

BELT WASHER OPERATION GUIDE

Parts & Service 800-331-6870

DougMac.com



Congratulations, and thank you for choosing the CYCLONE Belt Washer. When properly operated and maintained, your belt washer will provide years of efficient, trouble free belt washing. We ask that you familiarize yourself with the operation and maintenance information in this manual to maximize the effectiveness of your belt washer.

OVERVIEW

The patented CYCLONE Washing Head consists of specially angled high pressure jet nozzles that provide thorough cleaning over the entire surface of the belt. When properly positioned with the correct speed of the jet nozzles, the belt can be thoroughly cleaned in one (1) to two (2) passes using only 3 to 4 G.P.M. Your first cleaning may take longer.

The Rotary version of the Cyclone Belt Washer is designed to clean open type belting where as the Linear version is designed to clean flat top type belts.

SPECIFICATIONS

Washer Cart 60" x 30" Washer Head Weight Under 30 lbs. Power 230VAC @ 25 amps or 460VAC @ 15 amps Water Usage 3-4 gallons per minute Air Requirement 5-10 CFM (cubic feet per minute) @ 90 psi Electric Panel NEMA 4X - UL/CUL with ground fault protection

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This book is a publication of Douglas Machines Corp. Service Department. Future editions will reflect changes in procedures or technical details.

Use and duplication of this document is encouraged.

For technical assistance, please call

1-800-331-6870.

SAFETY

Qualified installation personnel, individuals, firms, corporations, and companies are responsible for:

- Wear appropriate P.P.E. ie... hearing protection, thermal resistant gloves, and eyewear.
- Know where the **exits** are located.
- Always turn off and drain the machine before entering. Allow a cool down period. Follow facility's L.O.T.O. procedure.
- **Never** enter a machine where flooring has been removed. Fall Hazard.
- Use non-permit required confined space guidelines for entering.
- When loading a rack into the washer keep hands away from the door edges. Keep hands on the horizontal bars inside of the rack. **Do not** hold racks on the vertical support bars or outside edges. Push the rack with both hands. Never strain yourself to move racks if racks are too heavy unload some product.
- Always use Caution. Use mats to help reduce slip hazards.
- Ensure that float switches and level probes are well maintained and cleaned daily. Failure to do so can result in unintended heater startup and potential fire.
- **Never** leave your machine idle (not in use) for more than 4 hours. This can result in water evaporating out of the rinse tank causing damaging. Do not touch Rinse tank without a cool-down period.

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IMPORTANT Pre-Installation

Qualified installation personnel, individuals, firms, corporations, and companies are responsible for:

- The installation or replacement of the gas piping and connection, installation, repair, or servicing of the equipment. Qualified installation personnel must be experienced in such work, familiar with all precautions required, and have complied with all requirements of state or local authorities having jurisdiction. Reference National Fuel Gas Code, NFPA 54 or latest edition or ANSI Z223.1 or latest edition, Section 1.4.
- The installation of electrical wiring from the electric meter, main control box, or service outlet to the appliance. Qualified installation personnel must be experienced in such work, familiar with all precautions required, and have complied with all requirements of state or local authorities having jurisdiction. Reference National Electrical Code, ANSI/NFPA 70 or latest edition. In Canada, Canadian Electrical Code Pan I (Std. 22.1 or latest).
- The installation of gas heated units in Canada. Qualified installation personnel should comply with the Installation Codes for Gas Burning Appliances and Equipment, (CAN-I-B 149.1 and B-149.2) and any local codes or approvals.
- The installation of washers equipped with casters. These washers shall be made with a connector that complies with the Standard for Connectors for Movable Gas Appliances, ANSI Z2 1.69 or latest, and a quick-connect device that complies with the Standard for Quick-Disconnect Devices for use with gas fuel, ANSI Z2 1.41 or latest.
- Water and waste piping and connections shall comply with the International Plumbing Code, International Code Council (ICC) or the Uniform Plumbing Code, International Association of Plumbing and Mechanical Officials (IAPMO). NSF/ANSI 3-2009
- Douglas Machines Corp. highly discourages the use of tankless or demand water heating units as a hot water supply for our machines. They typically are not properly sized nor can they meet the demand required by our machines.

Note: A fixed restraint must be provided if casters are used in conjunction with a flexible connector for movable appliances. This restraint must secure the washer to a non-movable surface to eliminate stress on the connector. If the washer is moved, the restraint must be reconnected after the washer is returned to its normal position.

DELIVERY

Upon delivery of your Douglas washer:

- Inspect the machine for any external damage. Any evidence of damage should be noted on the delivery receipt and signed by you and the driver.
- Remove packaging from the washer and check for any concealed damage. Carrier must be notified of damage immediately. Please retain packaging for inspection if claim is filed.
- Douglas Machines Corp. cannot accept responsibility for lost or damaged merchandise suffered in transit. The carrier assumes full responsibility for delivery in good order; however, we are prepared to assist you in any action needed regarding shipping damage.

Electrical Connections: Upon receiving your machine, all wire connections in the electric panel, pump motor and electric heaters should be checked, including the wire nuts and lugs. Check connections monthly for the first six months and every 90 days after the first six months of operation.

SAFETY PRECAUTIONS

Important: All safety precautions must be adhered to as to avoid personal injury.

Please Be Cautious!

BEFORE ATTEMPTING TO PERFORM ANY SERVICE TO THE UNIT ENSURE THAT THE ELEC- TRICAL DISCONNECT HAS BEEN TURNED TO THE OFF POSITION AND LOCKED OUT WITH A PHYISCAL LOCKING MECHANISM.

This manual will help with troubleshooting and the replacement of parts.

For parts or technical assistance please call Douglas Machines Corporation at **800-331-6870** and ask for the Service Department. Please have your **Serial Number** available to assist with the call. If the call is an emergency and after nor- mal working hours (Monday – Friday 8 AM - 4:30 PM) you can call your warranty provider direct and follow it up with a call during normal hours of operations. Douglas Machines Corporation will provide you with your local warranty provider contact information during the Factory Start up and Demonstration.

DO'S AND DO NOT'S

DO'S

- Before attempting any maintenance or repairs, ensure that electrical supply to the unit has been turned off and locked out. Wear safety glasses.
- Check inside the unit before starting the cycle to ensure nothing is inside.
- Keep hands and clothing clear of moving parts.
- Ensure safety rules are followed at all times.
- Ensure all electrical panel enclosures are closed before using the match

DO NOT'S

- Attempt to perform any maintenance, repairs or adjustments unless the supply power has been shut off and locked out first.
- Open door during machine cycle. There may be a delay between cycle steps so ensure cycle is complete by visually checking that the Run light in not illuminated.
- Hose down any electrical components.
- Remove any access panels or pit grids while unit is in use. Touch outside of cabinet without wearing gloves.
- Attempt to do any service or make any adjustments to this unit unless you are qualified service person.

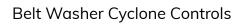
SET-UP AND OPERATION (Rotary Head)

Note: Head should be removed during production to prevent cross contamination.

- Perform an initial check of the belt washer to verify that it is in good working order. See maintenance section for more details.
- Check the drive chain transmission from the air motor to the rotating washing arm. Check for sprocket and chain wear and that the chain is properly tensioned.
- Check that all hardware is present and secure.
- Check that all air hoses and water lines are secure and in good condition. Replace all worn hoses
- Verify that the water pump has the proper oil level. Oil level at dot in sight glass
- Verify that the air line Oilier is properly filled with food grade air tool lubricant. Oiler filled with food grade air tool lube.
- Best cleaning results are obtained when the bottom of the belt washer's aluminum head housing is positioned 3 inches above the surface of the belt that is to be cleaned.
- Connect the air and water lines between the washer head and the washer cart.
- Check the water inlet filter screen in the inlet water hose union connection fitting for clogs. Clean if required.
- Connect a water supply hose capable of supplying 5 gallons per minute to the inlet union connection fitting. For best cleaning results, the use of hot water less than 160 degrees F. is recommended. DO NOT USE WATER HOTTER THAN 160 DEGREES F OR DAMAGE CAN OCCUR TO THE WATER PRESSURE PUMP.
- Connect the air pressure line to the washer cart air inlet fitting. For proper operation, the air supply must be capable of maintaining 90 PSI while the cleaning head is operating. Adjust operating air pressure to 80 PSI by pulling up pressure regulator knob and turning to obtain desired pressure.
- Plug in the main electrical power cord.
- Set timer on cart panel box to desired cleaning time. Note decimal point on timer display. A setting of 30 minutes will be displayed as 30.00 (not .30). Moderately dirty belts can be cleaned with 2 belt passes under the cleaning head. Very dirty belts will require 3 passes.
- Press the green start button to start the cleaning cycle.
- With the pump running, adjust the exit pressure from the water pump to be between 1000 to 1200 psi. This is achieved by rotating the top knob on the exit line water pump regulator.
- Adjust the washer arm rotation speed by turning the speed control knob.

- To set the proper rotational speed, first slow down the washer head to the point where sections of the belt are exiting the washer head having not been washed by the rotating cleaning nozzles. Slowly increase the rotational speed until the entire belt surface is washed. The spray path of the rotating nozzles should just barely overlap the path of the previous rotation. The speed is now properly set. If you set the speed too slow, sections of the belt will not be washed by the rotating head. If you set the speed too fast, the washer nozzles will not clean the belt as effectively as they would when properly set.
- Adjust the oil drip of the air line oiler using the green adjusting screw to 2-3 drips per minute.

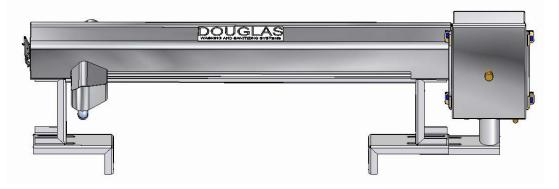




SET-UP & OPERATION (Linear Head)

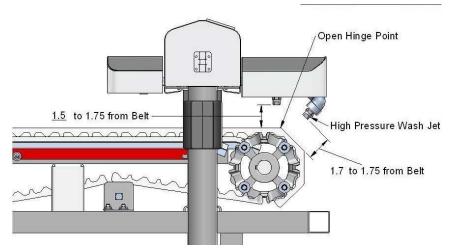
Note: Head should be removed during production to prevent cross contamination.

Select a suitable location to mount Linear Head.



(Cyclone Linear Head Shown with Adjustable Brackets)

The positioning is very critical and needs to comply with set-up DWG. Refer to the Linear Cyclone Head Set-Up document.



Perform an initial check of the belt washer to verify that it is in good working order. See maintenance section for more details.

- Check that all hardware is present and secure.
- Check that all air hoses, water lines and electrical leads are secure and in good condition.
- Replace all worn hoses.
- Verify that the water pump has the proper oil level.
- The oil level should be at the dot in the sight glass.
- Verify that the air line Oilier is properly filled with food grade air tool lubricant.

Connect the air, water and 6 Pin connector lines between the washer head and the washer cart.



(Oiler Filled With Food Grade Air Tool Lube)

Check the water inlet filter screen in the inlet water hose union connection fitting for clogs. Clean if required.

Connect a water supply hose capable of supplying 5 gallons per minute to the inlet union connection fitting. For best cleaning results, the use of hot water less than 160 degrees F. is recommended. DO NOT USE WATER HOTTER THAN 160 DEGREES F OR DAMAGE CAN OCCUR TO THE WATER PRESSURE PUMP.

Connect the air pressure line to the washer cart air inlet fitting. For proper operation, the air supply must be capable of maintaining 90 PSI while the cleaning head is operating. Adjust operating air pressure to 80 PSI by pulling up pressure regulator knob and turning to obtain desired pressure.

Plug in the main electrical power cord.

Set timer on cart panel box to desired cleaning time. Note decimal point on timer display. A setting of 30 minutes will be displayed as 30.00 (not .30). Moderately dirty belts can be cleaned with 2 belt passes under the cleaning head. Very dirty belts will require 3 passes.

Press the green start button to start the cleaning cycle.

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With the pump running, adjust the exit pressure from the water pump to be between 1000 to 1200 psi. This is achieved by rotating the top knob on the exit line water pump regulator.

Adjust the oil drip of the air line oilier using the green adjusting screw to 2-3 drips per minute.

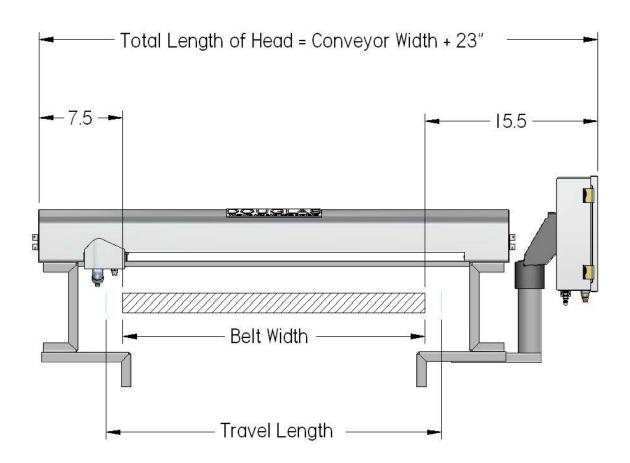
Select a suitable location for the portable cart. (Reference Cyclone manual Set-Up and Operation Rotary Head.)

- Allowing hoses and cables to be connected to the head with slack.
- Air hose from cart to quick fitting in control box on head.
- Set air pressure regulator @ 80 PSI.
- Set speed control to full out position for Linear Head application.
- Also used to control speed of Rotary & Linear Heads.
- Test the set up to ensure complete cleaning.
- Determine the time needed for one pass of your belting system.
- Set the timer for one or more passes based on soil conditions.
- Run system

SETTING TRAVEL LENGTH AND TIMING (LINEAR HEAD)

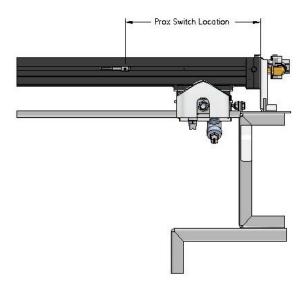
Your Cyclone Linear Head is factory set to run at **safe maximum speed**.

- This set-up allows maximum speed at full stroke without the internal piston hitting / slamming into the end blocks.
- This is accomplished by setting the prox. Switches inwards away from the end blocks to switch the air control valve in advance of the hard stop allowing the load to decelerate utilizing the trapped air in the cylinder. When properly adjusted the load travels past the switch, the air valve closes, and starts compressing the trapped air until it stops and changes direction. The stopping point should be just before the hard stop thus allowing a dampened stop and not a hard slam.





It is recommended that you run the linear head at factory setting and simply adjust the conveyor speed from 5 to 10 FPM.



If you slow the speed of the load; the reversing point will start moving in towards the center. To maintain proper travel length you would have to adjust the switches outward to compensate for the slower speed.

Correct travel length is when the inside jet just passes the outside edge of the conveyor prior to changing direction.

To adjust the prox switches:

- Use a flat head jeweler's screw driver to loosen the set screw.
- Relocate prox switch to desired location. Prox switch slides in channel.
- Tighten set screw and test system to ensure proper set-up.

MAINTENANCE (Common)

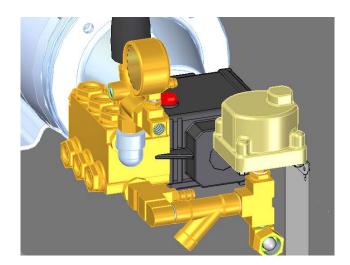
Proper maintenance of the belt washer will result in years of trouble free operation. The following maintenance schedule is based on the belt washer being used two days per week. If the washer is used more than the two times per week, decrease the maintenance schedule time periods proportionally.

DAILY (COMMON)

- Check that all hardware is present and secure.
- Check that all air hoses and water lines are secure and in good condition.
- Replace all worn hoses
- Verify that the water pump has the proper oil level.
- Oil level at dot in sight glass
- Verify that the air line oiler is properly filled with food grade air tool lubricant.
- Oiler filled with food grade air tool lube
- If the air motor oiler needs to be filled with oil, remove the screw as shown below

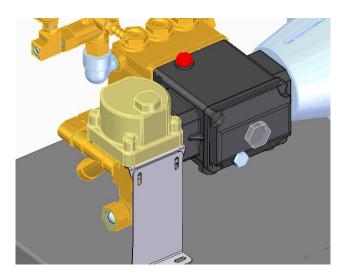
30 DAYS (COMMON)

Remove and check the water pump inlet strainer. Clean Strainer if Required



90 DAYS (COMMON)

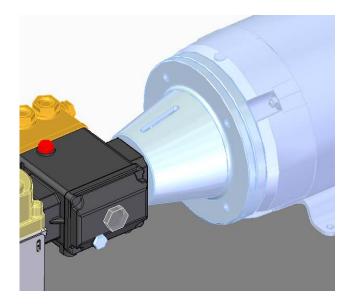
Drain oil in the water pressure pump by removing the lower drain plug in gear box. Replace the oil with 30W non-detergent oil. CHANGE THE OIL AFTER 40 HOUR BREAK-IN PERIOD. THEREAFTER CHANGE THE OIL EVERY 3 MONTHS OR 500 HOUR INTERVAL.



- After draining oil, remove dipstick to add oil.
- Fill with 30W non-detergent oil.
- Fill to dot in sight glass. DO NOT OVERFILL.
- Check spray nozzles for clogs and/or wear.
- Always make sure that the spray tip is parallel to the shaft.

180 DAYS (COMMON)

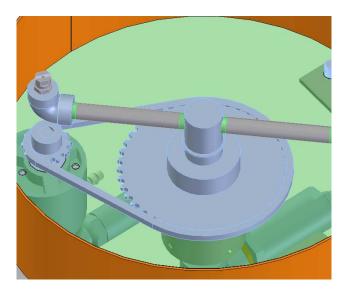
Remove the bolts securing the motor to the pump's bell housing. Check the motor coupling for worn, broken or missing bushings. Repair/replace as required



Motor coupling inside bell housing

DAILY (ROTARY HEAD ONLY)

Check the drive chain transmission from the air motor to the rotating washing arm. Check for sprocket and chain wear and proper chain tension. The drive chain needs 0.5" of slack. The tension is adjusted by

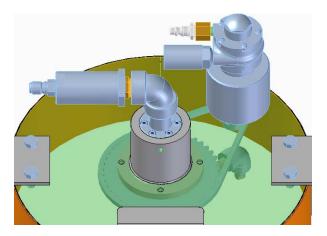


loosening the air motor on the washer head housing and repositioning the motor to obtain the correct tension. Recheck tension after motor is firmly re-tightened to washer head housing.



30 DAYS (ROTARY HEAD ONLY)

Grease the water union on the washer spray head. Use food grade grease only.



- Fill the Air Motor to proper oil level using 10W high detergent oil. Remove the upper level set screw to add oil. Fill the air motor gear box until oil flows out of upper fill hole. Replace set screw.
- Open the water union filter and check for debris build-up. Clean and repair as required
- After re-assembly, rotate nozzle-cleaning arm by hand and check for excessive wear in the arm bushing.
- Check the Air Motor for clogging. Clean using solvent if required

Procedure	Daily	Monthly	90 Days	180 Days
Days				
Check the washer head drive chain tension	Х			
Check the hardware condition	Х			
Check all air and water hoses	Х			
Check the water union inlet screen filter	Х			
Grease the water union on washer spray head		Х		
Check the spray nozzles for clogs and wear			Х	
Change the oil in air motor				Х
Clean the water union filter				Х
Check the Air Motor Muffler				Х

MAINTENANCE SCHEDULE (Rotary Head)

MAINTENANCE SCHEDULE (Linear Head)

Procedure	Daily	Monthly	90 Days	180
Days				
Check the hardware condition	Х			
Check all air and water hoses	Х			
Check the spray nozzles for clogs, wear and loose mounting hardware.			Х	

MAINTENANCE SCHEDULE (Pump & Cart)

Procedure	Daily	Monthly	90 Days	180
Days				
Check the hardware condition	Х			
Check all air and water hoses	Х			
Check the water pump oil level	Х			
Check the air line Oilier oil level	Х			
Check the water pump filter screen		Х		
Change oil in water pump-30W non-detergent			Х	
Check the water pump motor coupling				x



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TROUBLESHOOTING (Common)

Problem	Things To Check
Unit will not run	 Check that the disconnect switch is on. The "Power On" light should be lit.
	 Check the circuit breakers.
	 Check that the Motor Overload Switch OK light is on. If it is not on, the motor may have tripped its internal overload. When the motor cools down it will automatically reset (not all units have motor thermal switches).
	 Check if the water input is turned on. The Water Pressure OK light should be on.
	 Check the pump motor protector overload disconnect for a trip.
	 Check if the ground fault interrupters have tripped.
	 If the 3 phase GFI tripped – check for ground shorts or moisture in the pump motor wiring.
Unit stops a short time after starting	 Check the time setting – a common mistake is setting the time to .30 minutes instead of 30.00 minutes.
	 Check if the water supply faucet is fully open. The pump may be drawing the water faster than the supply and tripping the water pressure switch.
Low water output from spray nozzles	 The spray tips may be clogged.
	 Remove and clean the spray tip. **Make sure that the spray tip is parallel to the shaft (see page 8)**
	 The water union water filter may be clogged.

TROUBLESHOOTING (Rotary Head)

Problem	Things To Check
The air motor is sluggish	 Make sure the feed to the motor is 1/4" ID line or larger. 1/8" ID line will not allow you to reach necessary CFM. The air motor uses as much as 10 CFM. We found using even one 1/8" fitting before the motor slows it down. The air motor exhaust muffler may be clogged – try removing it. A fitting may be restricted with some Teflon tape or a small piece may have broken loose and found its way into the filter. The water union may have been damaged from the wash head falling on its head. The drive chain may be binding either from being too tight or sprocket misalignment.
The air motor will not run	 Check for pressure at the regulator filter assembly. Adjust the pressure gauge to at least 80 PSI. Turn the speed control on the washer head counter clockwise to increase the airflow.
	 Check for a kink in the air hose.
	 Check the air solenoid circuit breaker. It is located in the control panel upper left hand corner CB3.
Air motor runs too slow	 Check that the air pressure is at least 80 PSI.
	 Check if the speed control valve on the washer head is clogged.

TROUBLESHOOTING (Linear Head)

Problem	Things to Check
Load sled is slamming into ends too hard.	 Air pressure regulator is set @ 80 PSI Slow speed of head Position of Proximity Switches. Move towards center to advance air valve timing and prevent internal piston from hitting end blocks
Load sled moves to one side and does not start reciprocating.	 Check that air tube A is connected to port A and B to B Proximity Switches Prox. Wires Air pressure @ 80 PSI Speed control should be full open Mechanical jamb
Travel Length does not cover conveyor width.	 Speed control should be full open or not closed Air pressure @ 80 PSI Position of Proximity Switches. Move towards ends to increase travel length. Mechanical jamb

PARTS LIST

Spare Parts List for Cyclone Belt Washer

Part # Description		
Rotating Wash Heads		
PUMP		
5083	BALDOR 7.5HP MOTOR (WD)	
5088	MOTOR ADAPTER FLANGE 184TC-213TC	
5090	GENERAL T9971-LH TRIPLEX PUMP	
5091	GENERAL ZF184 BELL HOUSING, 184TC	
5092	PUMP SHAFT COUPLER	
WATER		
5094	UNLOADER VALVE	
5123	UNLOADER VALVE SWITCH	
5158	HIGH PRESS. SS SPRAY NOZZLE	
5172	FILTER ELEMENT	
5173	WATER UNION FILTER	
5175	2-1/2" PRESSURE GAUGE	
5180	LOW PRESSURE SWITCH	
5187	30' 3/8" 3000 PSI HIGH PRESS HOSE ASSY.	
5699	WATER UNION	
6338	HIGH PRESSURE HAND GUN (OPTION)	
AIR PNE		
5113	GEAR MOTOR	
5115	NORGREN LUBRICATOR	
5116	FLOW CONTROL	
5117	FILTER / REGULATOR	
5186	30' 1/4" BLUE 300 PSI AIR HOSE	
5220	AIR MOTOR OIL	
MECHANICAL		
10141	.5" BORE SMALL SPROCKET STAINLESS STEEL	
10142	1.25" BORE LARGE SPROCKET STAINLESS STEEL	
10143	SPROCKET CHAIN & MASTER LINK	
ELECTRICAL COMPONENTS		
120V CONTROL		
10333	1AMP. BREAKER	
10332	.5AMP. BREAKER	
10535		
1583		
5108		
10532		
10533	DISCONNECT SWITCH SHAFT	
1581	OFF/ON SWITCH	

Part # Description		
Electrical Components		
240V-1PH		
8991	CONTACTOR	
5935	MOTOR PROTECTOR	
5141	TRANSFORMER	
480V-3PH		
1210	CONTACTOR	
5131	MOTOR PROTECTOR	
5141	TRANSFORMER	
575V-3PH		
1209	CONTACTOR	
5262	MOTOR PROTECTOR	
8655	TRANSFORMER	
8653	2/10AMP. FUSE	
8654	6/10AMP. FUSE	
BLOW OFF MOD	DULE (OPTION)	
208V-3PH		
5675	7.5HP. MOTOR STARTER	
5935	10HP. MOTOR STARTER	
8653	2/10AMP. FUSE	
8654	6/10AMP. FUSE	
240V-3PH		
5675	7.5HP. MOTOR STARTER	
5675	10HP. MOTOR STARTER	
8653	2/10AMP. FUSE	
8654	6/10AMP. FUSE	
480V-3ph		
5131	7.5HP. MOTOR PROTECTOR	
5131	10HP. MOTOR PROTECTOR	
COMPLETE ROTATING WASH HEAD ONLY ASSEMBLIES		
6424	12"-21" WASH HEAD ASSEMBLY	
6425	22"-31" WASH HEAD ASSEMBLY	
6426	32"-41" WASH HEAD ASSEMBLY	
6427	42"-51" WASH HEAD ASSEMBLY	

Кеу	
Number	CRITICAL TO HAVE ON HAND
Number	RECOMMENDED TO HAVE ON HAND
Number	LONG LEAD TIME

Part # Description

Rotating Wash Heads

208V-3PH		
1238	CONTACTOR	
5675	MOTOR PROTECTOR	
5676	TRANSFORMER	
240V-3PH		
1238	CONTACTOR	
5675	MOTOR PROTECTOR	
5141	TRANSFORMER	

Part # Description

Electrical Components

LINEAR WASH HEAD DESIGN ONLY		
9385	MICRO SWITCH	
9008	ZELIO SMART RELAY	
9009 ZELIO 24v POWER SUPPLY		



IMPORTANT NUMBERS

FOR WARRANTY WORK YOU MUST CALL DOUGLAS MACHINES CORP. AT 800-331-6870 AND WE WILL ISSUE A PURCHASE ORDER TO THE LOCAL SERVICE AGENT.

> FOR PART OR TECHINCAL SUPPORT, PLEASE CALL DOUGLAS MACHINES CORP. AT 800-331-6870



For Partnering with Douglas Washing & Sanitizing Systems.

DOG AND WASHING AND

REDUCE DOWNTIME

Save money and reduce down time by having the parts on hand with our Platinum, Gold, Silver kits.

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