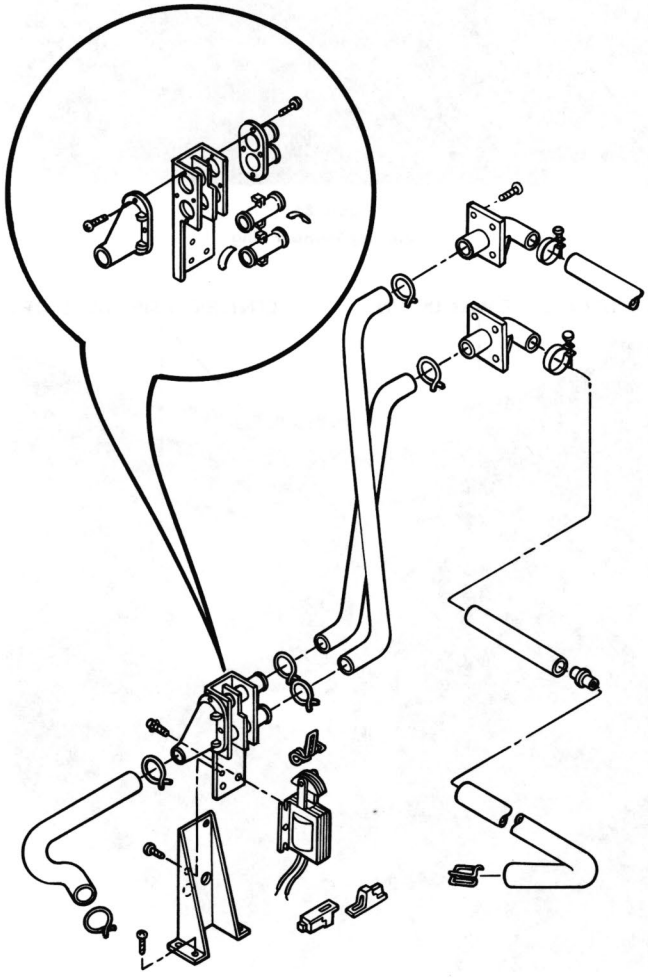


Figure 82
Exploded View — Suds Saver Valve

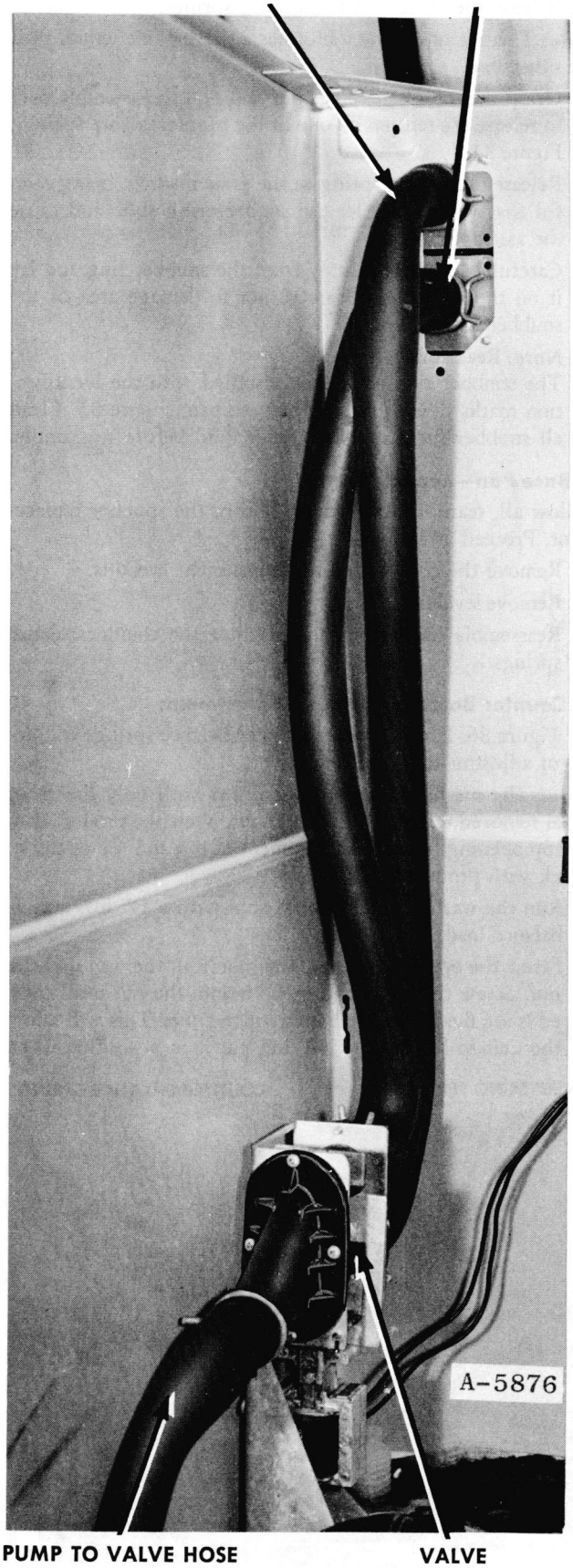


Figure 83
Sudsaver Hose detail

W. Snubber Components—Counter Balance Springs:

To remove the snubber follow the procedures of complete cabinet removal procedure U plus the following procedures as seen in Figures 84, 85 and 86.

1. Release the three small centering springs.

Note: The one under the motor has a shorter free length than the other two.

2. Grasp the top of the outer tub and pull the assembly over to release the tension on one of the counterbalance springs, Figure 84.
3. Release the second spring in the same manner, being careful that you do not let the snubber ring slide and cause the assembly to fall.
4. Carefully lift the assembly from the snubber ring and lay it on the floor, being careful not to damage area of the snubber surface.

   Note: Reassembly
   The snubber ring should be installed with the identification marks down, next to the base pan. Figure 85. Clean all snubber surfaces with lighter fluid before reassembly.

X. Base Pan—Replacement:

Follow all, teardown procedure U, thru the snubber replacement. Proceed as follows.

1. Remove the counter balance adjustment eyebolts.
2. Remove leveling feet.
3. Reassemble the washer and readjust the counter balance springs.

Y. Counter Balance Springs—Adjustment:

See Figure 86. For location of counter balance springs and detail of adjustment.

Note: The machine must be assembled with only the front panel removed to make the adjustment. View the product thru the top opening for proper alignment of top and tub opening. Check with product in spin cycle.

1. Run the washer at high speed spin with a 1.5 lbs. out-of-balance load.
2. Screw the eye bolt opposite the motor all the way into the nut. Screw the other two eyebolts into the nut until their ends are flush with the bottom of the nuts. This will allow the unit to lean to the left and put it in a position to be

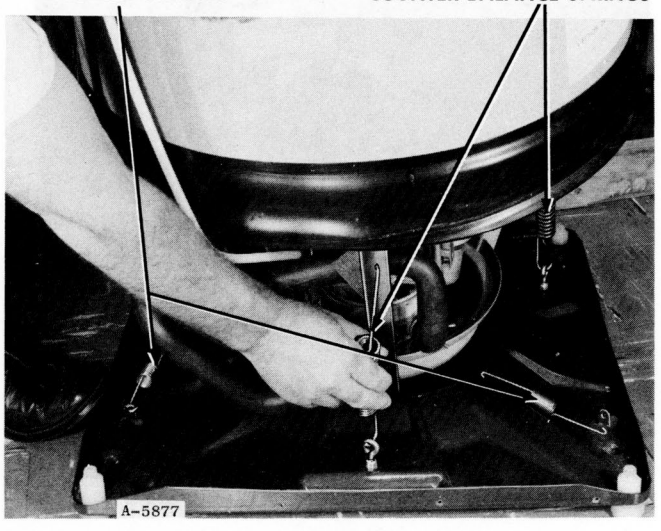


Figure 84
Removing Counter Balance Springs

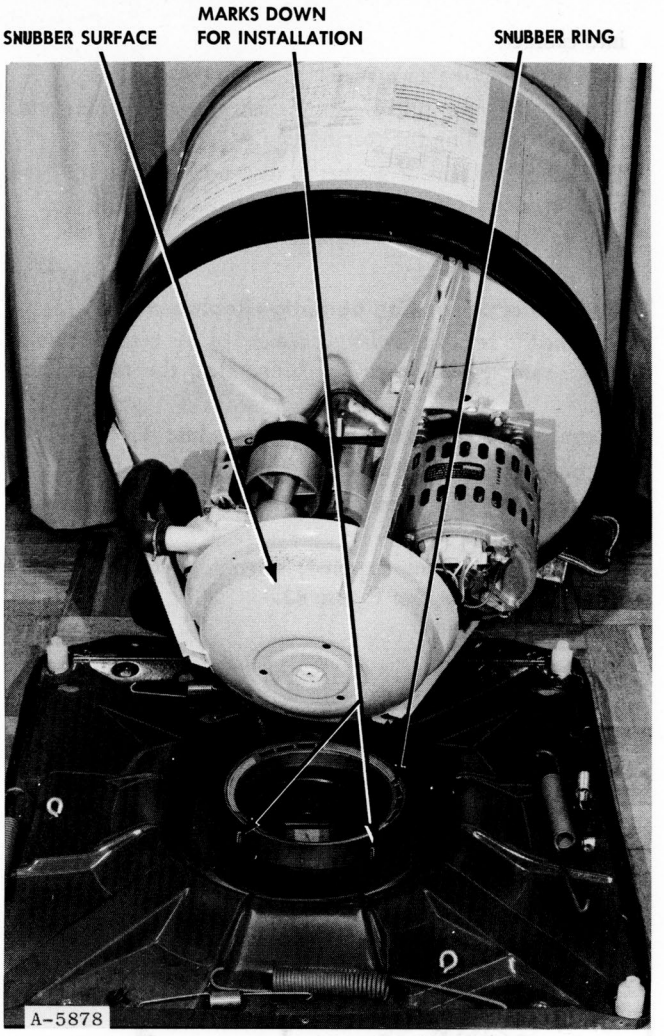


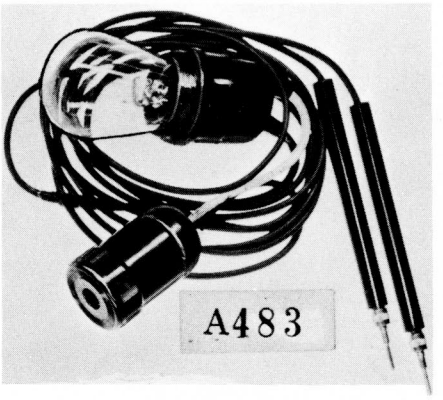
Figure 85
Replacing Snubber Ring

Figure 86
Counter Balance Spring Adjustment

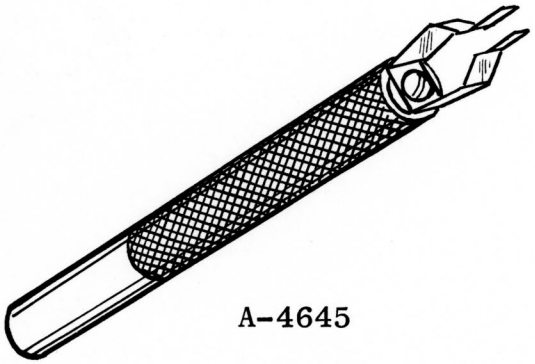
centered by tightening the two nuts on the opposite spring eyebolts. This operation may be performed either through the cabinet front access, or by tilting the washer and tightening the nuts under the base.

3. Adjust the load of the two vertical springs nearest the motor, only by tightening nuts on eyebolts, until the tub is centering itself in the washer top opening.
4. Apply 1 drop of brown Loctite at the top of each nut in threaded area.

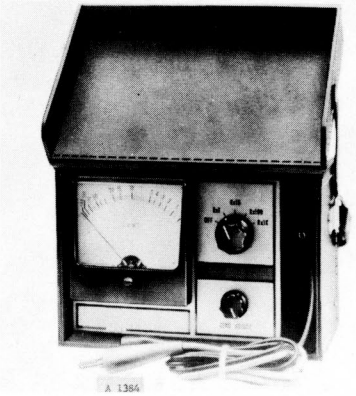
Volt Wattmeter 12865



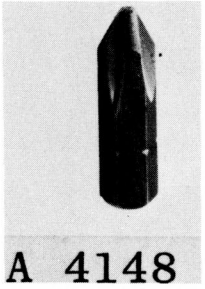
Test Lamp 12167



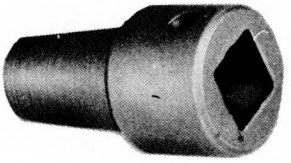
Terminal Remover 22727



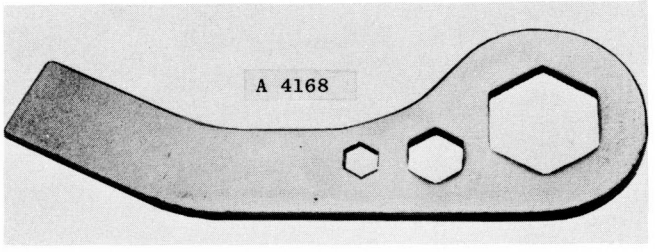
Ohmmeter 12855



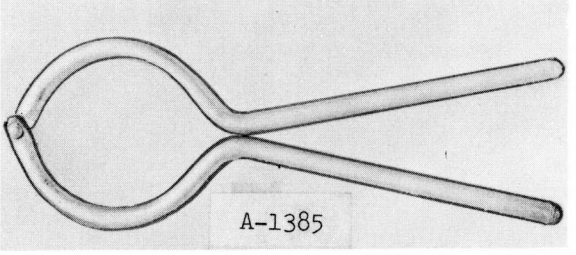
Posi-Drive Bit 14061-5



Brake Plate Screw Bit Holder 14061-1

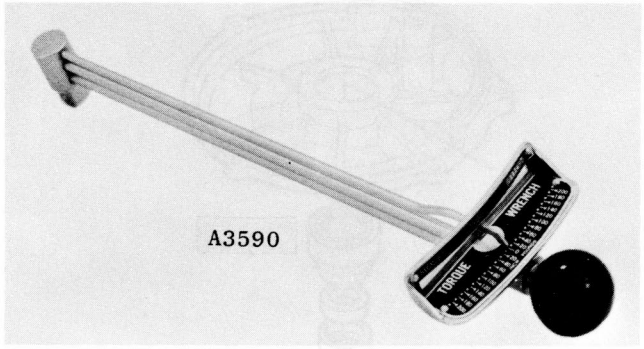


Tub Mounting Nut Wrench 12154

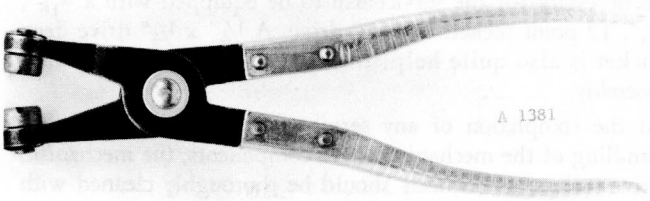


Oil Seal and Water Seal Pliers
12071 & 12168

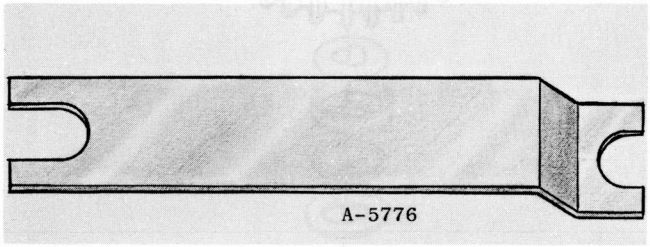
Figure 87
Washer Service Tools



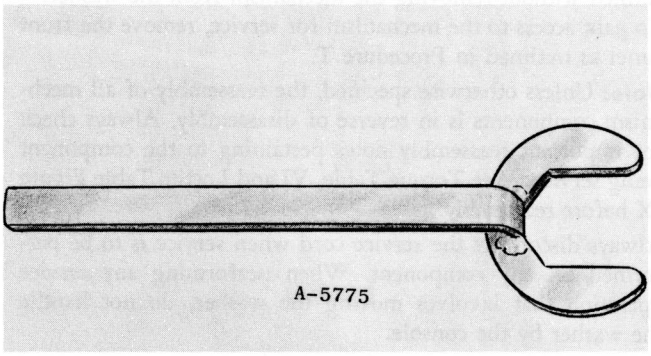
Torque Wrench 12934-7



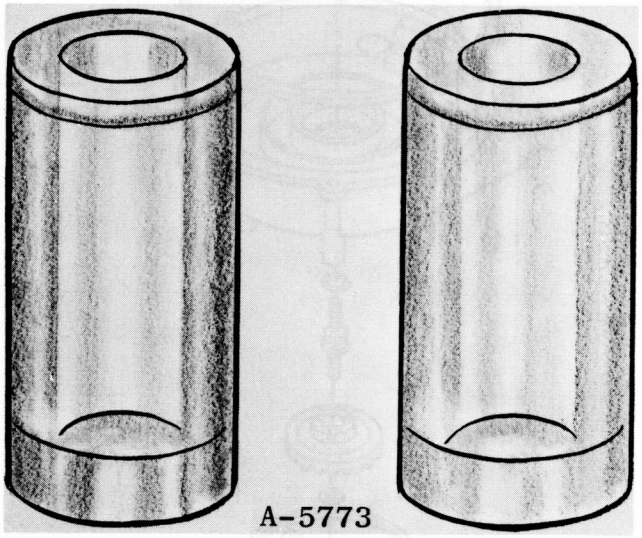
Hose Clamp Pliers 12289



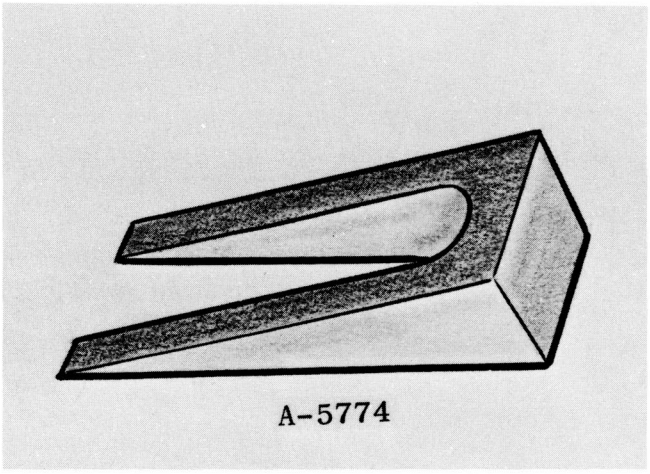
Spacer Gauge 14405



Wrench 14445



Bearing Installers 14406



Wedge 14404

Figure 87A
Washer Service Tools

Mechanism Service

Refer to Figures 88, 89, 90 for the assembly sequence and service nomenclature of all parts. All reassembly is in reverse of disassembly. When service is performed on the mechanism, the following practices should be observed. Use the proper tools in servicing the mechanism. Figure 87 shows the special tools required. In addition to the ordinary hand tools it will be necessary for the serviceman to be equipped with a 5/16", 3/8", 12 point sockets with 3/8 drive. A 1/4" x 1/4" drive deep socket is also quite helpful in removing the water pump assembly.

At the completion of any service operation which requires handling of the mechanism drive components, the mechanism drive rollers, and wheels should be thoroughly cleaned with a high grade of lighter fluid using a clean, lint-free cloth. Do not clean the drive components with the mechanism in operation. All mechanism service operations except the agitate shaft, spin shaft, and spin shaft bearings replacement can be performed without removing the mechanism from the washer.
To gain access to the mechanism for service, remove the front panel as outlined in Procedure T.

Note: Unless otherwise specified, the reassembly of all mechanism components is in reverse of disassembly. Always check for important reassembly notes pertaining to the component being serviced. See Torque Table, VI and Loctite Table Figure IX before reassembly.

Always disconnect the service cord when service is to be performed on any component. When performing any service operation that involves moving the washer, do not handle the washer by the console.

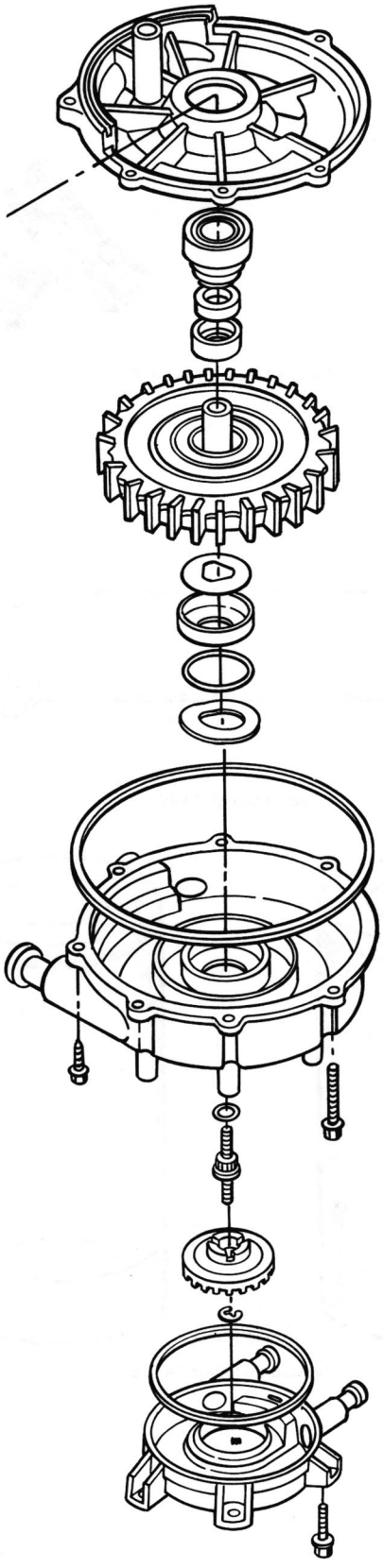


Figure 88
Exploded View of Water Pump

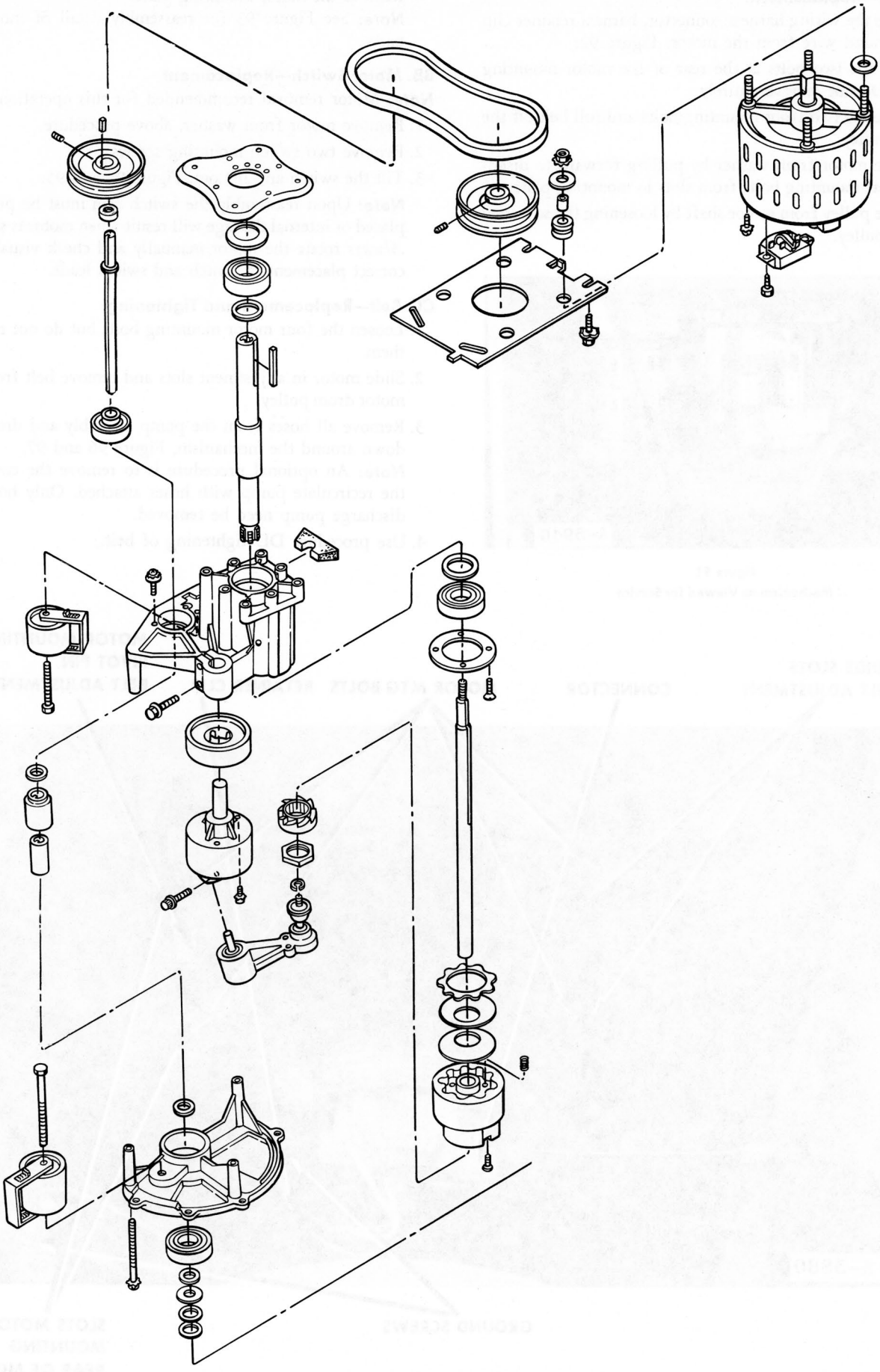


Figure 89 & 90
Exploded View of Drive Assembly and Mechanism

AA. Motor—Replacement:

1. Remove the wiring harness connector, harness retainer clip and ground wire from the motor, Figure 92.
2. Loosen the two bolts at the rear of the motor mounting plate. Do not remove entirely.
3. Remove the two front mounting bolts and roll belt off the drive pulley.
4. Remove motor from washer by pulling forward to disengage rear mounting bolts from slots in mounting plate.
5. Remove pulley from motor shaft by loosening the set screw in the pulley.
6. Remove the motor mounting plate.
   Note: See Figure 93 for reassembly detail of mounting parts.

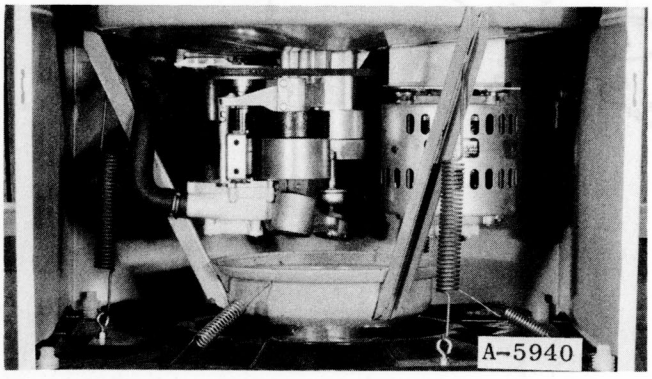


Figure 91
Mechanism as Viewed for Service

BB. Motor Switch—Replacement

Note: Motor removal recommended for this operation.

1. Remove motor from washer, above procedure.
2. Remove two switch mounting screws.
3. Tilt the switch and lift out. Figure 94 and 95.
   Note: Upon reassembly the switch arm must be properly placed or internal damage will result when motor is started. *Always* rotate the motor manually and check visually for correct placement of switch and switch leads.

CC. Belt—Replacement and Tightening:

1. Loosen the four motor mounting bolts but do not remove them.
2. Slide motor in adjustment slots and remove belt from the motor drum pulley.
3. Remove all hoses from the pump assembly and drop belt down around the mechanism, Figure 96 and 97.
   Note: An optional procedure is to remove the cover on the recirculate pump with hoses attached. Only hoses on discharge pump need be removed.
4. Use procedure DD tightening of belt.

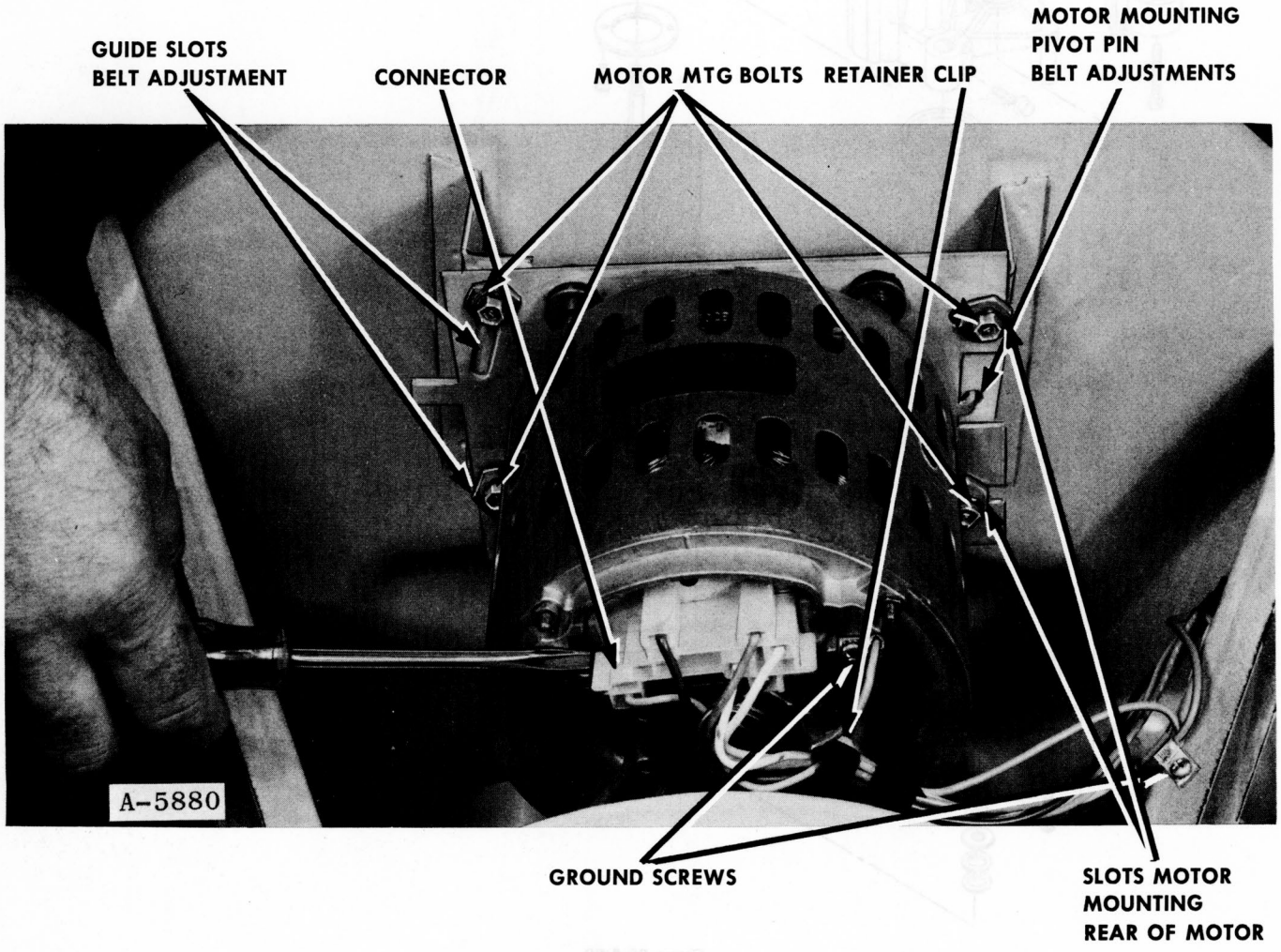


Figure 92
Motor Installed

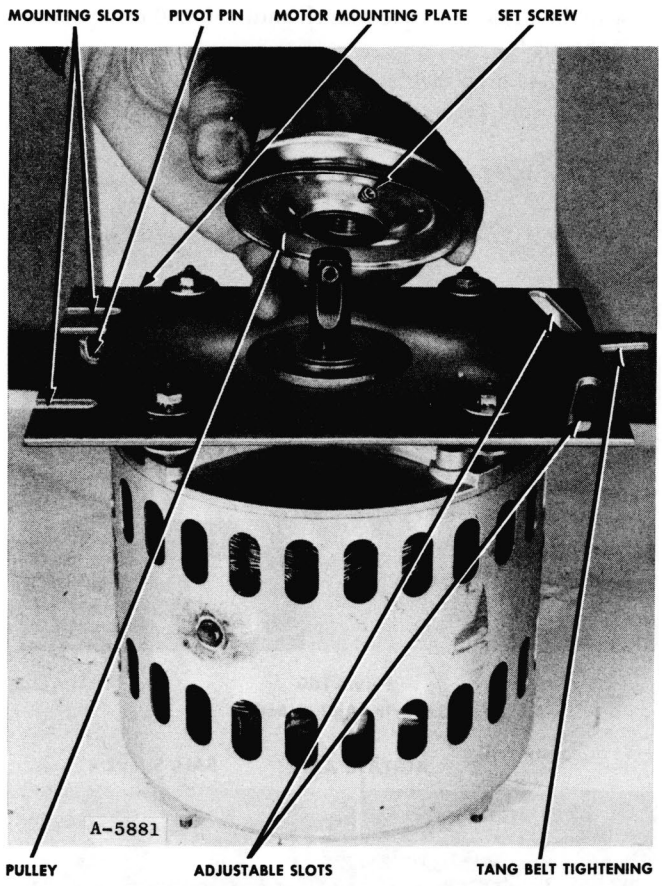


Figure 93
Motor Pulley Removed

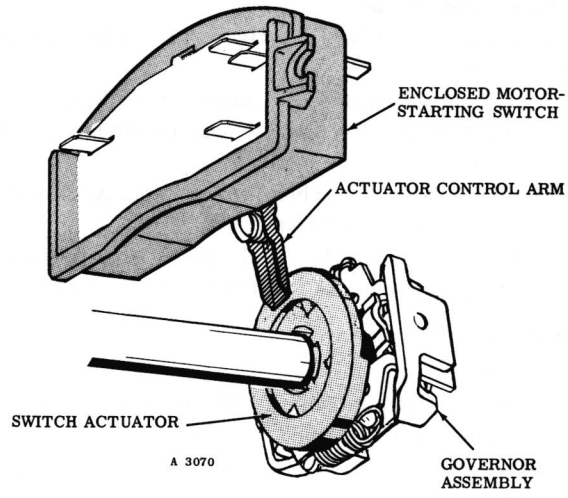


Figure 95
Positioning of Switch Arm

Figure 96
Removing Hoses

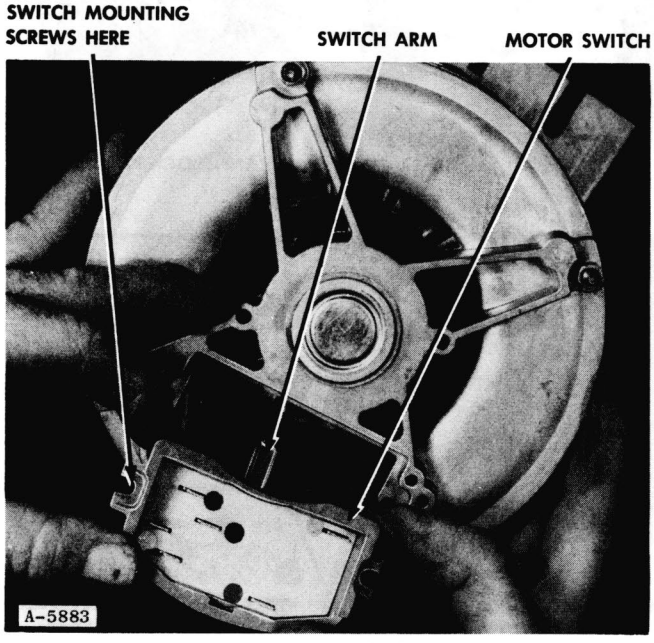


Figure 94
Replacing Motor Start Switch

Figure 97
Removing Belt

DD. Belt—Tightening:

1. After belt is in place, see Figure 98 for the tightening procedure.
2. Using a pair of channel lock pliers, grasp the tang of the motor mounting plate and the edge of the motor mounting bracket.
3. Test the tightness of the belt for deflection. Approximately ½" of deflection is sufficient.
4. Hold the motor in place and tighten one of the front mounting screws to lock the motor in place. Figure 99.

EE. Roller—Replacement:

Agitate and Spin

1. Loosen the roller mounting bolt and remove the roller. Both agitate and spin roller can be removed. Figure 100.

Note: Reassembly torque is 20-30 inch pounds. One drop blue Loctite on threads.

FF. Agitate Arm—Replacement:

1. Remove the ball support from the agitate shaft, Figure 101.
2. Loosen the bolt, Figure 102 that mounts the agitate arm in the clamp mount on the agitate wheel.
3. Use tool 14404 to remove the agitate arm from the agitate wheel, Figure 102.

Note: The service replacement arm is supplied with the ball support. Replacement of any component of the agitate arm necessitates replacement of the entire agitate arm assembly.

Installation—

1. Install the agitate arm on the wheel, using the 14405 spacer tool, Figure 103 to obtain the required clearance between the agitate arm shaft bearing and the clamp mount on the agitate wheel.
2. Tighten the agitate arm to the agitate wheel mounting bolt with the 12934-7 torque wrench until 180-200 inch pounds is obtained.
3. Apply one drop of blue Loctite to the threads of the ball support stud before assembly to the agitate shaft.

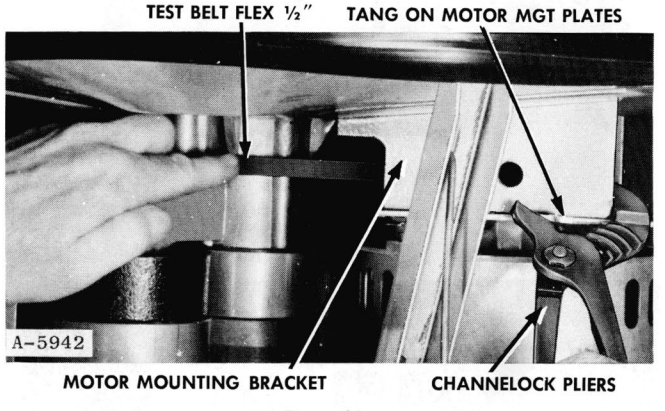


Figure 98
Tightening Belt

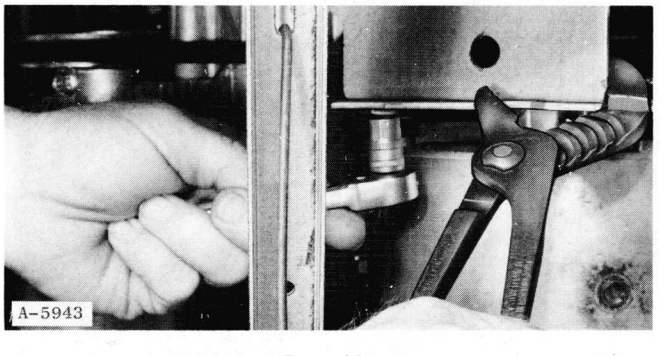


Figure 99
Fastening Motor in Place

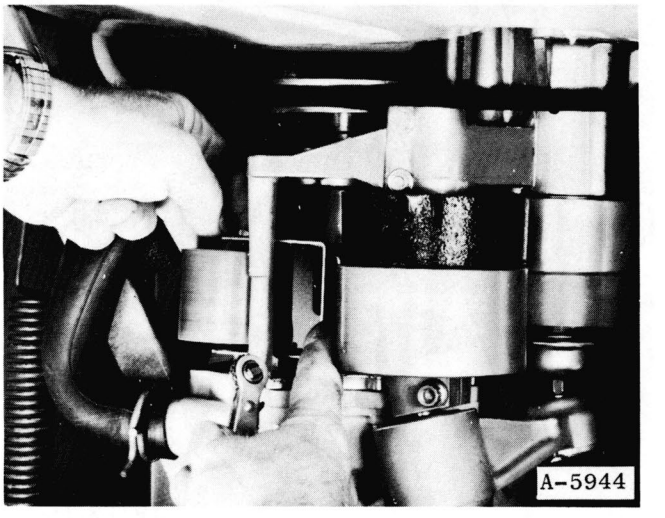


Figure 100
Removing Agitate Roller

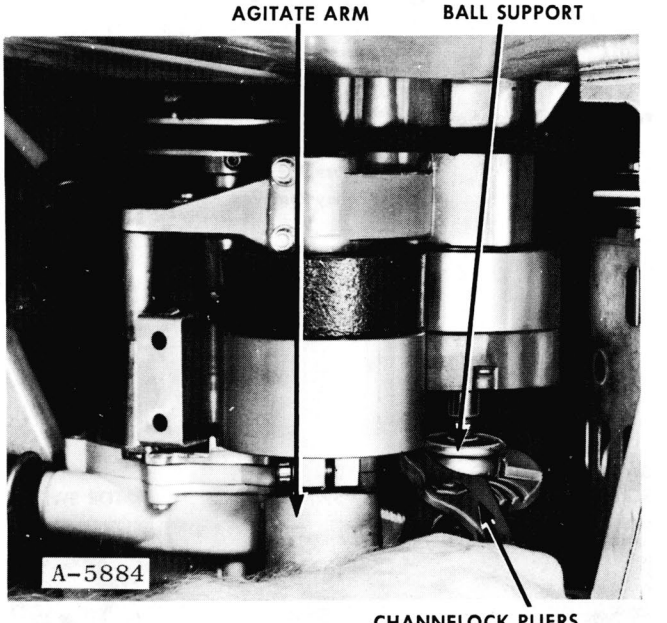


Figure 101
Removing Ball Support

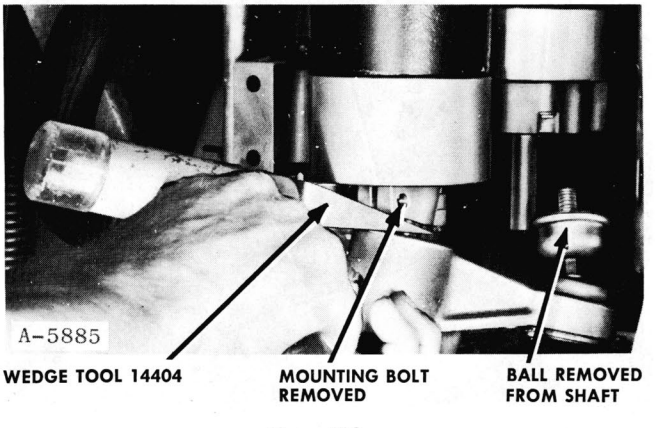


Figure 102
Removing Agitate Arm

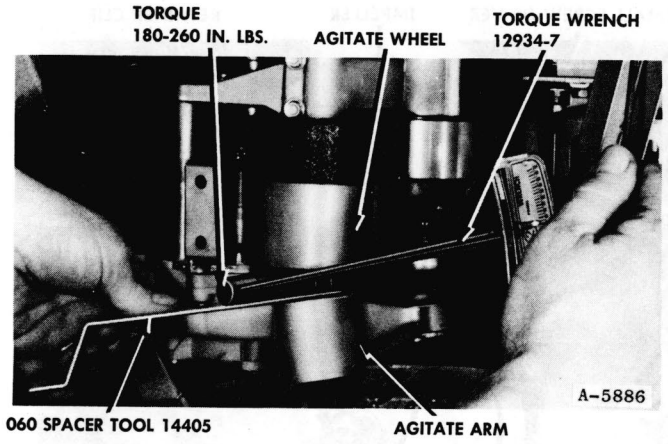


Figure 103
Checking Spacing of Agitate Arm

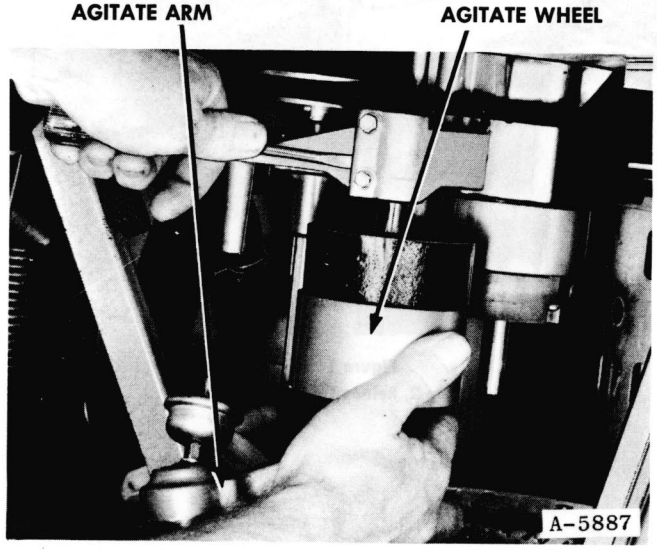


Figure 104
Removing Agitate Wheel

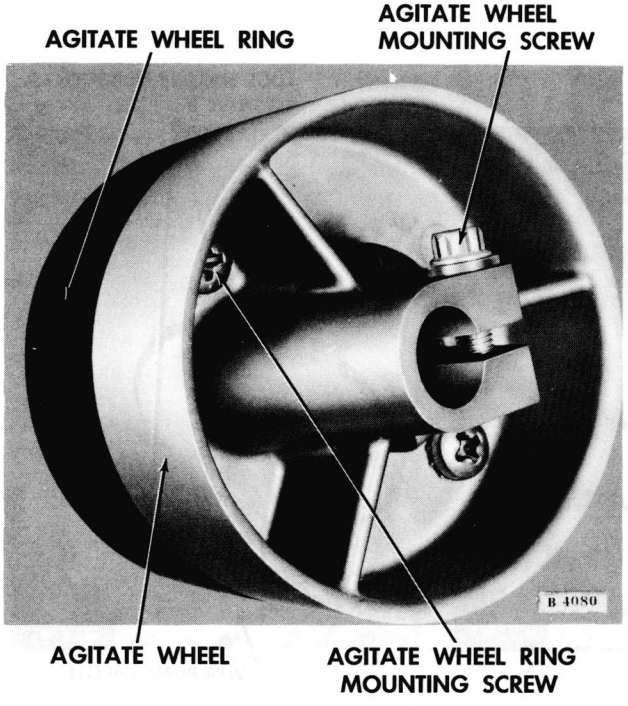


Figure 105
Wheel and Ring Assembly

GG. Agitate Wheel, Agitate Wheel Ring—Replacement:

1. Remove the pump assembly procedure HH.
2. Remove the agitate arm from the agitate wheel, Procedure F. Optional: Remove arm and wheel assembly, Figure 104.
3. Loosen the two bolts that mount the agitate wheel to the mechanism housing.
3. Remove the agitate wheel and ring from the mount.

   Note: The agitate wheel shaft may stay tight after the mounting screws are loosened. A wedge type tool may be used to spread the clamp sufficiently to remove the shaft from the clamp. Care must be exercised to assure that the clamp is spread only an amount necessary to loosen the clamp on the shaft, Figure 104.
4. Loosen the two screws, Figure 105, that mount the agitate wheel ring to the agitate wheel and lift the ring from the wheel.
5. Place the ring on agitate wheel and torque the two screws to 80 in. pounds. Figure 105.

   Note: Install the agitate wheel and ring into the mounting clamp, using the 14405 spacer gage, Figure 106, to obtain the required clearance between the agitate wheel shaft bearing housing and the mounting clamp.
6. Tighten the mounting bolts to a torque of 100-130 inch pounds.
7. Clean the agitate roller and agitate wheel surfaces with a high grade of lighter fluid.

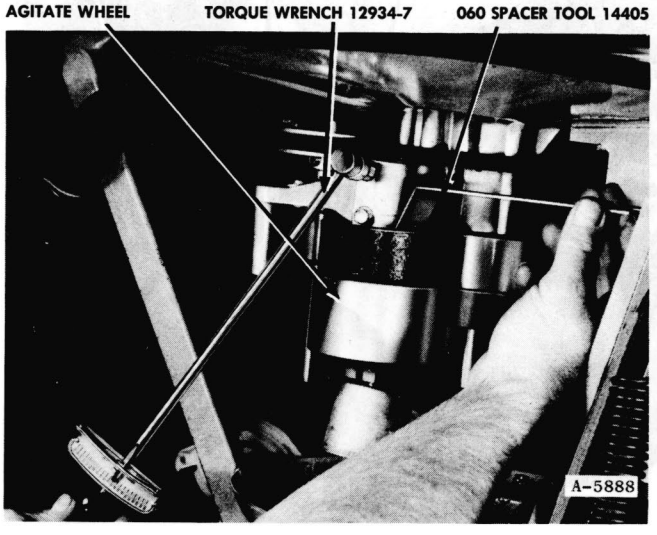


Figure 106
Adjusting Agitate Wheel

HH. Pump Assembly—Replacement:

1. Remove the hoses from the discharge pump.
2. Remove the 5 screws that hold the recirculate pump cover to upper pump housing, Figure 107.

   Note: The hoses may be left attached to the recirculate pump cover and pushed aside.
3. Remove the recirculate pump impeller from the mounting stud. See Figures 108 and 109.

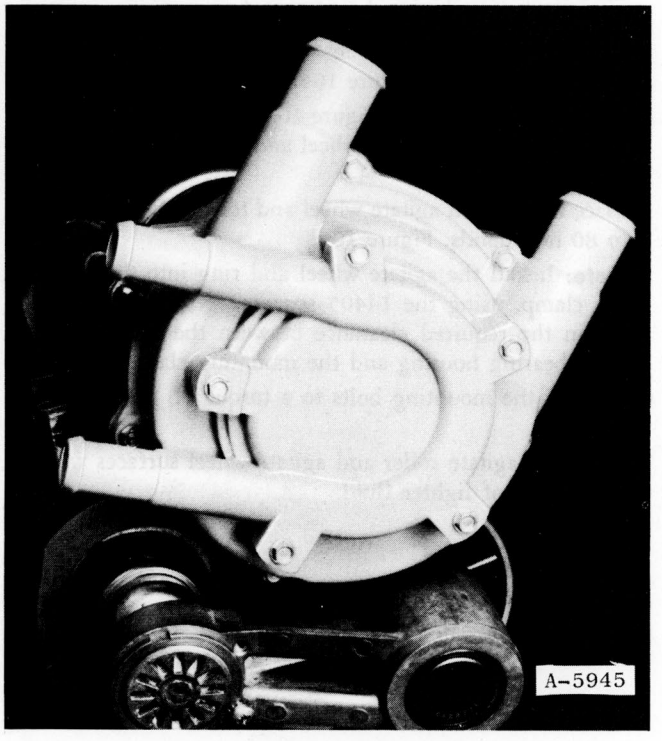


Figure 107
Lower Pump Cover

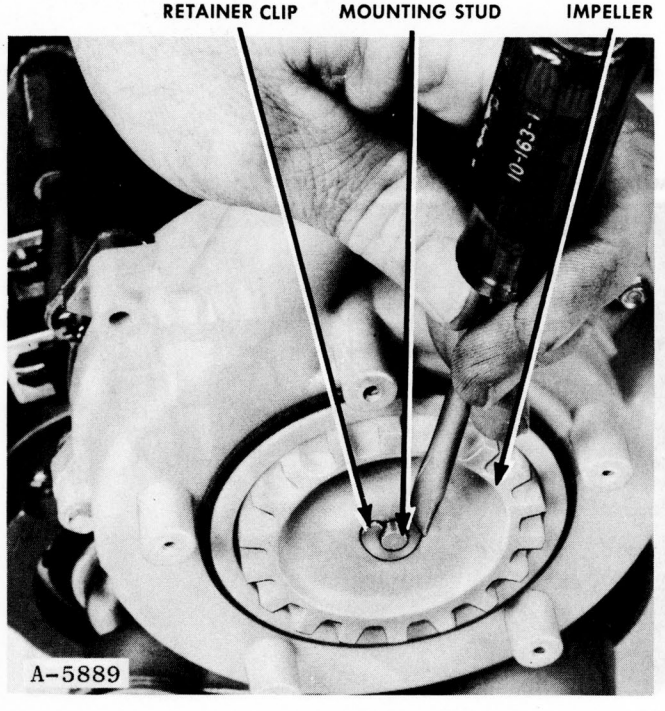


Figure 108
Step 1, Removing Retainer

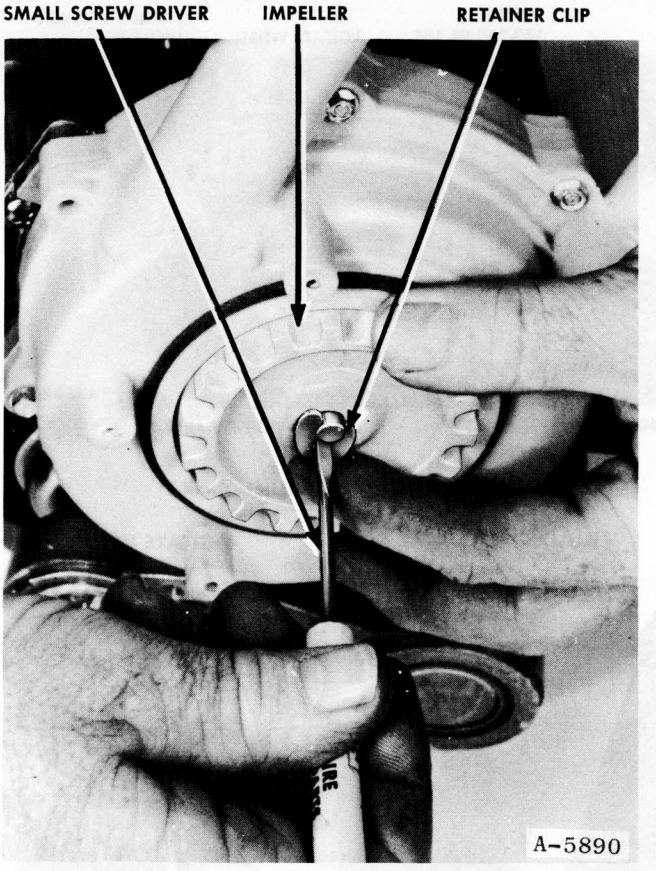


Figure 109
Step 2, Removing Retainer

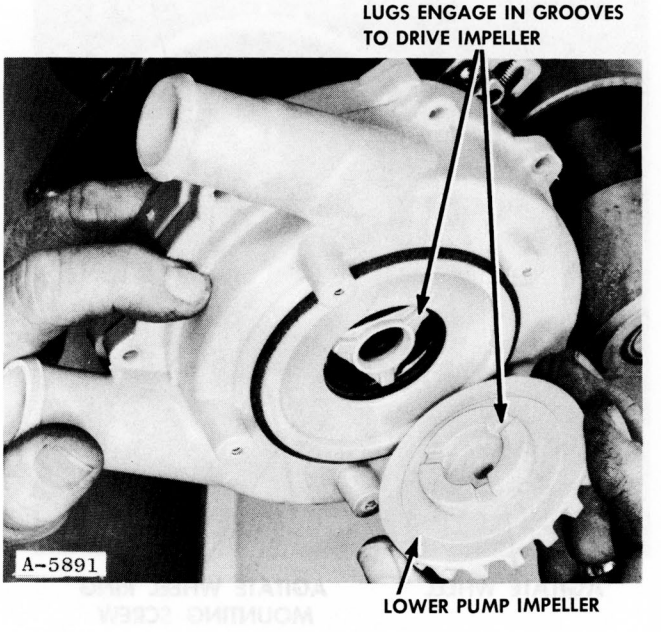


Figure 110
Lower Jump Impeller

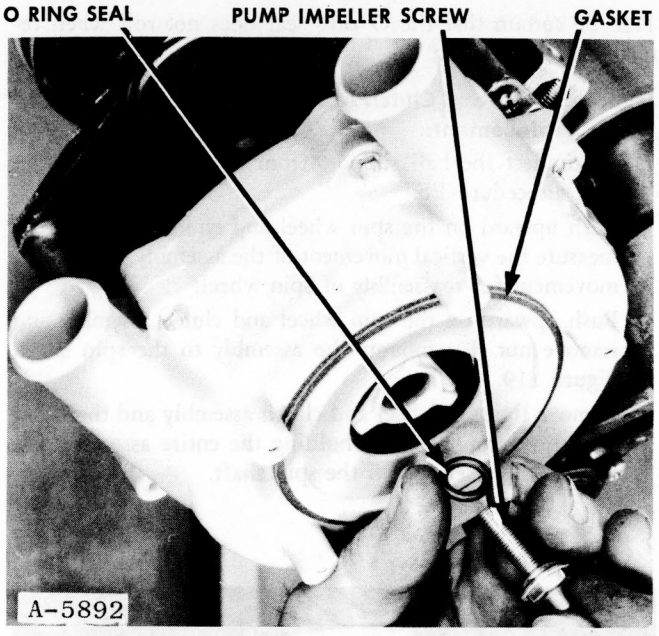


Figure 111
Pump Impeller Screw

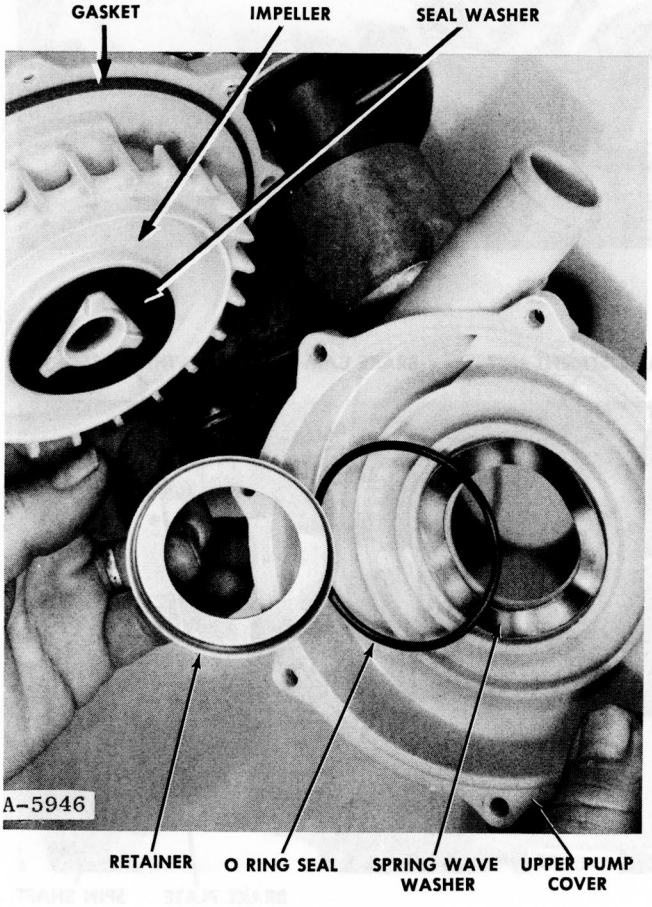


Figure 112
Pump Housing Detail

Note: Use a tool with a good square end to start the retainer clip from the stud. Figure 108. Final removal can be made with a small screwdriver to avoid loss of the retainer. Figure 109.

4. Remove the pump impeller screw from the pump assembly, Figure 111.
5. Remove the seven (7) screws from the upper pump housing and remove upper impeller housing. See Figure 112 for assembly detail.
6. Remove the impeller from the drive shaft. Figure 113 and 114 shows assembly detail.
7. Remove upper pump cover.

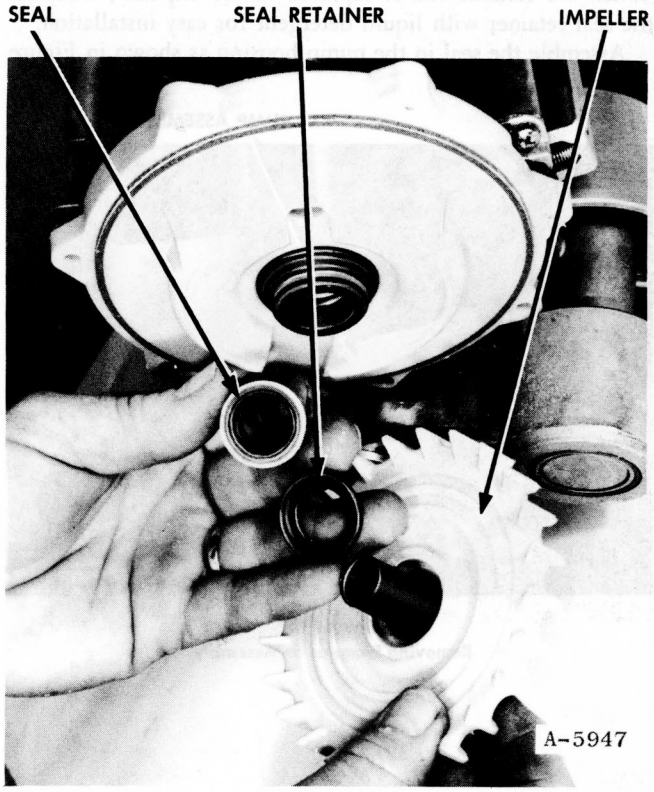


Figure 113
Impeller Seals

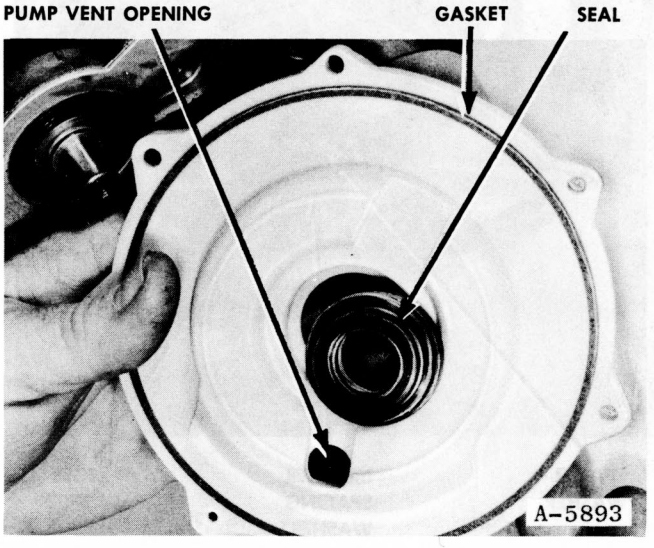


Figure 114
Pump Cover Seal

Note: Step 5, 6 and 7 can be combined upon disassembly or reassembly. See Figure 115. Figure 116 shows the spacer washers in proper order. The top washer is smaller in diameter than the flinger washer. The other washers or spacers are to be used as required to properly space the impeller away from the upper pump cover. Clearance is measured from the impeller fins to pump cover. $\frac{1}{16}$" + $\frac{1}{32}$". See Figure 117.

II. Discharge Pump Seals—Replacement:

1. Follow Pump removal procedures.
2. Push seal from pump cover.

Note: The seal is a finger-press fit in the cover. Clean all seal contact surfaces and install new seal. No sealant is required. When the ceramic seal is replaced in the impeller, lubricate the seal retainer with liquid detergent for easy installation.

Assemble the seal in the pump housing as shown in Figure 112. Be certain that the O ring seal does not roll when retainer is set in place.

JJ. Spin Wheel and Clutch Assembly, Brake Components —Replacement:

1. Disconnect the ball support from the agitate shaft. Fig. 101, Procedure FF.
2. Push upward on the spin wheel and clutch assembly and measure the vertical movement of the assembly, record this movement for reassembly of spin wheel.
3. Push upward on the spin wheel and clutch assembly and remove nut that mounts the assembly to the spin shaft, Figure 119.
4. Remove the spin wheel and clutch assembly and the brake assembly components by holding the entire assembly and pulling the assembly off the spin shaft.

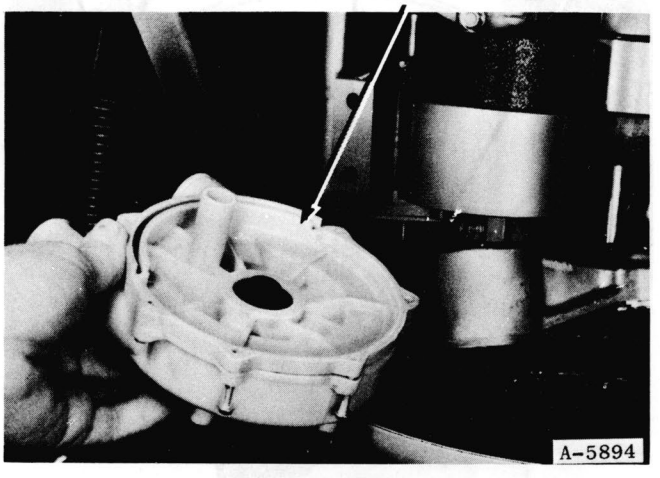


Figure 115
Removing Pump as an Assembly

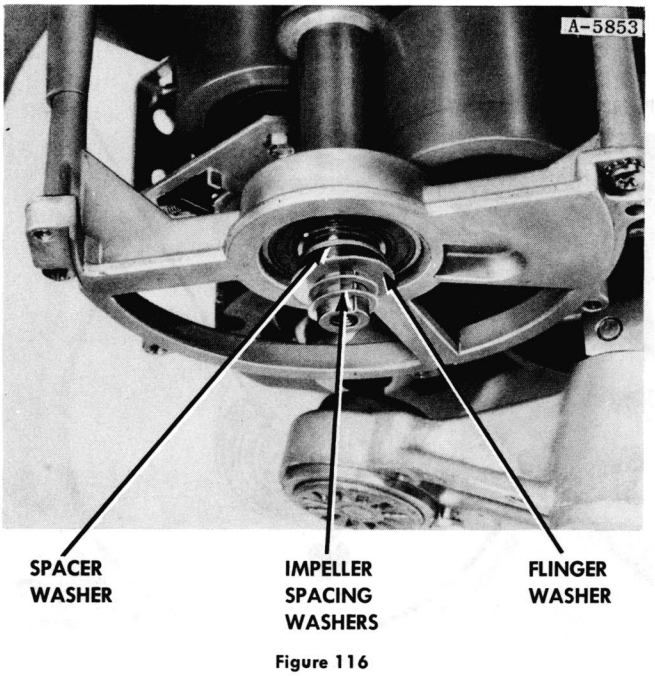


Figure 116
Impeller Spacer Washers

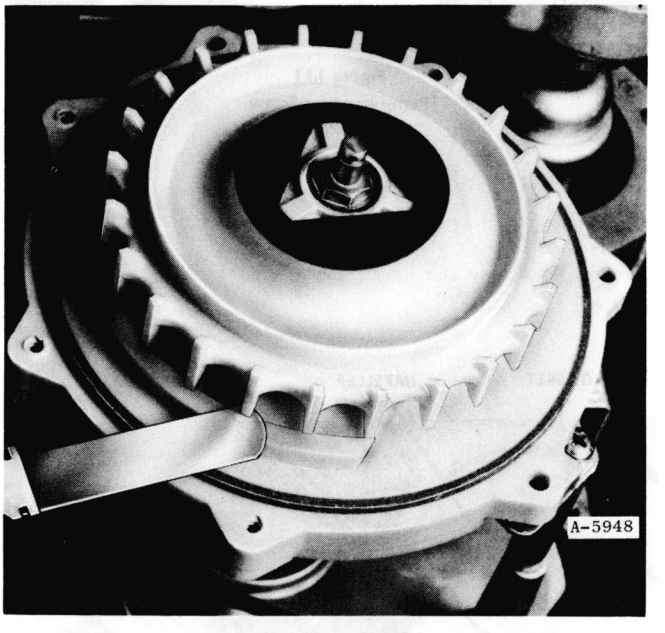


Figure 117
Check Impeller Clearance

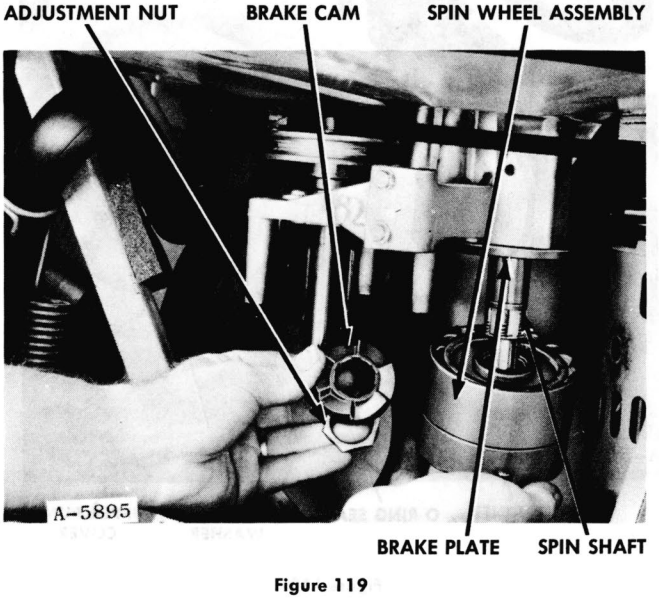


Figure 119
Installing Spin Wheel

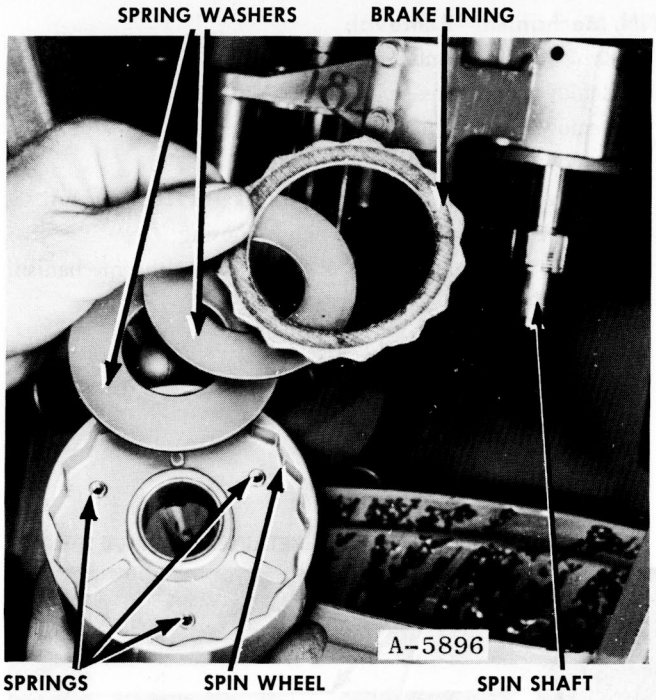


Figure 120
Spin Wheel Brake Assembly

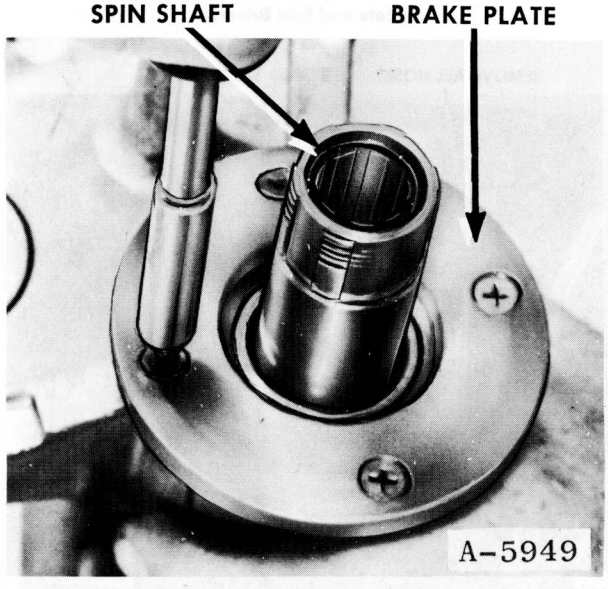


Figure 121
Removing Brake Plate

5. Remove the brake lining, two spring washers from inside the top of the spin wheel, Fig. 120.
6. Remove the four screws that mount the brake plate to the mechanism support housing, Fig. 121.
7. Check clutch torque using torque wrench as shown in Fig. 68.

Note: The service replacement spin wheel and clutch is supplied as an assembly. Replacement of any component of the spin wheel necessitates replacement of the entire spin wheel and clutch assembly.

KK. Brake Plate:

1. Assemble the brake plate to the support housing by cross tightening the four mounting screws to a torque of 25-40 in. pounds using the 12934-7 torque wrench and the 14061-4 torque wrench adapter and the 14061-5 adapter bit.
2. The bit must be held securely in the head of the mounting screws to prevent slippage of the adapter and subsequent damage to the screw head.
3. Remove any moisture, dirt or other foreign material from the plate by wiping the face of the plate with a clean, dry cloth.

LL. Brake Components:

1. Assemble the two spring washers in the top of the open wheel, the first concave down and the second concave up. Fig. 120.
2. Assemble the brake lining in the top of the spin wheel; mate the teeth on the brake lining with the slots in the spin wheel.

Note:

1. Hold the spin wheel and brake assembly, Fig. 119 and slip the entire assembly onto the spin shaft. Hold the spin roller away from the spin wheel and slide the spin wheel up the spin shaft until the brake lining contacts the brake plate.

   Note: Apply a very thin coating of oil part No. 5878007 to the inner surface of the spin wheel bearing before installing.
2. Install the spin brake cam so that the rectangular teeth on the cam fit in the slots of the clutch lining, Fig. 122.
3. Install the spin roll stop on the shaft, Fig. 119 by mating the teeth on the stop with the teeth on the brake cam.
4. Install the brake cam nut on the spin shaft and lock the nut by mating the flats on the nut with the flats on the spin roll stop.
5. Push upward on the spin wheel assembly and, using a scale, set the vertical movement of the spin wheel as follows.
   A. If the original brake lining was reinstalled, set the vertical movement of the spin wheel to the measurement found in procedure JJ step 2.
   If new lining is installed, set the vertical movement of the spin wheel assembly to 1/32.
   B. Tighten or loosen the brake cam nut to obtain the desired movement. The flats on the brake cam nut must mate with the flats on the spin roll stop when adjusting the spin wheel vertical movement.
   C. Hand operate the brake several times by rotating the wheel approximately 15° clockwise, then counter-clockwise. Recheck and adjust as needed.

MM. Driver, Agitate and Spin—Replacement:

1. Remove water pump, Procedure HH.
2. Remove the drum shaft lower bearing from the pump mounting bracket. Figures 123 and 124.
3. Remove the agitate and spin drivers from the drive shaft.

Note: Both drivers will come through the bearing opening of the pump bracket.

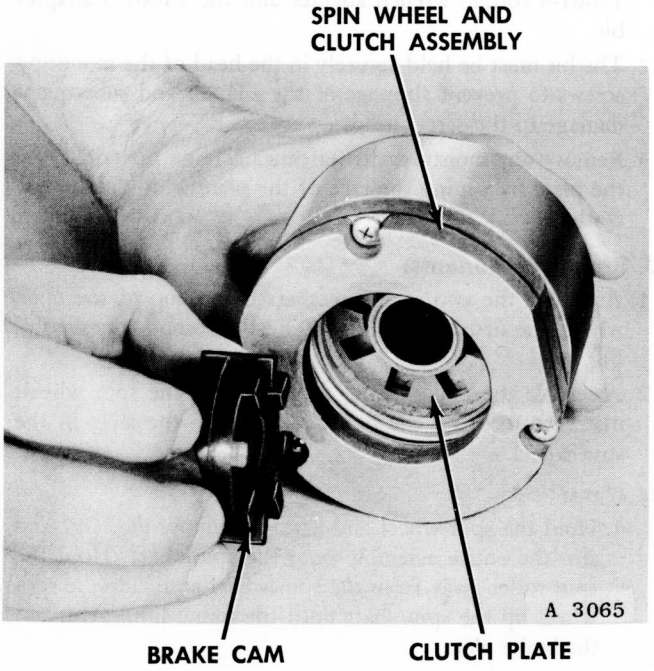


Figure 122
Brake Cam Installation

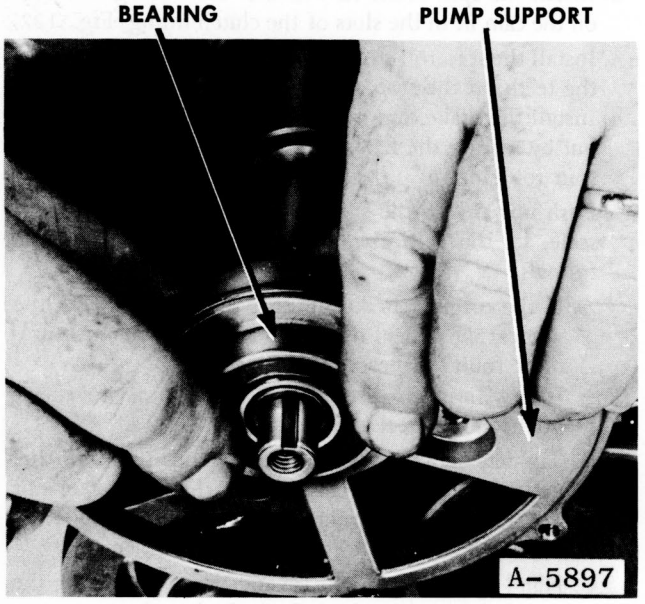


Figure 123
Removing or Replacing Lower Bearing

NN. Mechanism—Removal:

1. Remove top assembly, Procedure H.
2. Remove sub top assembly, Procedure N.
3. Remove the tub assembly, Procedure S.
4. Remove the front access panel, Procedure T.
5. Remove motor from mounting bracket, Procedure AA.
6. Remove all hoses from the pump housing.
7. Place a piece of wood ¾ x 4 x 14 under the mechanism for support, Fig. 125.

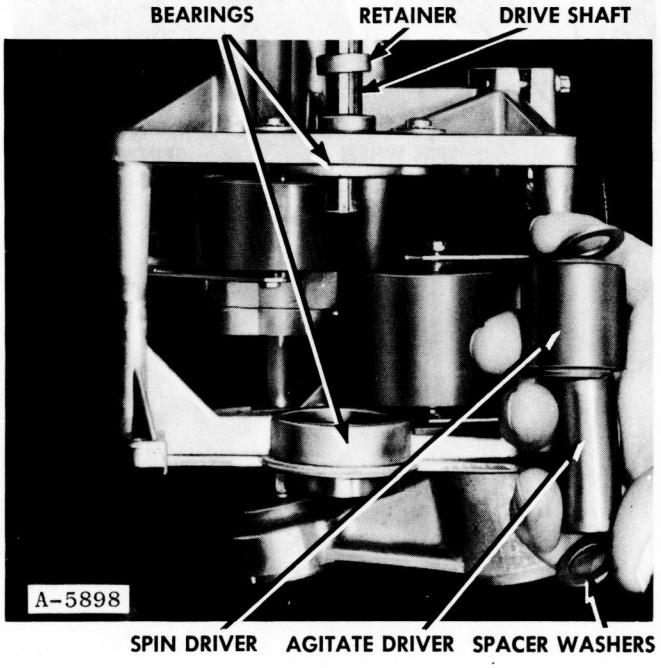


Figure 124
Agitate and Spin Drivers

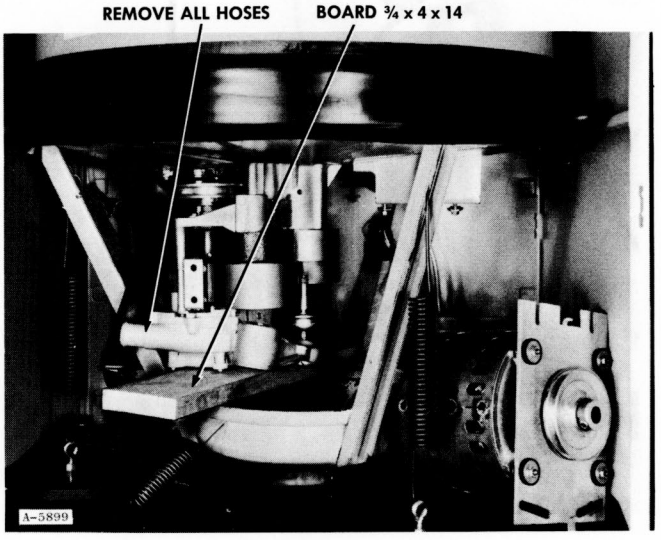


Figure 125
Preparing to Remove Mechanism

8. Remove the 8 bolts from the seal retainer inside the outer tub, Fig. 126 and 127.
9. Remove the board supporting the mechanism and tilt the mechanism to the right, Fig. 128. This allows the pump hose connection to clear the tub support.

Note: Reassembly Procedures:

1. Glue the bellows muffler in place, Figure 129.
2. Place the belleville spring on top of bearing. Fig. 130.

Note: Upon disassembly, this part may have been glued in place. When replaced this is not necessary. It is glued for factory processing only.

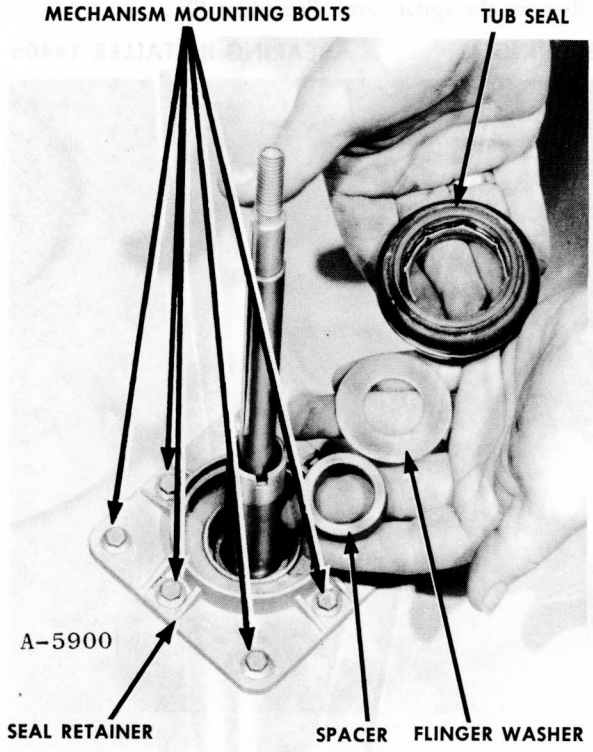


Figure 126
Tub Seal Assembly

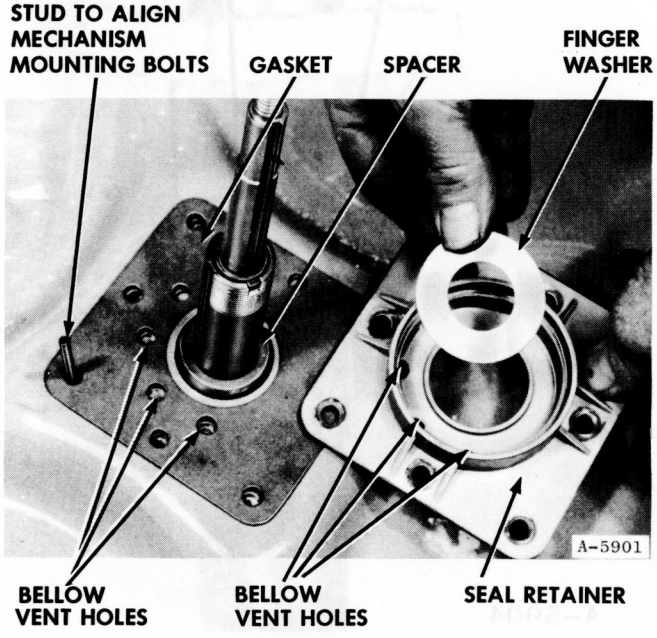


Figure 127
Retainer Mounting Detail

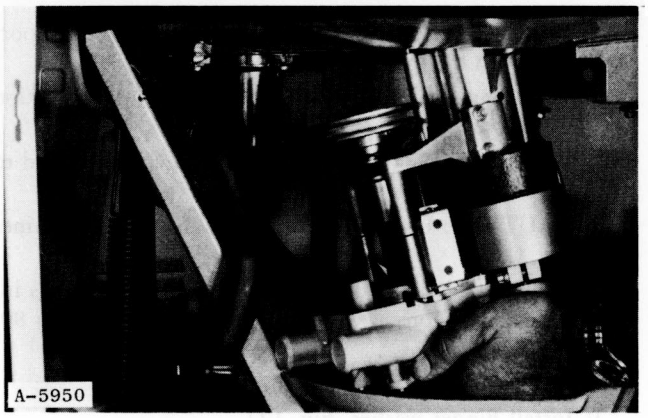


Figure 128
Tilt Mechanism to Remove

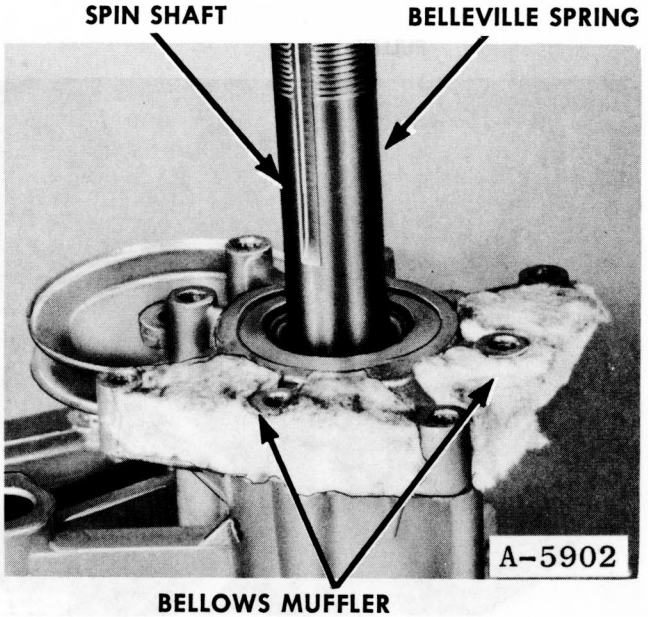


Figure 129
Bellows Muffler

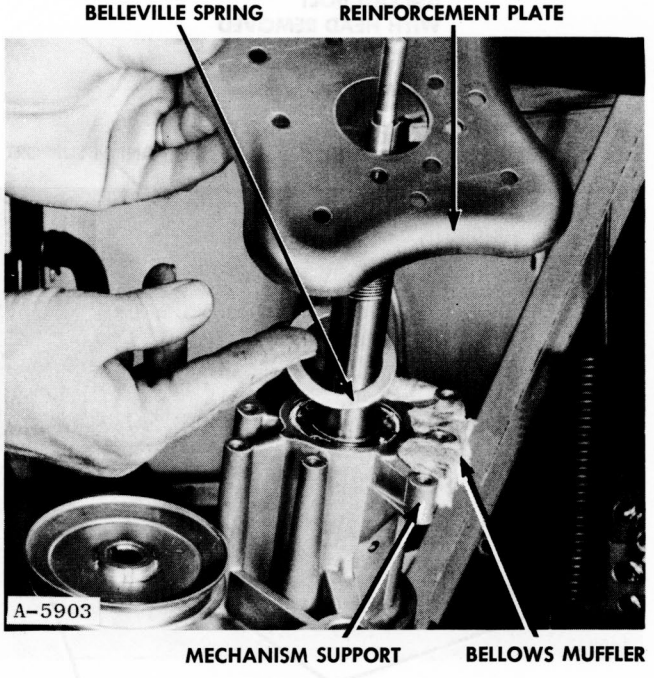


Figure 130
Bellville Spring

3. Place the reinforcement plate on mechanism support and align the mounting bolt holes.
4. Install guide pin next to the drive pulley. This location works very well, Fig. 131.
5. Install into outer tub and use the ¾ x 4 x 14" board to support the mechanism.
6. CAUTION: Use new gasket under the tub seal retainer Fig. 127.
7. Use 8 new bolts 638867, each time a mechanism is installed. Use torque wrench 12934-7 and torque to 80-100 in. pounds.
8. Install tub support spacer. Fig. 127.
9. Install flinger washer, Fig. 127.
10. Install tub seal. Figure 78 Procedure S tub seal replacement.

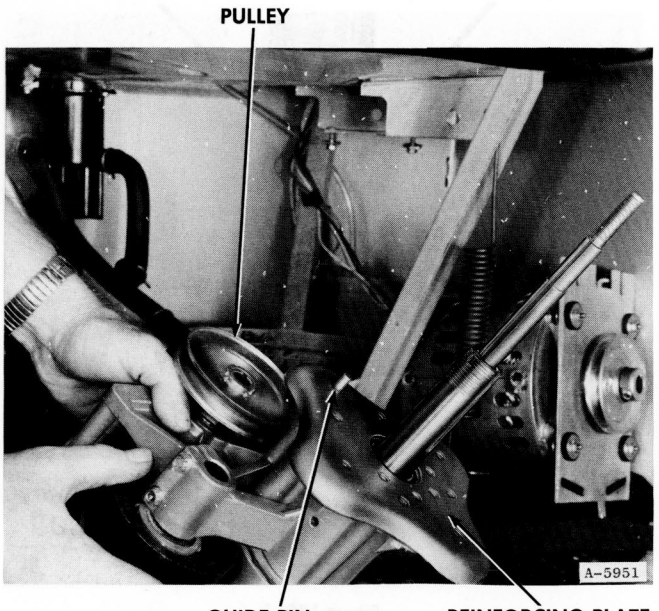


Figure 131
Reinforcing Plate Mounted

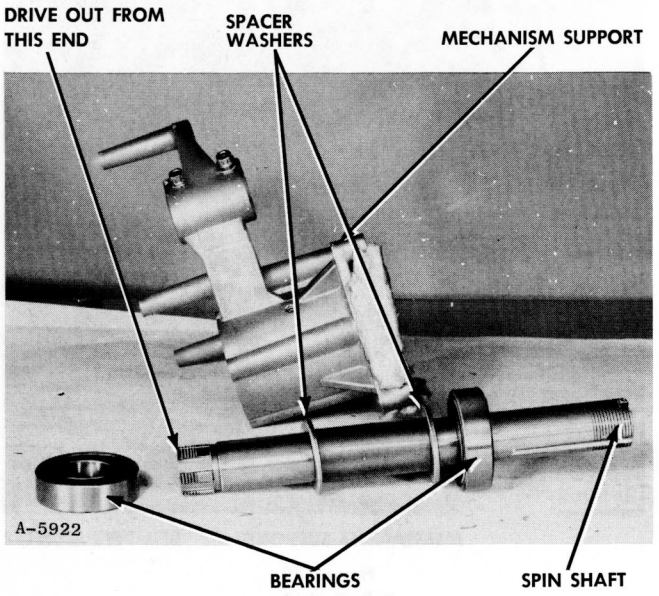


Figure 132
Assembling Spin Shaft

11. Replace motor.
12. Replace belt and tighten, Procedure DD—Fig. 99.
13. Replace all pump hoses.
14. Replace tub, sub top, top and front panel.

OO. Agitate Shaft—Replacement:

1. Remove mechanism from the washer, Procedure NN.
2. Remove the agitate arm, Procedure FF, Fig. 102.
3. Pull shaft down through the spin shaft.

PP. Spin Shaft and Bearings—Replacement:

1. Remove the mechanism from the washer, Procedure NN.
2. Remove the agitate arm, Procedure FF.

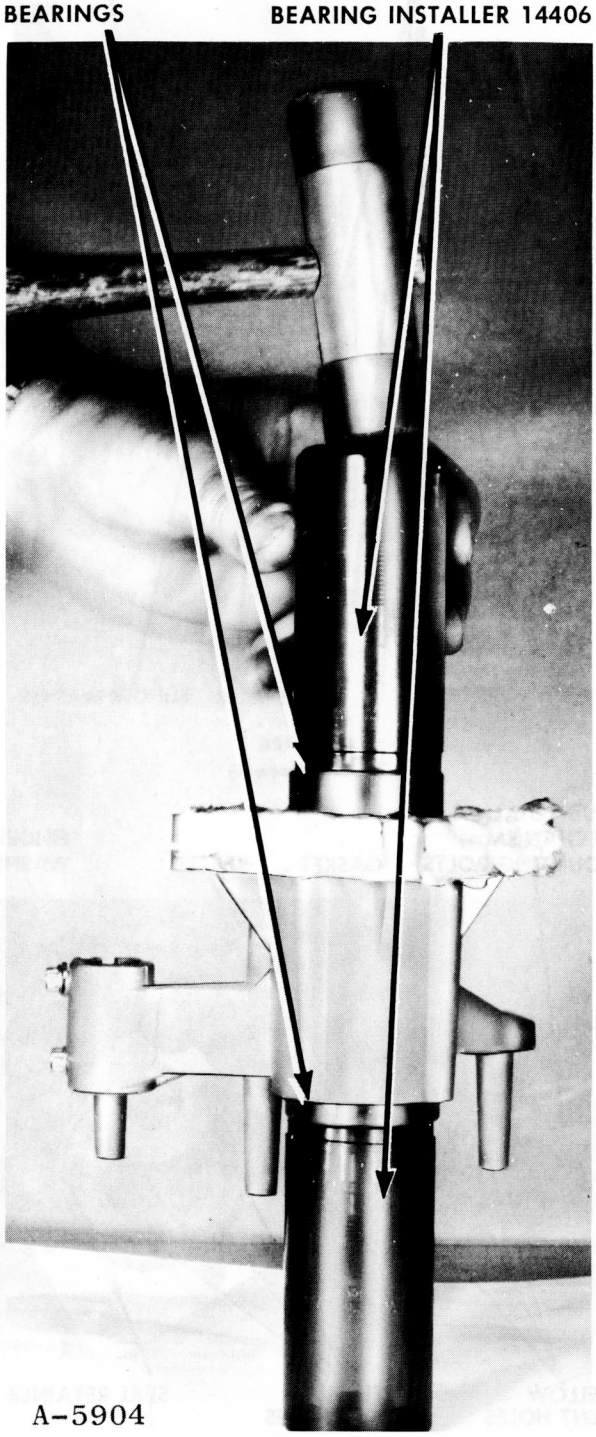


Figure 133
Installing Bearings

3. Remove the spin wheel and Procedure JJ, Fig. 104.
4. Remove the brake plate, Procedure KK, Fig. 121.
5. A. Remove the spin shaft from the support by striking the *bottom* end of the spin shaft with a rawhide or plastic mallet.
   B. Remove the bearing from housing.
   C. Remove the upper bearing from the spin shaft.

Note: To install the bearings in the mechanism support proceed as follows.

1. See Figure 133. Place the shaft and bearings in the mechanism support.
2. Place the bearing installer tool 14406 over the ends of the spin shaft.
3. Place the bottom installer on a solid surface and using a mallet, drive the bearings onto the spin shaft and into the retainer areas of the support.
4. Install brake plate, Procedure KK-2 and 3.
5. Assemble spin wheel and brake assembly, Procedure LL.
6. Replace the agitate arm.
7. Replace the mechanism into washer, using reassembly, Procedures NN.

QQ. Mechanism Support—Replacement:

1. Remove mechanism from washer procedure NN.
2. Remove spin shaft and bearings, Procedure PP.
3. Reassemble mechanism.

RR. Drive Pulley—Replacement:

1. Remove mechanism from washer, Procedure NN.
2. Loosen set screw and remove pulley from drive shaft, Figure 134.

SS. Drive Shaft and Bearings—Replacement:

1. Follow Procedure RR above.
2. Remove pump assembly from mechanism.
3. Pull drive shaft up through the bearings and drivers, Fig. 124.
4. Push lower bearing from pump support, Fig. 123.
5. Remove the screws and bearing from the mechanism support, Fig. 135.

Note: All reassembly is in reverse of disassembly unless a reassembly note is called out for a particular procedure or adjustment.

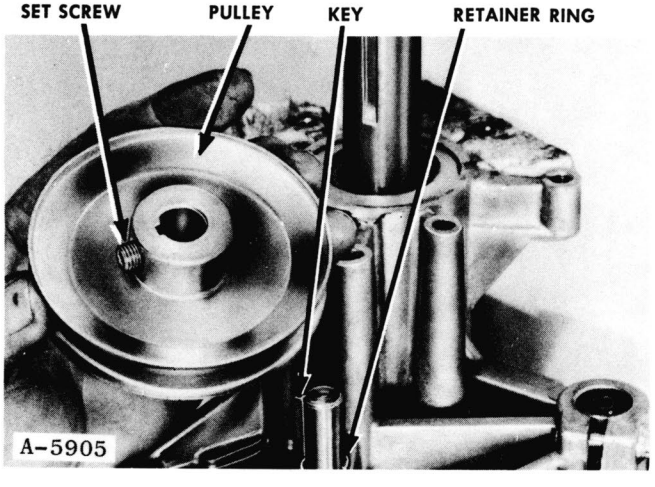


Figure 134
Removing Pulley

TT. Drain Sump Assembly—Replacement:

1. Remove cabinet shell, Procedure U.
2. Remove all hoses from sump.
3. Remove three mounting screws, Fig. 135A.
4. Remove O ring seal from sump.

Note: Apply a small amount of liquid detergent to the O-ring before placing in the retainer area.

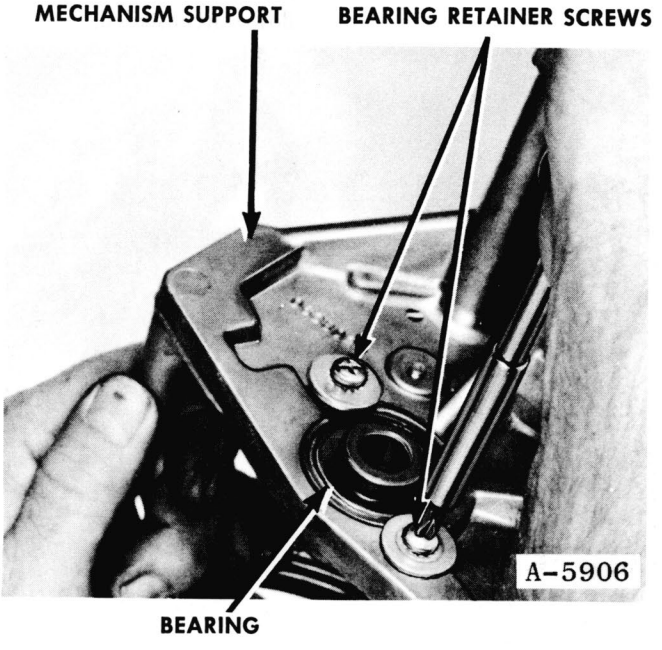


Figure 135
Replacing Drive Shaft Bearing

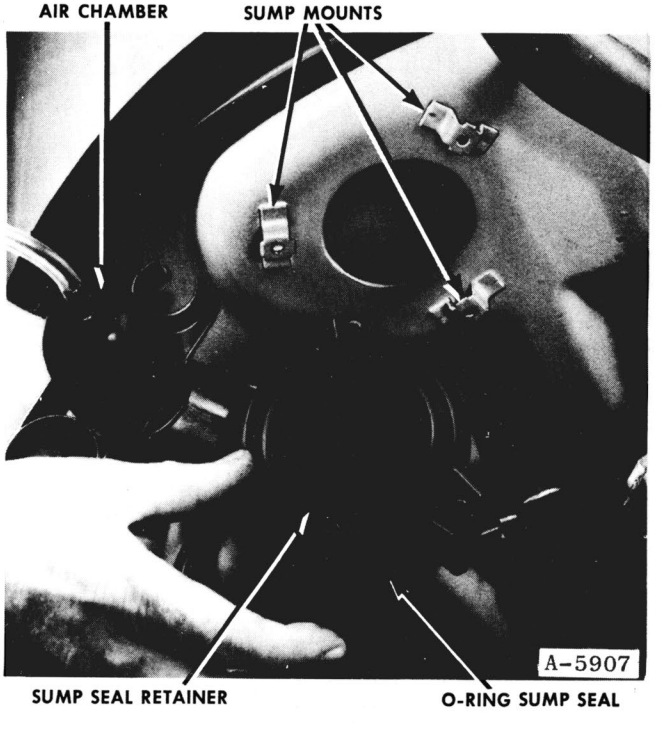


Figure 135A

UU. Skirt Overflow—Replacement:

1. Remove cabinet, Procedure U.
2. Place skirt in proper position and use masking tape to hold in place.
3. Use a piece of solid steel wire for a band and twist the ends together.
4. Remove masking tape and reassemble cabinet to washer.

VV. Outer Tub Assembly—Replacement:

1. Remove top, sub top, inner tub, cabinet shell and mechanism. Remove outer tub assembly from base.
2. Transfer all parts to replacement assembly.

Note: Service replacement assembly will come with the overflow skirt installed.

NOTES

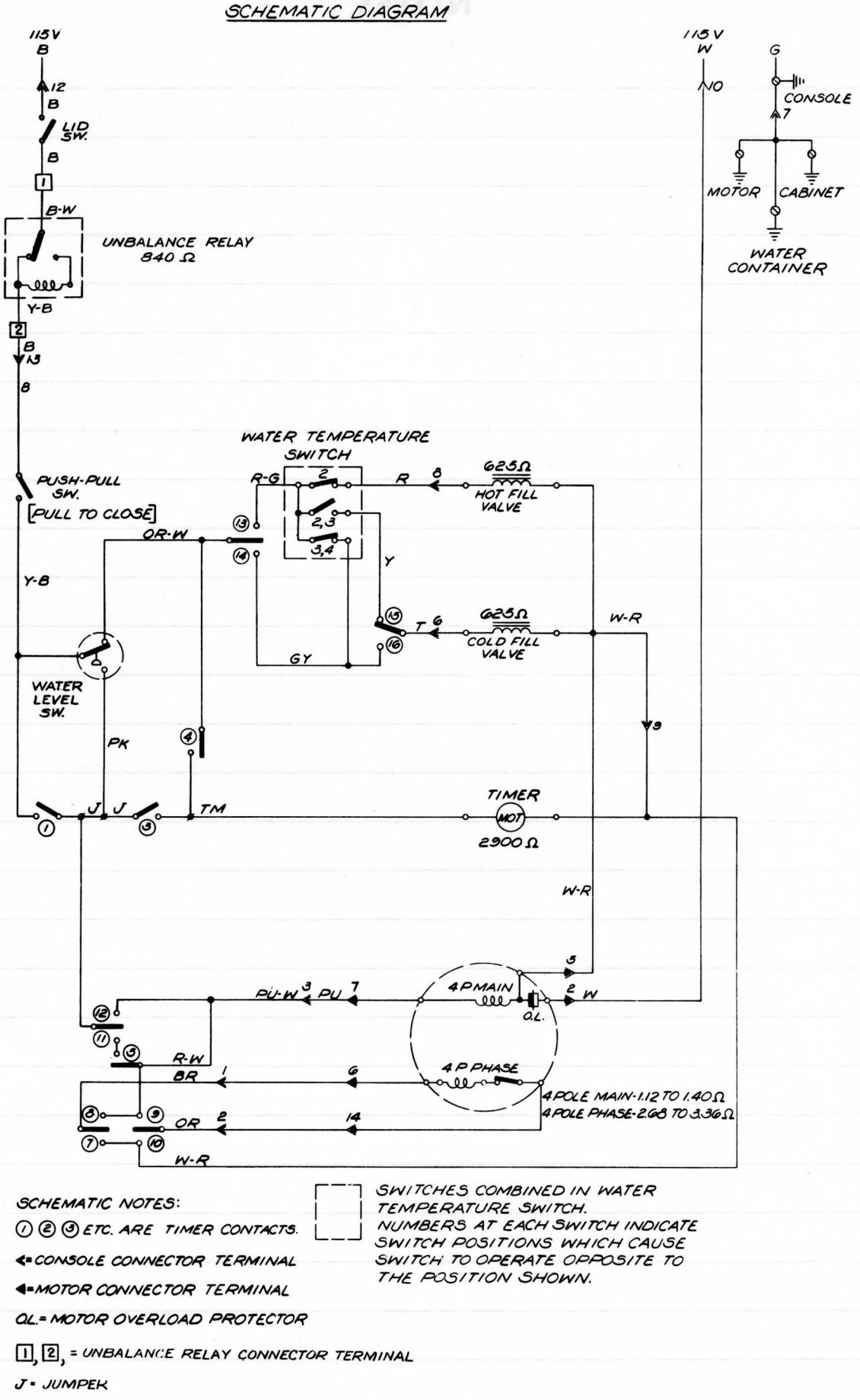
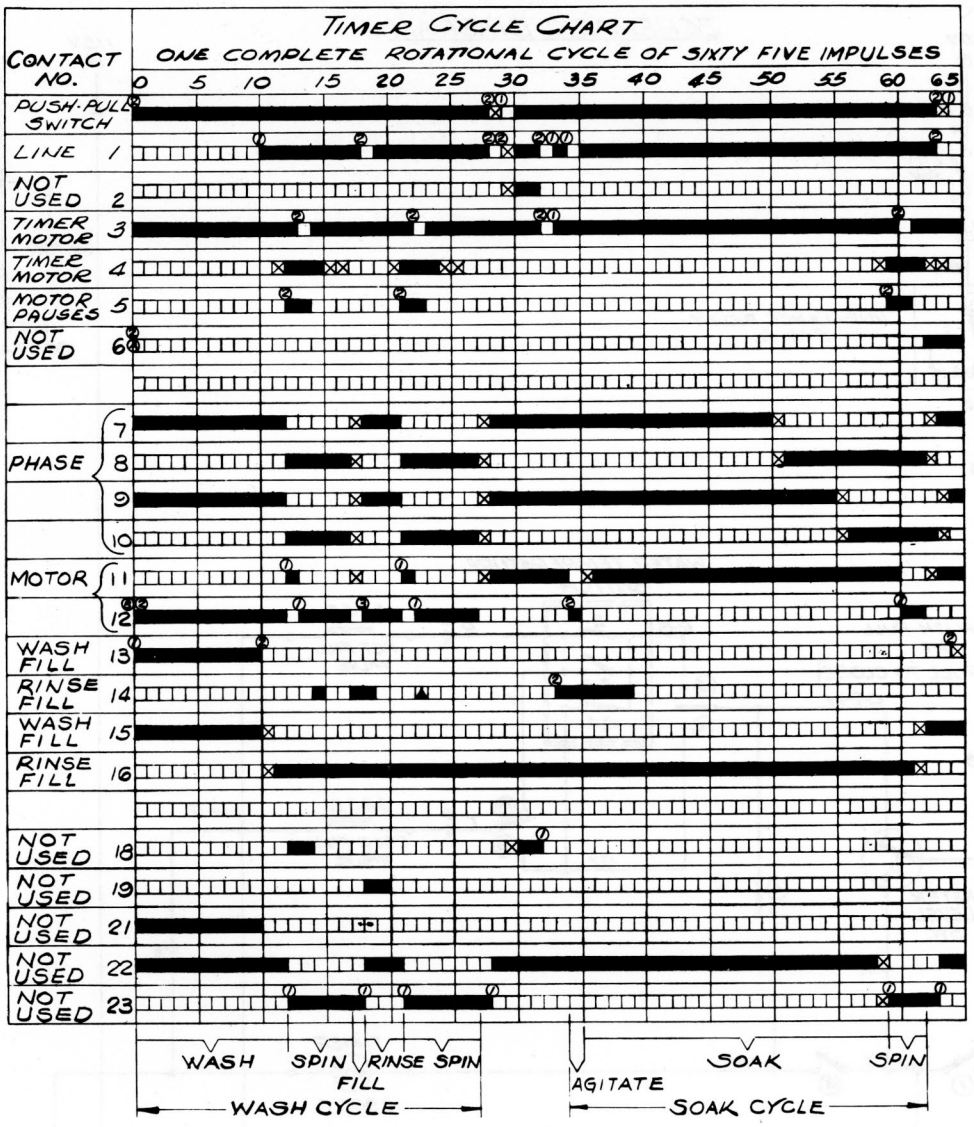


Figure 136
Schematic Diagram — Model WAS



FILLED IN AREAS INDICATE CONTACTS CLOSED

☒ = CONTACTS MAY BE OPEN OR CLOSED

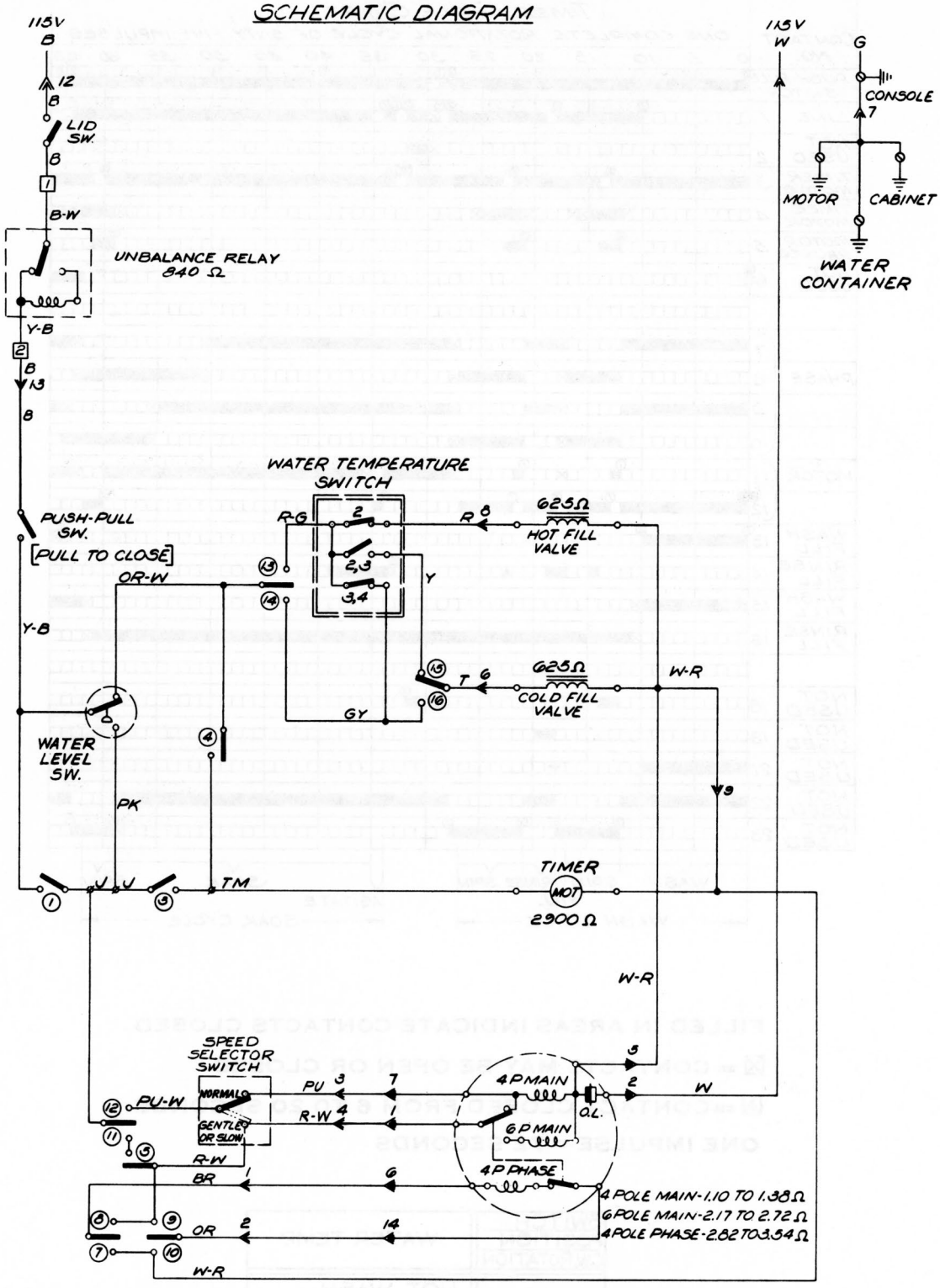
◭ = CONTACT CLOSED FROM 6 TO 20 SECONDS

ONE IMPULSE = 72 SECONDS

SWITCH POSITION C.W. ROTATION	WATER TEMP.
1	HOT WASH WARM RINSE
2	COLD WASH COLD RINSE
3	WARM WASH COLD RINSE
4	HOT WASH COLD RINSE

WATER TEMP. SWITCH

Figure 136-A
Timer Cycle and Switch Schematic Charts — Model WAS



SCHEMATIC NOTES:

①②③ ETC ARE TIMER CONTACTS.

◀= CONSOLE CONNECTOR TERMINAL

◀= MOTOR CONNECTOR TERMINAL

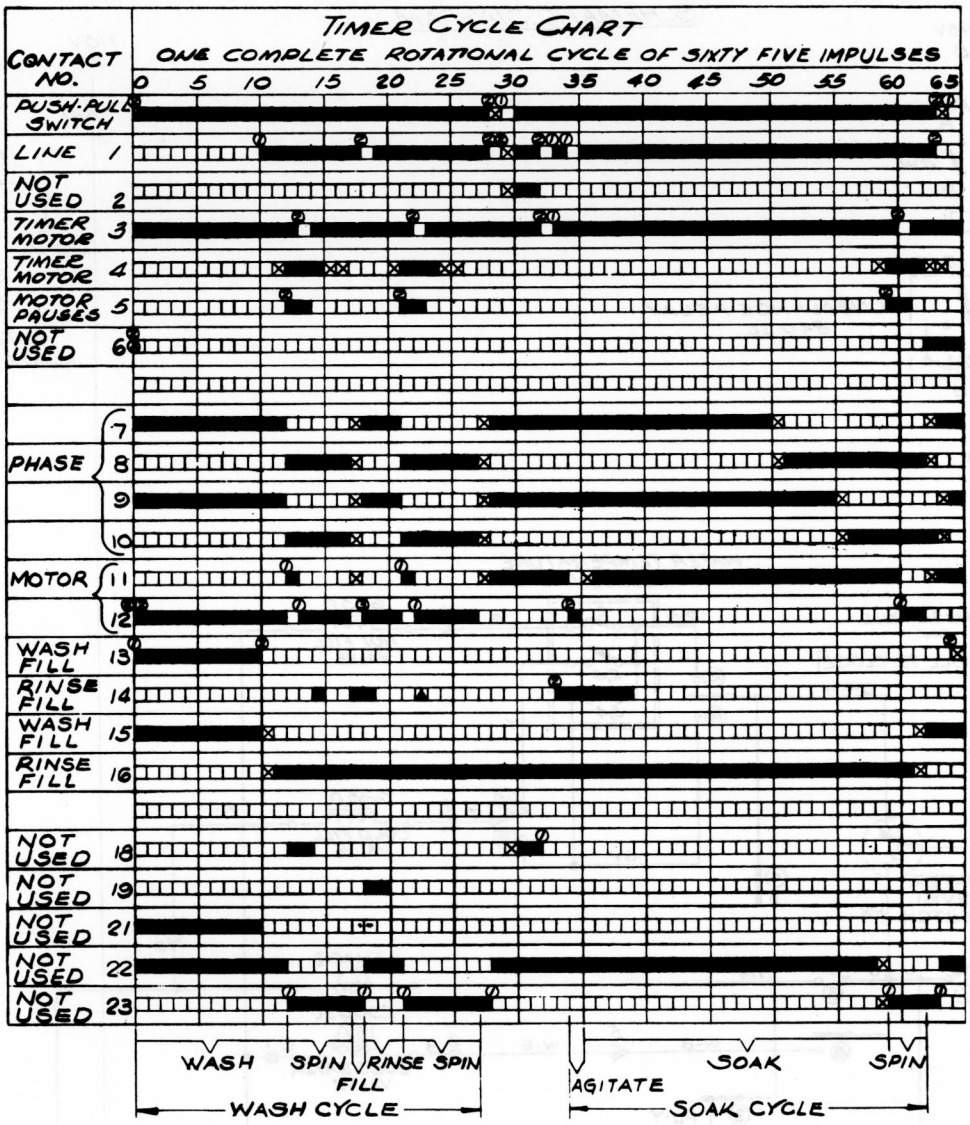
QL.= MOTOR OVERLOAD PROTECTOR

[1],[2] UNBALANCE RELAY CONNECTOR TERMINAL

J = JUMPER

SWITCHES COMBINED IN WATER TEMPERATURE SWITCH. NUMBERS AT EACH SWITCH INDICATE SWITCH POSITIONS WHICH CAUSE SWITCH TO OPERATE OPPOSITE TO THE POSITION SHOWN.

Figure 137
Schematic Diagram — Model WCDS



FILLED IN AREAS INDICATE CONTACTS CLOSED

⊠ = CONTACTS MAY BE OPEN OR CLOSED

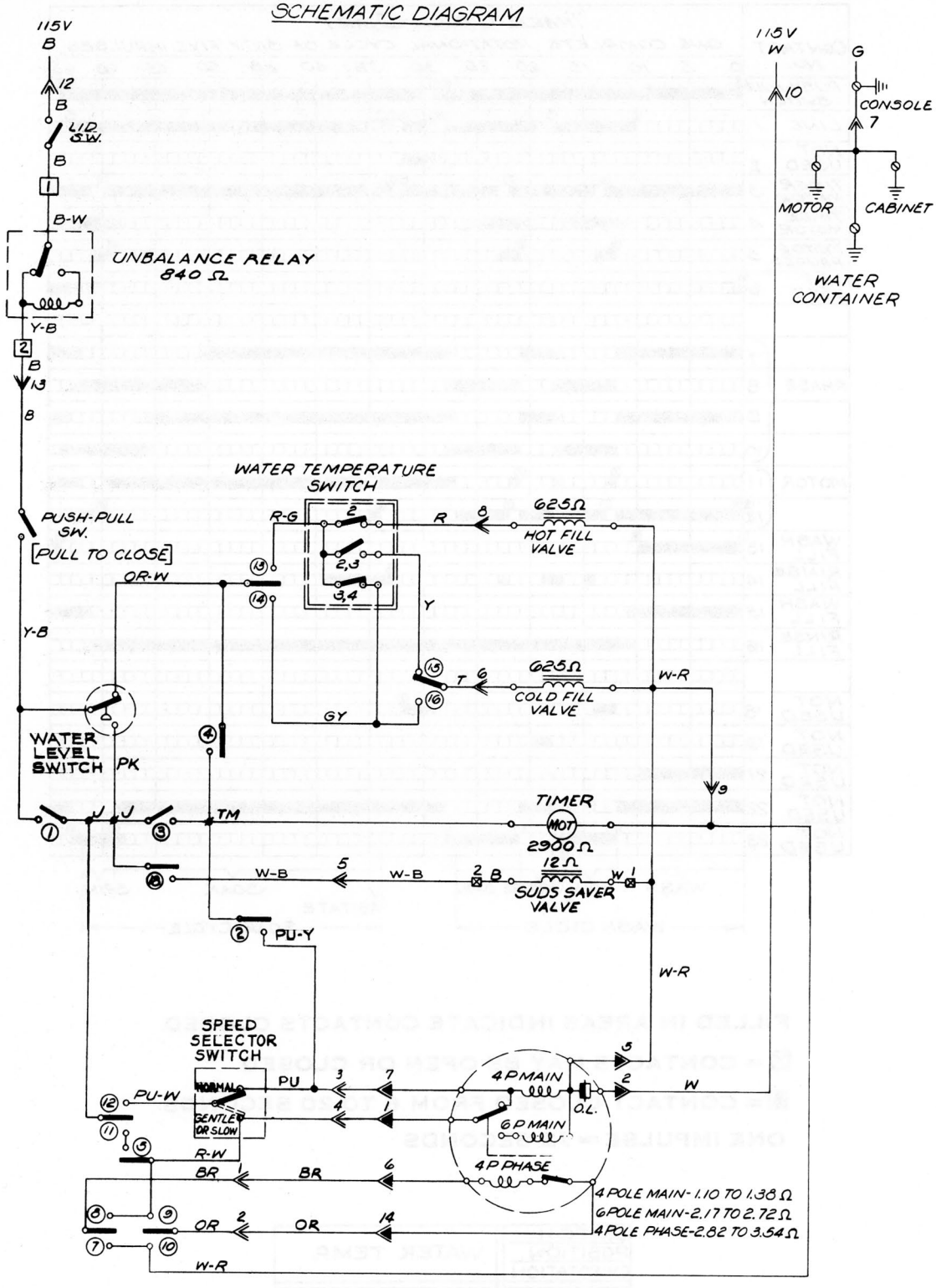
■ = CONTACT CLOSED FROM 6 TO 20 SECONDS

ONE IMPULSE = 72 SECONDS

SWITCH POSITION C.W. ROTATION	WATER TEMP.
1	HOT WASH WARM RINSE
2	COLD WASH COLD RINSE
3	WARM WASH COLD RINSE
4	HOT WASH COLD RINSE

WATER TEMP. SWITCH

Figure 137-A
Timer Cycle and Switch Schematic Charts — Model WCDS



SCHEMATIC NOTES:

①②③ ETC ARE TIMER CONTACTS

◀ = CONSOLE CONNECTOR TERMINAL

◀ = MOTOR CONNECTOR TERMINAL

O.L. = MOTOR OVERLOAD PROTECTOR

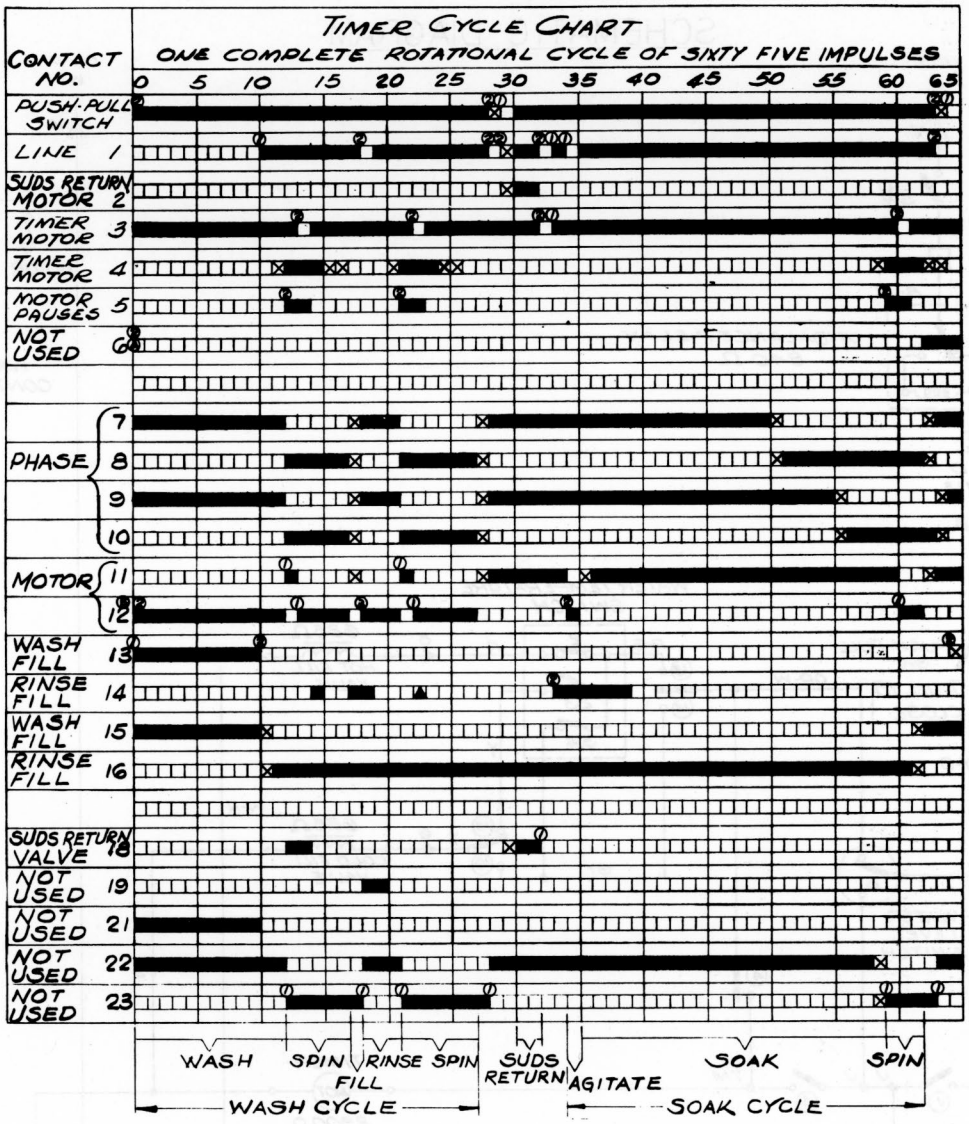
⊠ = SUDS SAVER VALVE CONNECTOR

[1], [2] = UNBALANCE RELAY CONNECTOR TERMINAL

J = JUMPER

SWITCHES COMBINED IN WATER TEMPERATURE SWITCH. NUMBERS AT EACH SWITCH INDICATE SWITCH POSITIONS WHICH CAUSE SWITCH TO OPERATE OPPOSITE TO THE POSITION SHOWN.

Figure 138
Schematic Diagram — Model WCDRS



FILLED IN AREAS INDICATE CONTACTS CLOSED

☒ = CONTACTS MAY BE OPEN OR CLOSED

▲ = CONTACT CLOSED FROM 6 TO 20 SECONDS

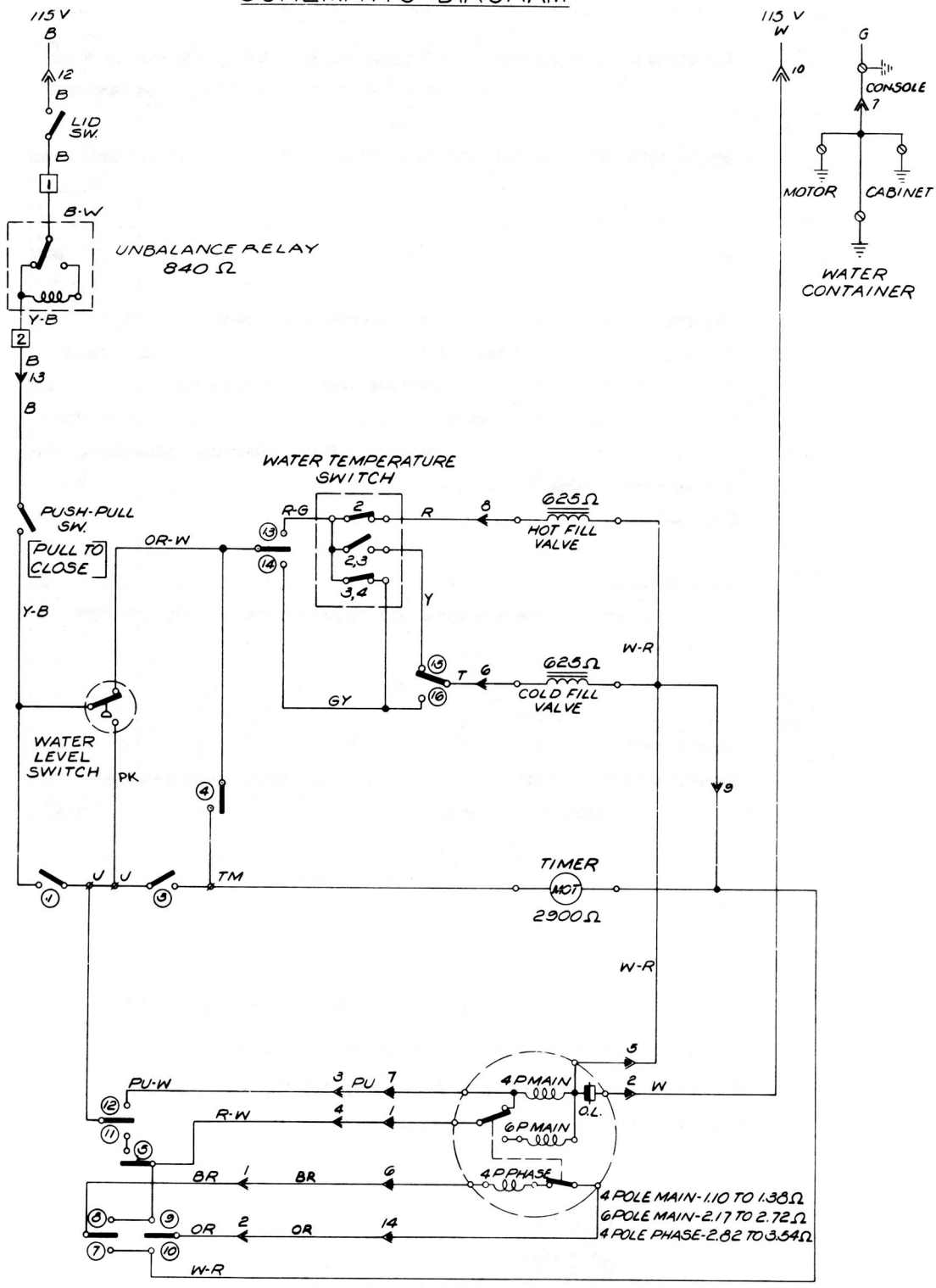
ONE IMPULSE = 72 SECONDS

SWITCH POSITION C.W. ROTATION	WATER TEMP
1	HOT WASH WARM RINSE
2	COLD WASH COLD RINSE
3	WARM WASH COLD RINSE
4	HOT WASH COLD RINSE

WATER TEMP. SWITCH

Figure 138-A
Timer Cycle and Switch Schematic Charts — Model WCDRS

SCHEMATIC DIAGRAM



SCHEMATIC NOTES:

① ② ③ ETC. ARE TIMER CONTACTS.

◀= CONSOLE CONNECTOR TERMINAL

◀= MOTOR CONNECTOR TERMINAL

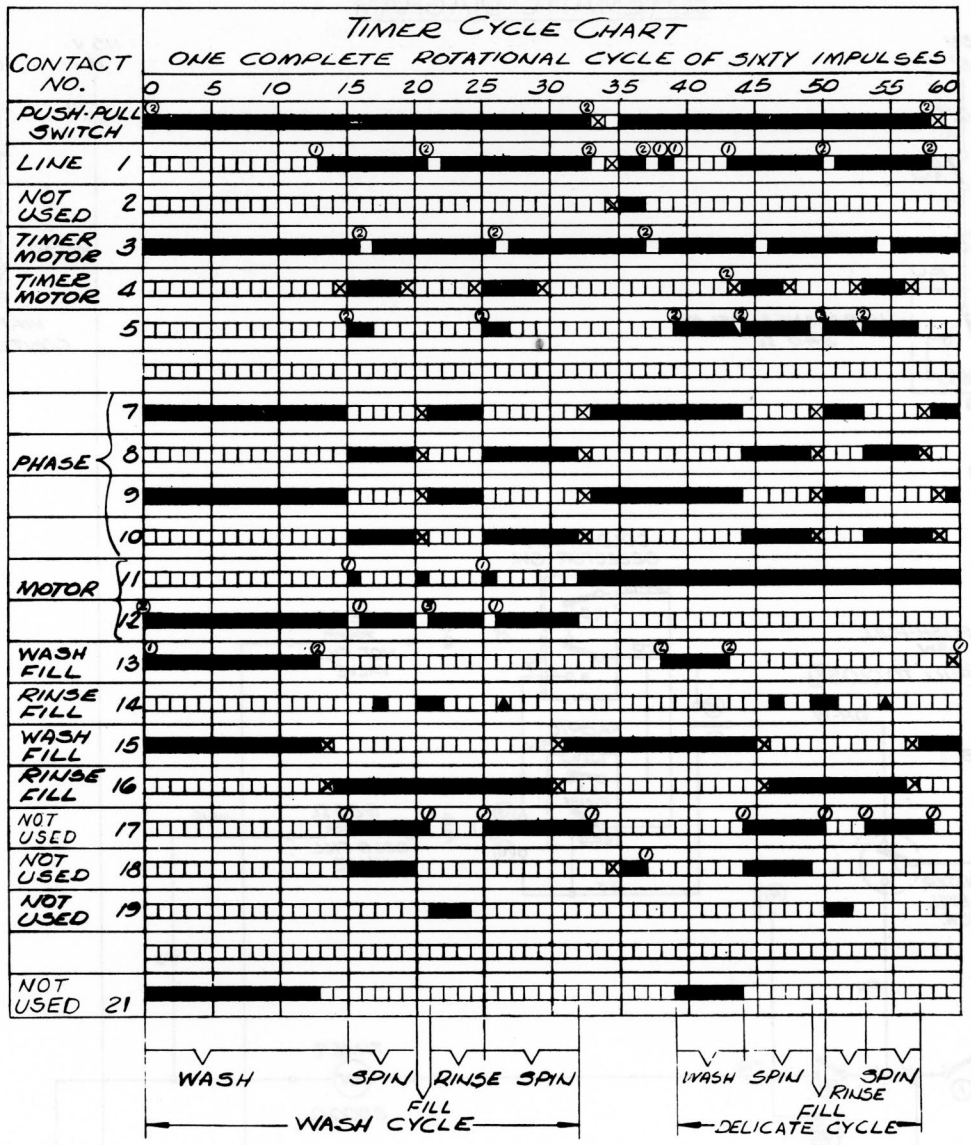
O.L.= MOTOR OVERLOAD PROTECTOR

1, 2, UNBALANCE RELAY CONNECTOR TERMINAL

J = JUMPER

SWITCHES COMBINED IN WATER TEMPERATURE SWITCH. NUMBERS AT EACH SWITCH INDICATE SWITCH POSITIONS WHICH CAUSE SWITCH TO OPERATE OPPOSITE TO THE POSITION SHOWN.

Figure 139
Schematic Diagram—Model WCDAS



FILLED IN AREAS INDICATE CONTACTS CLOSED

⊠ = CONTACTS MAY BE OPEN OR CLOSED

◭ = CONTACT CLOSED FROM 6 TO 20 SECONDS

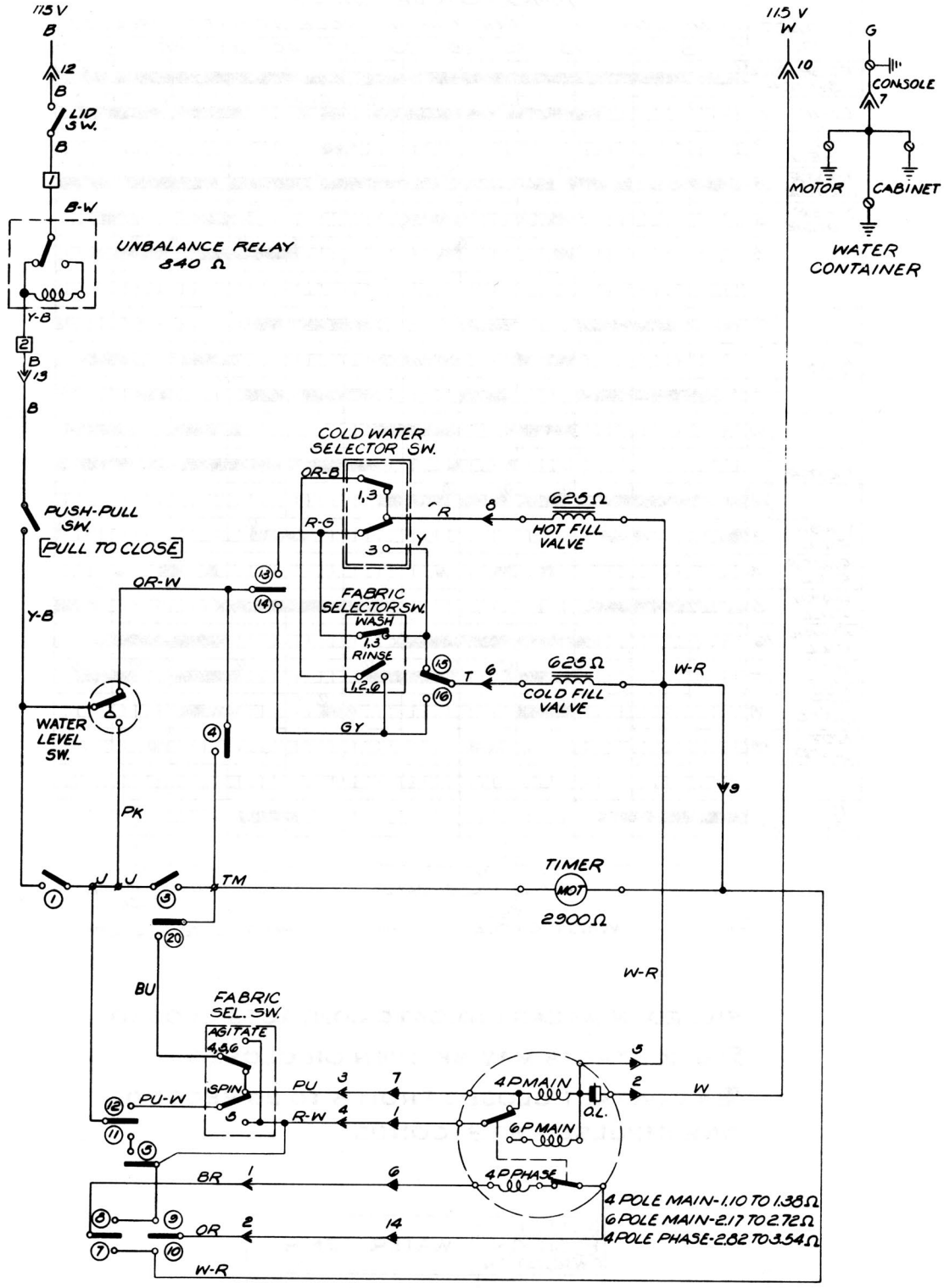
ONE IMPULSE = 60 SECONDS

SWITCH POSITION C.W. ROTATION	WATER TEMP.
1	HOT WASH WARM RINSE
2	COLD WASH COLD RINSE
3	WARM WASH COLD RINSE
4	HOT WASH COLD RINSE

WATER TEMP. SWITCH

Figure 139-A
Timer Cycle and Switch Schematic Charts — Model WCDAS

SCHEMATIC DIAGRAM



SCHEMATIC NOTES:

① ② ③ ETC. ARE TIMER CONTACTS.

SWITCHES COMBINED IN FABRIC SELECTOR SWITCH.

SWITCHES COMBINED IN COLD WATER SWITCH.

◀ = CONSOLE CONNECTOR TERMINAL

◀ = MOTOR CONNECTOR TERMINAL

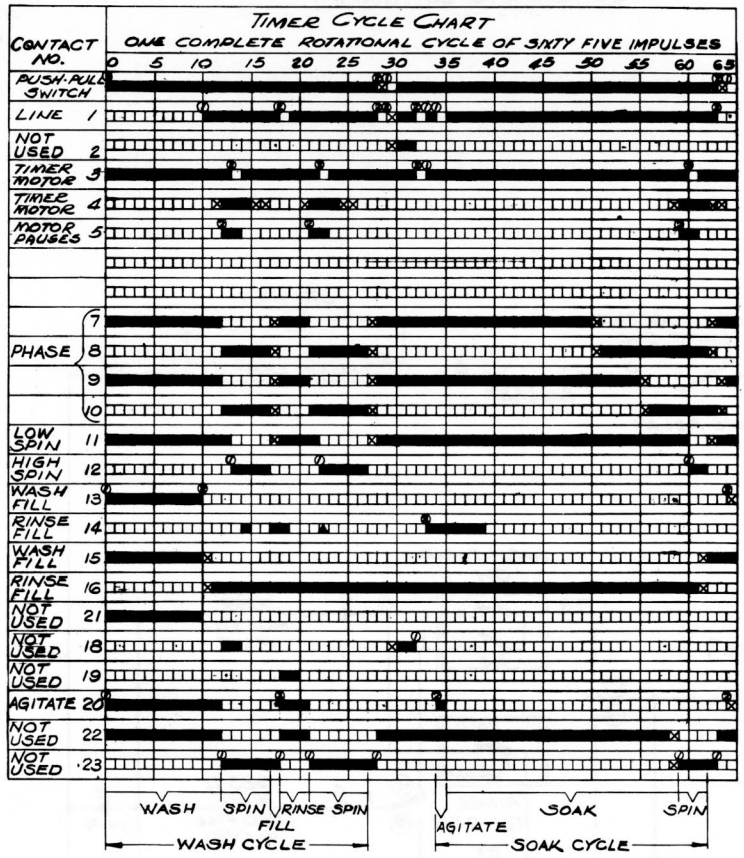
OL = MOTOR OVERLOAD PROTECTOR

1, 2 = UNBALANCE RELAY CONNECTOR TERMINAL

J = JUMPER

NUMBERS AT EACH SWITCH INDICATE SWITCH POSITIONS WHICH CAUSE SWITCH TO OPERATE OPPOSITE TO THE POSITION SHOWN.

Figure 140
Schematic Diagram — Model WIAS



FILLED IN AREAS INDICATE CONTACTS CLOSED

☒ = CONTACTS MAY BE OPEN OR CLOSED

▲ = CONTACT CLOSED FROM 6 TO 20 SECONDS

ONE IMPULSE = 72 SECONDS

SWITCH POSITION C.W. ROTATION	FABRICS	WASH TEMP.	RINSE TEMP.	WASH SPEED	SPIN SPEED	SOAK TEMP.
1	REGULAR WHITE & COLORFAST	H	W	N	N	W
2	REGULAR NON-COLORFAST	W	W	N	N	W
3	STURDY PERMANENT PRESS	H	C	N	N	C
4	DELICATE PERMANENT PRESS	W	C	G	N	C
5	DELICATE	W	C	G	S	C
6	SPECIAL	W	W	G	N	W

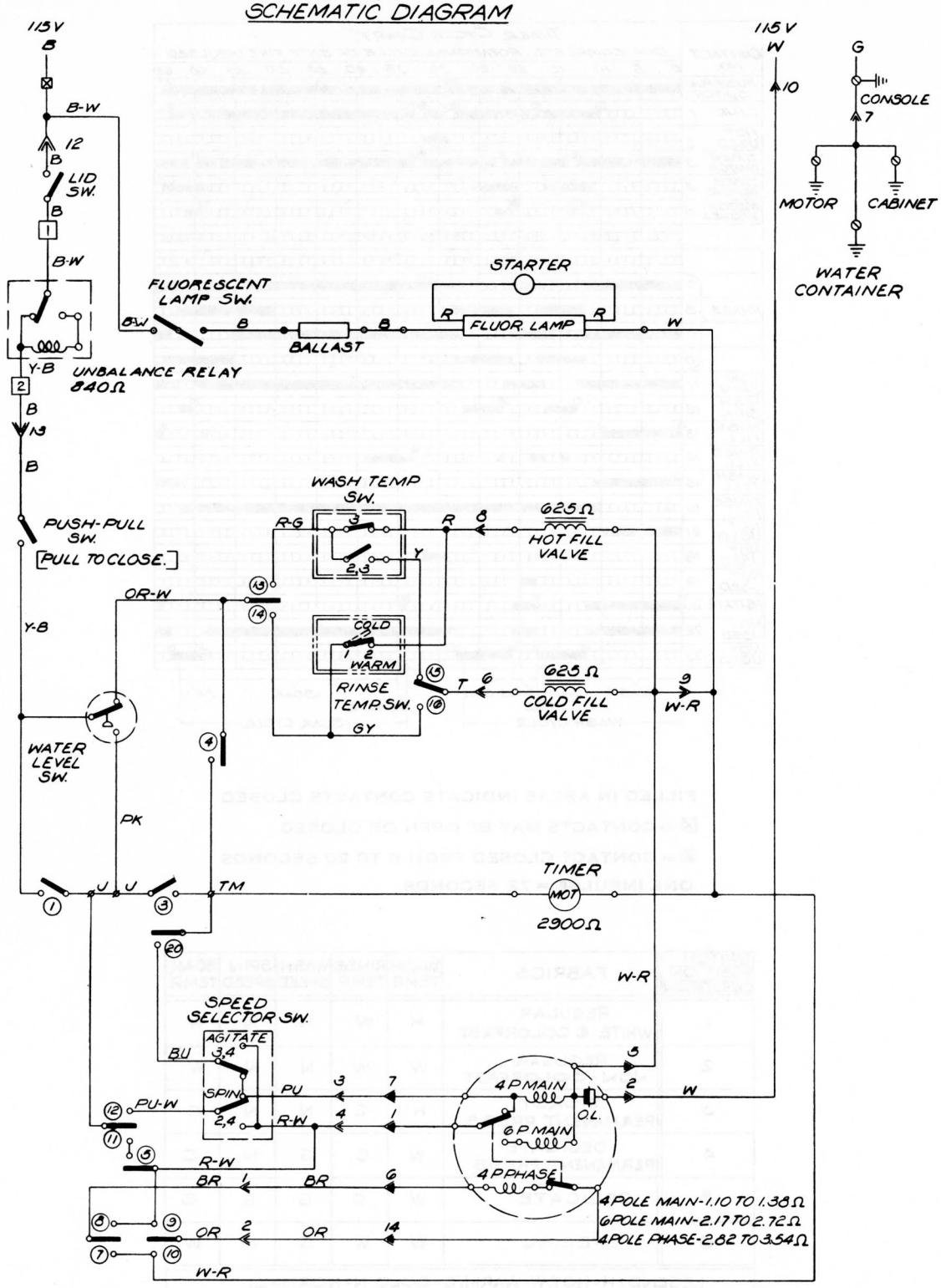
LEGEND: H = HOT, W = WARM, C = COLD, N = NORMAL, G = GENTLE, S = SLOW

FABRIC SELECTOR SWITCH

SWITCH POSITION C.W. ROTATION	COLD WATER
1	SOAK, RINSE
2	NORMAL
3	SOAK, WASH, RINSE

COLD WATER SWITCH

Figure 140-A
Timer Cycle and Switch Schematic Charts — Model WIAS



SCHEMATIC NOTES:

① ② ③ ETC. ARE TIMER CONTACTS.

⋖ = CONSOLE CONNECTOR TERMINAL

◁ = MOTOR CONNECTOR TERMINAL

OL. = MOTOR OVERLOAD PROTECTOR

⊠ = SPLICE CONNECTOR

1, 2, = UNBALANCE RELAY CONNECTOR TERMINAL

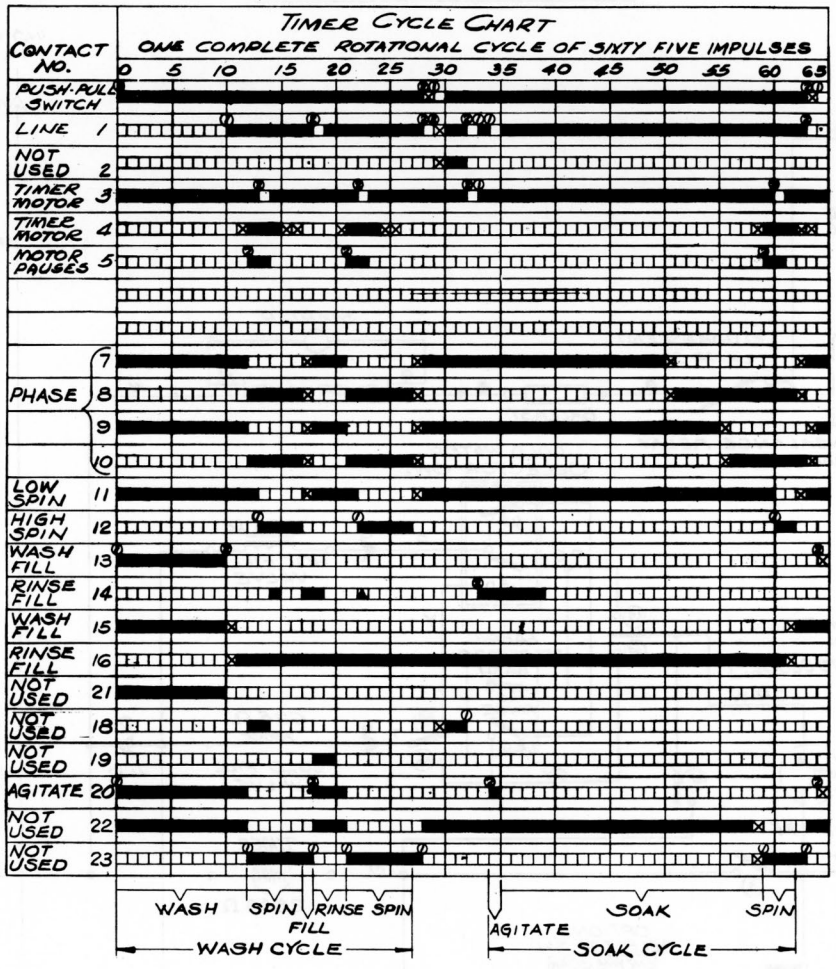
J = JUMPER

SWITCHES COMBINED IN SPEED SELECTOR SWITCH.

SWITCHES COMBINED IN WASH TEMPERATURE SWITCH.

NUMBERS AT EACH SWITCH INDICATE SWITCH POSITIONS WHICH CAUSE SWITCH TO OPERATE OPPOSITE TO THE POSITION SHOWN.

Figure 141
Schematic Diagram — Model WIS



FILLED IN AREAS INDICATE CONTACTS CLOSED

⊠ = CONTACTS MAY BE OPEN OR CLOSED

◭ = CONTACT CLOSED FROM 6 TO 20 SECONDS

ONE IMPULSE = 72 SECONDS

SWITCH POSITION C.W. ROTATION	SPEED
1	NORMAL AGITATE NORMAL SPIN
2	NORMAL AGITATE SLOW SPIN
3	GENTLE AGITATE NORMAL SPIN
4	GENTLE AGITATE SLOW SPIN

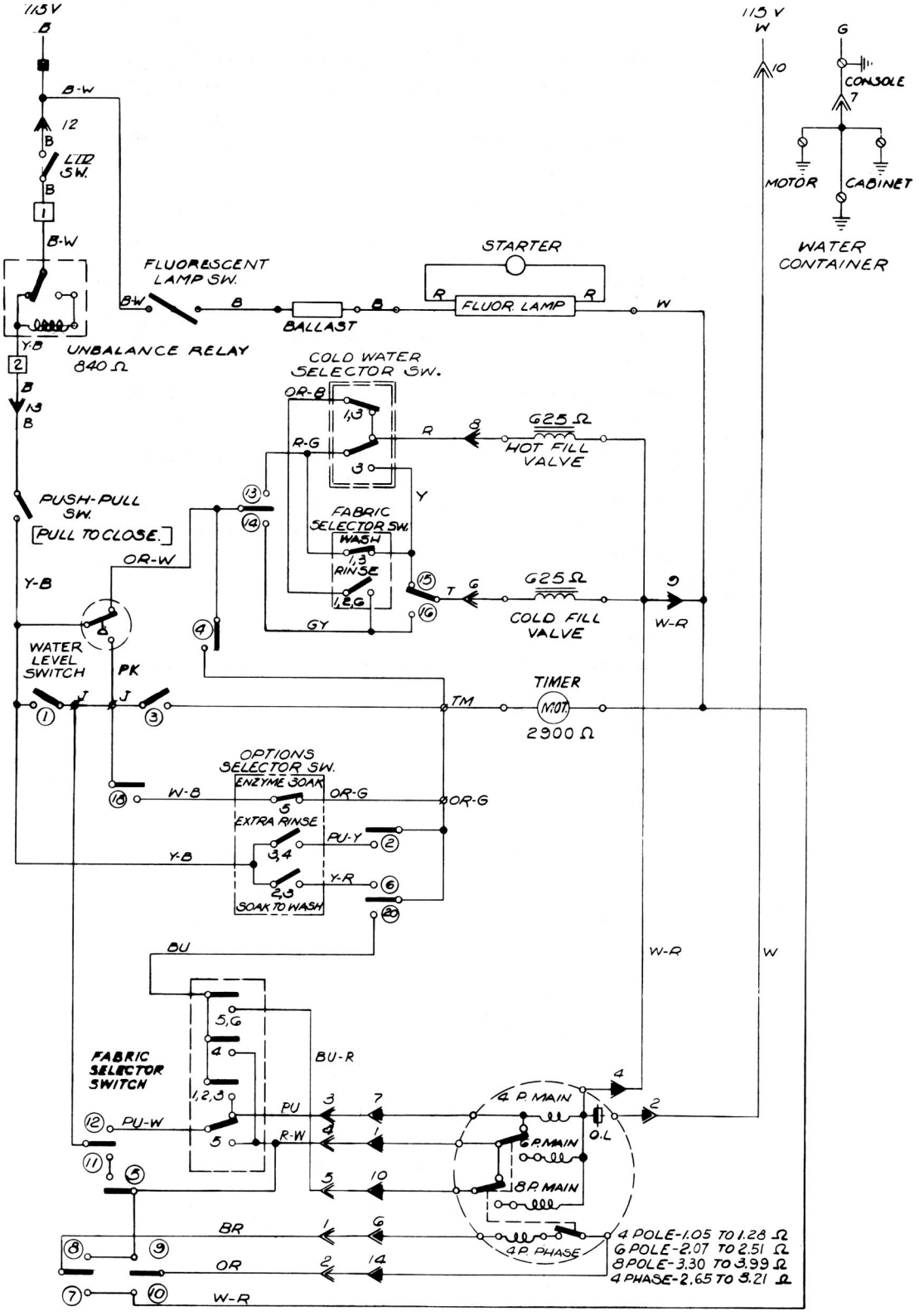
SPEED SWITCH

SWITCH POSITION C.C.W. ROTATION	WASH TEMP
1	HOT
2	WARM
3	COLD

WASH TEMP. SWITCH

Figure 141-A
Timer Cycle and Switch Schematic Charts — Model WIS

SCHEMATIC DIAGRAM



SCHEMATIC NOTES:

① ② ③ ETC. ARE TIMER CONTACTS.

◀ = CONSOLE CONNECTOR TERMINAL

◀ = MOTOR CONNECTOR TERMINAL

O.L. = MOTOR OVERLOAD PROTECTOR

■ = SPLICE CONNECTOR

[1], [2], = UNBALANCE RELAY CONNECTOR TERMINAL

J = JUMPER

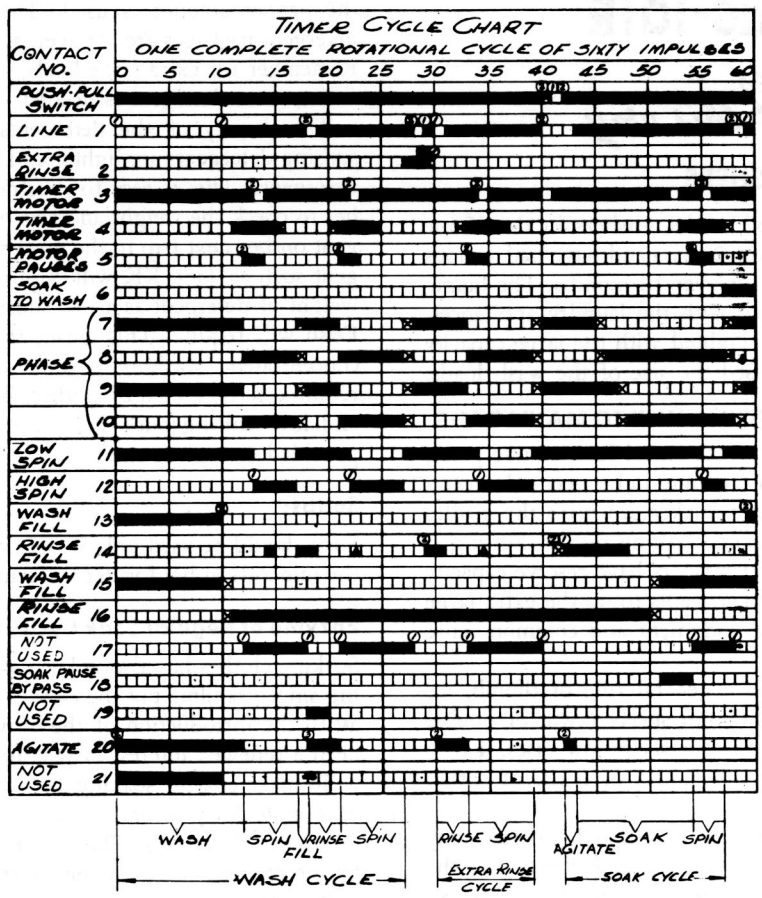
SWITCHES COMBINED IN FABRIC SELECTOR SWITCH.

SWITCHES COMBINED IN COLD WATER SWITCH.

SWITCHES COMBINED IN OPTIONS SWITCH.

NUMBERS AT EACH SWITCH INDICATE SWITCH POSITIONS WHICH CAUSE SWITCH TO OPERATE OPPOSITE TO THE POSITION SHOWN.

Figure 142
Schematic Diagram — Model WCIS



FILLED IN AREAS INDICATE CONTACTS CLOSED

⊠ = CONTACTS MAY BE OPEN OR CLOSED

◪ = CONTACT CLOSED FROM 6 TO 20 SECONDS

ONE IMPULSE = 72 SECONDS

SWITCH POSITION C.W. ROTATION	FABRICS	WASH TEMP.	RINSE TEMP.	WASH SPEED	SPIN SPEED	SOAK TEMP.
1	REGULAR WHITE & COLORFAST	H	W	N	N	W
2	REGULAR NON-COLORFAST	W	W	N	N	W
3	STURDY PERMANENT PRESS	H	C	N	N	C
4	DELICATE PERMANENT PRESS	W	C	G	N	C
5	HAND WASHABLES	W	C	H-W	S	C
6	SPECIAL	W	W	H-W	N	W

LEGEND: H=HOT, W=WARM, C=COLD, N=NORMAL, G=GENTLE, H-W=HAND WASH, S=SLOW

FABRIC SELECTOR SWITCH

SWITCH POSITION C.W. ROTATION	COLD WATER
1	SOAK, RINSES
2	NORMAL
3	SOAK, WASH, RINSES

COLD WATER SWITCH

SWITCH POSITION C.W. ROTATION	OPTIONS
1	NORMAL
2	REG. SOAK & WASH
3	REG. SOAK WASH & EXTRA RINSE
4	WASH & EXTRA RINSE
5	ENZYME SOAK

OPTIONS SWITCH

Figure 142-A
Timer Cycle and Switch Schematic Charts — Model WCIS

Home Ec-Talk

The Ladies look at it this way

WASHERS

We have been testing the "S" model washers in the Home Economics Department for over 2 years and have had various prototypes on tests in homes for over 18 months. The homemakers have been very pleased with the laundry appliances. They have been particularly delighted with the large capacity tub and generally have increased the size of the wash loads.

LARGE TUB + LOAD SELECTOR = MINI TO MAXI LOADS

The large 1-18 washer can wash the mini load of one piece, the maxi load of 18 pounds or anything in between. However, this does not mean that the homemaker can wash the girdles with the blue jeans and get good washing results. Sorting is still important. The "S" model washers have reserve capacity built in for when the homemaker wants to do the extra large loads. But she must use some judgment and common sense to get a good clean wash.

What is a MAXI load? As a general rule of thumb, we recommend no more than six cotton sheets (twin or double size) to a load. To these add five or six pillow cases, 4 to 6 bathtowels, a ½ dozen face cloths and 5 or 6 sets of cotton underwear.

For king or queen size sheets, the load should contain only 2 king or queen size sheets, 2 twin or double sheets plus the pillowcases, bathtowels, face cloths and underwear. When washing permanent press sheets, smaller loads are recommended since these items need more room to open and move so that the wrinkles as well as dirt will be removed. Wash four permanent press sheets plus pillowcases and several bathtowels in one load.

LARGER LOADS = MORE DETERGENT NEEDED

With the larger tub, women will wash slightly larger loads. Therefore, the amount of detergent should be increased to match the increased load size. Although the "S" model washers do an excellent job of removing soil, detergent is necessary to hold the soil in suspension and to prevent redeposition. The amount of detergent needed depends on the amount and type of soil, temperature of the water and the hardness of the water.

DETERGENT USAGE
Average size load (6 to 8 pounds)

NORMAL Load Selector setting
(approx. 17 gallons water)

	HIGH SUDSERS	LOW SUDSERS
Heavy soil	1½ to 2 cups	1¼ to 1½ cups
Normal soil	1¼ to 1½ cups	¾ to 1 cup
Light soil	¾ to 1 cup	½ to ¾ cup

Note: Increase amount of detergent by 25% (¼) if water hardness is over 18 grains.

Detergents are not all alike; each one is different and therefore, it is necessary to follow package directions to be sure the proper amount is used. The directions given on most detergent packages are for average size loads with normal soil. Remember for extra large loads, extra heavy soil or very hard water, more detergent is needed.

The density of the detergents vary with the type. The sudsing detergents are lighter and fluffier than the low sudsing detergents. This is easy to illustrate to the homemakers. Ask her to check the weight and size of several packages of detergent on her next trip to the grocery store. High sudsing detergent such as Tide XK will require a larger box for the same weight of detergent as a low sudsing detergent such as All or Dash will require. This means that the low sudser has more concentrated "washing power," and therefore, less will be required to do a load of clothes. Both high sudsing detergents and low sudsing ones do an excellent job of removing dirt provided enough is used.

Soaps:

Soap should be used only in soft water since it will react with the minerals in hard water to form soap curd or scum.

Enzyme or Regular Soak Cycle:

Soaking clothes has always been an important part of laundering since grandma put the clothes in to soak on Sunday night. With the introduction of the enzyme laundry aids, there has been a renewed interest in soaking clothes.

To make enzyme soaking as convenient as possible, a longer 30-minute Enzyme or Regular Soak Cycle has been included on most "S" models. This is the soaking time recommended by the manufacturers of the enzyme laundry aids.

Women have many questions about enzymes. Here are a few of the more frequently asked.

• *Are enzymes harmful to the washer?* No Enzymes cannot and do not react with the porcelain enamel finish of the tub or with any other material used in the Frigidaire washer. Soaking with the enzyme laundry aids will have no more effect on the porcelain enamel of the tub than soaking with any other normal laundry aid.

• *Are enzymes harmful to any fibers?* No. Enzymes are very selective. A particular enzyme will catalyze only one specific reaction. The enzymes in the laundry aids will react with the type of proteins found in food stains and some body soils. They will not react with the proteins in wools and silks. Therefore, these new laundry aids can be used on all types of fabrics.

• *Do enzymes work on all stains?* In general, these enzyme products are of the greatest help in removing the types of protein found in food stains—such as chocolate, gravies, baby formula, egg and many more. Enzymes will work well on grass stains, on blood stains, on much of the body soil on garments, such as collar and cuff lines on men's shirts. Enzymes used in laundry products do not work on fatty soils nor on inorganic soils like rust or ink.

• *How long should an enzyme soak be?* It depends on the soil. A good job can be accomplished in 30 minutes.

• *What temperature should be used for soaking?* Warm water is best—100-105°. The enzymes will work better in warm than in cold water and warm water will not set stains as hot water might.

Sanitize Cycle:

By using the Sanitize setting on the "S" Model Washers, homemakers can help prevent the spread of illness through

their families. There are some bacteria that are not killed at temperatures below 140°F. And many loads of clothes are washed in water much cooler than that. As a precaution against spreading bacteria from one wash load to another, the washer can be sanitized with liquid chlorine bleach.

To use the Sanitize setting, the homemaker uses 1½ cups liquid chlorine bleach, the Mini Load Selector setting, a warm rinse and sets the Timer at + SANITIZE. The washer will fill, agitate and spin out. It is recommended that this procedure be used just before using the washer for most effective results.

Additional information about sanitizing can be found in the U.S. Department of Agriculture's Home and Garden Bulletin No. 97, "Sanitation in Home Laundering."

WATER TEMPERATURE AND FABRICS

Water temperature is very important since it affects soil removal, dye stability and wrinkling. Hot water gives the quickest and the best cleaning results. Wash water temperature should be as hot as is safe for the fabric and dye.

Rinse water has a temperature, too. With the increased use of thermoplastic fibers and finishes, rinse water temperature is extremely important since it directly affects wrinkling.

WATER TEMPERATURE GUIDE

YELLOWING

Yellowing of the center of sheets and pillowcases or other items is usually caused by an accumulation of body oils or other oily type soil over a long period of time. If the hems of sheets and pillowcases are white, then the washing procedure is not correct.

Cause:

1. Insufficient detergent to remove the accumulated soil.
2. Wash water temperature not hot enough.
3. Too short a wash time.

Solution:

Increase the amount of detergent. If a high sudsing detergent produces too many suds, change to a low sudsing one. Suds level does not necessarily indicate that the correct amount of detergent has been used. Sudsing varies with the type of detergent.

Wash water temperature should be at least 140°F.

Use full wash time and be sure washer is not overloaded.

Remedy:

Clothes that have yellowed will probably never regain the original whiteness. However, the appearance can be improved and the accumulated soil removed by using a concentrated detergent soak.

1. Fill washer with just enough hot water (140°F. to 160°F.) to cover the clothes to be soaked.
2. Add 3 to 4 cups detergent and 1 cup oxygen type bleach. If water is hard, add enough Calgon to soften the water before adding the detergent and bleach.
3. Soak clothes overnight. Then spin out detergent water.
4. Wash clothes in regular wash cycle using hot water and enough Calgon to soften the water. Do not add detergent or soap to wash. If clothes are extremely yellow, it may be necessary to add ½ to ¾ cup of liquid chlorine bleach.

YELLOW OR BROWN SPOTS OR STREAKS

Cause

Mineral in water. Yellow or brown stains are characteristic of iron or mangenese in the water.

Solution:

Small amount of iron in water: Add Calgon to both the wash and rinse. Allow washer to fill with water before loading with clothes.

High iron content in water: Install a mechanical water softener and/or iron filter.

Do not use chlorine bleach in water containing iron since this bleach will aggravate the condition.

Remedy:

Iron or manganese stains may be removed from items with oxalic acid solution (3 tablespoons oxalic acid per pint of warm water) or with a commercial rust remover.

DO NOT USE OXALIC ACID OR RUST REMOVERS IN THE WASHER OR ON THE TOP OF THE WASHER. THEY WILL DAMAGE THE FINISH OF THE PORCELAIN.

"TATTLETALE" GRAY

Causes:

Repeated washings in one or more of the following conditions.

1. Water temperature too low
2. Too little detergent
3. Use of soap in hard water without water conditioner in wash and rinse
4. Improper sorting—heavily soiled and lightly soiled clothes in same load
5. Infrequent washing resulting in build-up of soil

Solution:

Increase water temperature. For heavily soiled clothes hot water should be at least 140°F. Use adequate detergent to hold soil in suspension to prevent redeposition. In hard water areas, use water conditioners in both the wash and rinse to prevent soap scum from forming.

Sort white clothes from colored clothes that may fade during washing.

Remedy:

Grayed clothes will never regain original whiteness, however, reconditioning in a concentrated detergent soak will remove the accumulated soil and improve the appearance.

"GREASY" STAIN WITH WAXY FEEL

Cause:

Probably fabric softener added to wash water rather than rinse water. Fabric softeners will react with detergents, bleaches and other laundry aids to form a "greasy-waxy" scum which stains the clothes. The stain looks like a grease stain but feels waxy.

Solution:

Be sure fabric softener is added to the rinse water.

Remedy:

To remove stain, wash clothes in hot water with 1½ to 2 cups laundry SOAP such as Fels Naptha or Duz. If the water is hard, be sure to use water conditioner in the wash and rinse to prevent soap scum from forming.

TEARS OR HOLES IN CLOTHES

Cause:

Improper use of chlorine bleach. Bleach damage occurs when concentrated chlorine bleach comes in direct contact with the fabric or is not completely rinsed out. Holes or tears may show up immediately or not for several washings, depending upon the extent of the damage. However, each time the fabric is laundered the fibers become weaker and finally break.

Solution:

Be sure bleach is used only in the soak or wash.

Be sure concentrated bleach is not poured directly into the tub.

Use the Bleach Dispenser or dilute the chlorine bleach before adding to the wash.

Be sure to wipe up bleach spills on the countertops, work surfaces and washer lid.

Cause:

Other household cleaners and chemicals.

Solution:

Cleaners and scouring powders containing chlorine can damage fabric if it is not rinsed out. Do not put cleaning cloths used with such cleaners in clothes hampers. Battery acid, varnish removers, brush cleaners and other chemicals should be used with caution.

Cause:

Objects left in pockets may cause holes in clothes.

Solution:

Check for coins, nails, rocks, screws, nuts and bolts, etc.

Cause:

Age of fabric. All fabrics weaken and wear with age. How old is the garment? Curtains and draperies can become "sun damaged" in just a few months. The rays from the sun plus atmospheric conditions can weaken fabrics to the extent that they will shred during washing even with the minimum amount of agitation.

Cause:

Failure to mend rips and tears, hook hooks and close zippers before laundering.

Cause:

Rough spots or burr on screw heads in tub, chipped porcelain enamel, burr on tub.