



INSTALLATION — OPERATION PARTS MANUAL

THREE POCKET END-LOADING WASHER-EXTRACTORS RIGID — SOFT MOUNT — PASSTHRU

DW Range:
End-Loading; Rigid Mount



DW_SM Range:
End-Loading; Soft Mount



DW_PTSM Range:
Barrier Type; Soft Mount



DW_PT Range:
Barrier Type; Rigid Mount



Models: DW100, DW150, DW200, DW300 & DW400

Series: DW; DW_SM; DW_PT; DW_PTSM

Technical specifications are based on the latest information available at the time of printing and are subject to change without notice.

Manufactured in accordance to Canadian Standards Association general requirements.



The EDRO Corporation

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NEW MACHINE LIMITED WARRANTY

The EDRO Corporation, from here on known as the Seller, warrants all EDRO DynaWash® washer extractors shipped by it to be free from defects in material and workmanship for a period of eighteen (18) months from the date of shipment from the Seller's factory or two-thousand two-hundred operating hours whichever occurs first, provided: (a) the machine is used by the original Buyer, (b) it is given normal and proper usage, (c) all electrical and mechanical connections are made in accordance with Seller's specifications, (d) proper installation and start up procedures are employed by qualified personnel, (e) machine is not altered in any way, shape, or form from it's original factory specifications, and (f) warranty card is completed and returned to Seller prior to warranty expiration.

Consumable and normal wear items, such as control switches, regulators, solenoids, gaskets, glass, and plastic are not covered under this warranty. All labor charges incurred during any warranty activity are the sole responsibility of the Buyer.

Notice of any warranty claim must be presented to the Seller immediately upon Buyer's discovery of the defect. The right of inspection must be given to the Seller while the product is in the claimed defective condition, and operation of the product must be suspended until written clearance is issued for continued operation.

Upon receipt of a warranty claim notice, the Seller will proceed without unreasonable delay to remedy any defect found to exist under the terms of warranty. During the warranty period, parts found to be defective after the Seller's inspection, will, at the Seller's option, be repaired or replaced with new or factory rebuilt parts free of charge, except that of freight charges, custom charges, or other associated fees involved with the returning of the defective component to the Seller, and shipment of the replacement component will be the responsibility of the Buyer.

Vendor Supplied Items : Vendor supplied items shall be warranted in accordance with the available warranty, if any, provided to the EDRO Corporation, by the vendor. Claims relating to vendor supplied items will be dealt with on a case-by-case basis.

Five (5) year pro-rated warranty on shell, cylinder and frame. For a period of five years, from the date of shipment, EDRO DynaWash® shells, cylinders and frames are guaranteed not to develop any structural fractures to the material due to workmanship.

There are no warranties which extend beyond the description and the warranties contained herein. The warranties expressed herein are in lieu of any other warranties, expressed or implied. Any implied warranty of merchantability and implied warranty of fitness for a particular purpose are hereby excluded. The Buyer's remedy is limited to, and the Seller's liability shall not exceed either, (1) repair or replacement of the defective part of the product or, at the Seller's option (2) return of the product and refund of the purchase price. Such remedy shall be the Buyer's entire and only remedy.



Battleship Quality

FAILURE TO COMPLETE AND RETURN WARRANTY REGISTRATION FORM WILL NULLIFY WARRANTY

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SECTION 1

SAFETY

Anyone operating or servicing this machine must follow the safety rules in this manual. Particular attention must be paid to the DANGER, WARNING, and CAUTION blocks, which appear throughout the manual. The following warnings are general examples that apply to these machines. Warnings specific to a particular installation or maintenance procedure will appear in the manual with the discussion of that procedure.

DANGER

Identifies a condition, which is not strictly observed could result in injury to or death to personnel.

WARNING

Identifies an operating or maintenance procedure, practice, statement, etc., which if not strictly observed could result in injury to or death to personnel.

CAUTION

Identifies an operating or maintenance procedure, practice, condition, statement, etc., which if not strictly observed could result in damage to or destruction of equipment or loss of effectiveness.

NOTE

Identifies an essential operating or maintenance procedure, precondition or statement which are essential but not of a known hazardous nature as indicated by warnings and cautions.

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The following are general CAUTION, DANGER and WARNING notices to be familiar with when working or servicing the machine.

CAUTION

Be careful around the open door, particularly when loading from a level below the door. Impact with door edges can cause personal injury.

WARNING

Dangerous voltages are present in the electrical control box(s) and at the motor terminals. Only qualified personnel familiar with electrical test procedures, test equipment, and safety precautions should attempt adjustments and troubleshooting. Disconnect power from the machine before removing the control box cover, and before attempting any service procedures.

DANGER

Death or serious injury can result if children become trapped in the machine. Do not allow children to play on or around this machine. Do not leave children unattended while the machine door is open.

WARNING

This machine must be installed, adjusted, and serviced by qualified electrical maintenance personnel familiar with the construction and operation of this type of machinery. They must also be familiar with the hazards involved. Failure to observe this warning may result in personnel injury and/or equipment damage, and may void the warranty.

CAUTION

Ensure that the machine is installed on a level floor of sufficient strength and that the recommended clearance for inspection and maintenance are provided. Never allow the inspection and maintenance space to be blocked.

WARNING

Never touch internal or external steam pipes, connections, or components. These surfaces can be extremely hot and will cause severe burns. The steam must be turned off and the pipe, connections, and components allowed to cool to a safe temperature before the pipe can be touched.

KEY TO SYMBOLS

The Lightning bolt within the triangle is a warning sign indicating the presence of dangerous voltage.



The exclamation point within the triangle is a warning sign indicating important instructions concerning the machine and possibly dangerous conditions.



This warning symbol indicates the presence of potentially dangerous drive mechanisms and possibly dangerous pinch points within the machine. Moving mechanical parts can crush and/or sever body parts. Guards should always be in place when the machine is in operation.



This warning symbol indicates the presence of possibly dangerous chemicals. Proper precautions should be taken when handling corrosive or caustic materials.



This warning symbol indicates the presence of hot surfaces that could cause serious burns. Steel and steam lines can become extremely hot and should not be touched.



Safety decals appear at crucial locations on the machine. Failure to maintain legible safety decals could result in injury to the operator or service technician. To provide personal safety and keep the machine in proper working order, follow all maintenance and safety procedures presented in this manual. If questions regarding safety arise, contact the factory immediately. Use factory-authorized spare parts to avoid safety hazards.

OPERATOR SAFETY

To ensure the safety of the machine operators, the following maintenance checks must be performed daily:

Prior to operating the machine, verify that all warning signs are present and legible. Missing or illegible signs must be replaced immediately. Make certain that spares are available.

Check door interlock before starting operation of the machine. Attempt to start the machine with the door open. The machine should not start with the door open and an alarm should sound. If the door lock and interlock are not functioning properly, call a service technician.

Do not attempt to operate the machine if any of the following conditions are present:

- a. The door does not remain securely locked during the entire cycle.
- b. Excessively high water level is evident.
- c. Machine is not connected to a properly grounded circuit.

DO NOT BYPASS ANY SAFETY DEVICES IN OR ON THE MACHINE.

WARNING

NEVER insert hands or objects into cylinder until it has completely stopped. Doing so could result in serious injury.



WARNING

NEVER operate the machine with a bypassed or disconnected vibration switch or sensor. Operating the machine with severe unbalanced loads could result in personal injury and serious equipment damage.

MACHINE LOCATION

Foundation: The concrete floor must be of sufficient strength and thickness to handle the floor loads generated by the high extract speeds of the machine.

Service/Maintenance Space: Provide sufficient space to allow comfortable performance of service procedures and routine preventative maintenance.

CAUTION

Replace all panels that are removed to perform service and maintenance procedures. Do not operate the machine with missing guards or with broken or missing parts. Do not bypass any safety devices.

INPUT AND OUTPUT SERVICES AND REQUIREMENTS

Water Pressure: Best performance will be realized if water is provided at a pressure of 30-85 PSI (2.0-5.7 bar). Although the machine will function at a lower pressure, increased fill times will occur. Water pressure higher than 100 PSI (6.7 bar) may result in damage to machine plumbing. Component failure(s) and personal injury could result.

Steam Heating (Optional): Best performance will be realized if steam is provided at a pressure of 30-80 PSI (2.0-5.4 bar). Steam pressure higher than 125 PSI (8.5 bar) **may result in damage** to the machine and may cause personal injury. For machines equipped with optional steam heating, (either direct or indirect), install piping in accordance with approved commercial steam practices. Failure to install the supplied steam filter may void the warranty.

Electric Heating (Optional): For best performance, size the power source to the power rating of the heating element and in accordance with local codes. A qualified electrician must determine the amount of power supplied.

Compressed Air: Air source should provide pressure between 80-100 PSI (5.4-6.7 bar).

Drainage System: Provide drain troughs large enough to accommodate the total number of gallons that could be dumped if all machines on the site drained at the same time from the highest attainable level. Troughs should be covered to support light foot traffic.

Grounding: For personal safety and for proper operation, the machine must be grounded in accordance with State and Local Codes. The ground connection must be to a proven earth ground, not to conduit or water pipes.

Electrical Overload: **Do not use fuses in place of a circuit breaker**. Each machine should be connected to a separate circuit breaker, with proper suppression devices for the machine. The circuit breaker must be an inverse time type. An easy-access disconnect switch should also be provided. These components must conform to the latest National Electric Code (NEC) and State and Local Codes.

WARNING

Ensure that a ground wire from a proven earth ground is connected to the ground lug near the input power block on this machine. Without proper grounding, personal injury from electric shock could occur and machine malfunctions may be evident.

Always disconnect power and water supplies before a service technician performs any service procedure. Where applicable, steam supply should also be disconnected before service is performed.

MISUSE

Never wash petroleum-soaked rags in machine. This could result in an explosion.

Never wash mechanical parts or automotive parts in machine. This could result in serious damage to the cylinder.

Never allow children to play on or around machine. Death or serious injury can result if children become trapped in machine. Do not leave children unattended while machine door is open. These cautions apply to animals as well.

SAFE OPERATING ENVIRONMENT

Safe operation requires an appropriate operating environment for both the operator and the machine. If questions regarding safety arise, contact EDRO immediately.

END-USER RESPONSIBILITY FOR ENVIRONMENT CONDITIONS

Ambient Temperature: Temperatures above 120° F (50° C) will result in more frequent motor overheating and in some cases, malfunction or premature damage to solid state components. Special cooling devices may be necessary. Increases and decreases in temperature affect water pressure switches. Every 25° F (10° C) change in temperature will have a 1% effect on the water level. Water in the machine will freeze at temperatures of 32° F (0° C) or below.

Humidity: Relative humidity above 90% may cause the machine's electronics or motors to malfunction or may trip the ground fault interrupter. A corrosion problem may occur on some metal components in the machine. If the relative humidity is below 30%, belts and rubber hoses may eventually develop dry rot. This condition can result in hose leaks, which may cause safety hazards external to the machine in conjunction with adjacent electrical equipment.

Ventilation: The need for make-up air openings for the washer-extractor and other laundry room accessories such as dryers, ironers, water heaters, etc. must be evaluated periodically. Louvers, screens, or other separating devices may reduce the available air opening significantly.

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Elevation: If the machine is to be operated at elevations of over 3,280 feet (1,000 meters) above sea level, pay special attention to water levels and electronic settings (particularly temperature) or desired results may not be achieved.

Detergent Chemicals: Keep all steel surfaces free of chemical residues. Damage to any part of the machine caused by corrosion resulting from the use of concentrated chemicals will impede machine performance and is specifically excluded from warranty.

DANGER

Do not place volatile or flammable fluids in any machine. Do not clean the machine with volatile or flammable fluids such as acetone, lacquer, thinners, enamel reducers, carbon tetrachloride, gasoline, benzene, etc. Doing so could result in serious personal injury and/or damage to the machine.



Water Damage: Do not spray the machine with water. Short circuiting and serious damage may result. Immediately repair all seepage due to worn or damaged gaskets, etc.

SECTION 2

INSTALLATION

The installation procedure of your DynaWash® washer-extractor should not take more than one day to complete. Except for re-connecting certain parts disconnected in shipping, no internal assembly or wiring is necessary. By reading these instructions carefully and following the recommended procedures, you will not only save time, but should avoid many unnecessary complications and possible future problems.

It is the responsibility of the Installer to check and complete the following items upon installation of the machine.

RIGID MOUNT MODELS (DW & DW_PT)

For installing DynaWash® Rigid Mount Models (DW100, DW150, DW200, DW300, DW400, and DW100PT, DW150PT, DW200PT) the ground floor thickness must be at least 12" (ref. page 17), and must be constructed of the equivalent of 5,000 PSI re-enforced concrete. For upper floor installations, check with a structural engineer to verify the capability of the floor to support the machine's static operating weight. Static operating weight is equal to the machine weight, a full load of laundry and 100% full water. Before positioning the machine, be sure to have adequate floor area to achieve a level foundation. Existing floors should be filled in if necessary to obtain the area needed for a proper installation. DynaWash® rigid mount models with down drain are designed to straddle a drain trough. Models with drain to rear option are designed to be piped to a sewer drain. It is required that all factory supplied mounting holes in the base footings of the machine be used to anchor the machine to the floor.

DYNA♦MOUNT SOFT MOUNT MODELS (DW_SM & DW_PTSM)

For installing DynaWash® with Dyna♦Mount Soft Mount option (DW100SM, DW150SM, DW200SM, DW300SM, DW400SM, and DW100PTSM, DW200PTSM, DW300PTSM DW-400PTSM), the floor thickness must be constructed of the equivalent of 5,000 PSI re-enforced concrete and able to support the machine's static operating weight. For upper floor installations, check with structural engineer to verify the capability of the floor to support the machine's static operating weight. Static operating weight is equal to the machine weight, a full load of laundry and 100% full water. Even though the deflection of vibration is less than 5%, before positioning the machine, be sure to have adequate floor area to achieve a level foundation. This is important so that the washer can maintain a stable and level operating environment and not put undue stress on any components of the suspension system. To achieve this condition, the existing floor should be filled in if necessary to obtain the area needed for a proper installation. We require the existing four (4) holes in the machine's base be used for anchoring the base of the machine to the floor.

The shock absorbers and reverse loaded coil springs on Dyna♦Mount units are pre-adjusted at the factory, however, final adjustments maybe necessary and should be made as follows:

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- Tighten shock nuts snug at upper and lower locations. DO NOT CRUSH THE RUBBER BUSHINGS!
- Main spring shafts should have two (2) full threads extending beyond lower locks nuts to ensure proper locking action.
- To achieve the required operating clearance or if leveling is required, first determine which spring assembly is out of level, then loosen the locking nut and either tighten or loosen the adjusting nut located on the threaded rod at the top of the main spring shaft assembly. Perform this operation in intervals of two (2) full turns at a time to compress or release the reverse loaded coil spring. Repeat as necessary. Once level, tighten the lock nut. For optimum performance, DynaWash® washer-extractors should be level left to right, as well as front to back. Minimum distance from the bottom of the front and rear plate to the top of the base plate is 1-¼" (3.175 cm).

PASSTHRU MODELS (DW_PT & DW_PTSM)

The *PassThru* option of DynaWash® machines, DW_PT and DW_PTSM, differs from the other models by its construction allowing the machine to be loaded from one side and unloaded from the other. The operation and the performance of these machines are identical with the standard end loading DynaWash® units. *PassThru* units require the installation of the clean side seal.

The superstructure of the clean side seal goes between clean side of unit and barrier wall. The clean side plate of the machine has bolts studded to it to assist in assembly of the barrier material from the machine to the barrier wall.

FOUNDATION

It is vitally necessary to provide a proper foundation for DynaWash® machines. Anchor the machine to the floor by either pouring a new foundation in accordance with factory specifications or install on existing floor. In either case, the foundation should be constructed of 5,000 PSI re-enforced concrete. For installations on upper floors, check with a structural engineer to verify the capability of the floor to support the machine's static weight and forces once in operation.

For best machine performance, it is recommended that DynaWash® straddle a drain trough, unless the drain to rear option is ordered in which case the machine should be piped directly to a sewer drain. The drain trough should have a capacity to sustain the maximum amount of water for all machines at the site if all washers were to simultaneously drain from their high water level.

Minimum foundation requirements can be found on the following charts. For reference, the minimum foundation requirement for Dyna♦Mount Soft Mount models (DW_SM & DW_PTSM) is ability of floor to support the static weight of a fully loaded machine taking into account a 5% variance for vibration deflection. Variations may be made to suit a specific installation as long as minimum and/or maximum requirements are met.

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MINIMUM FOUNDATION REQUIREMENT

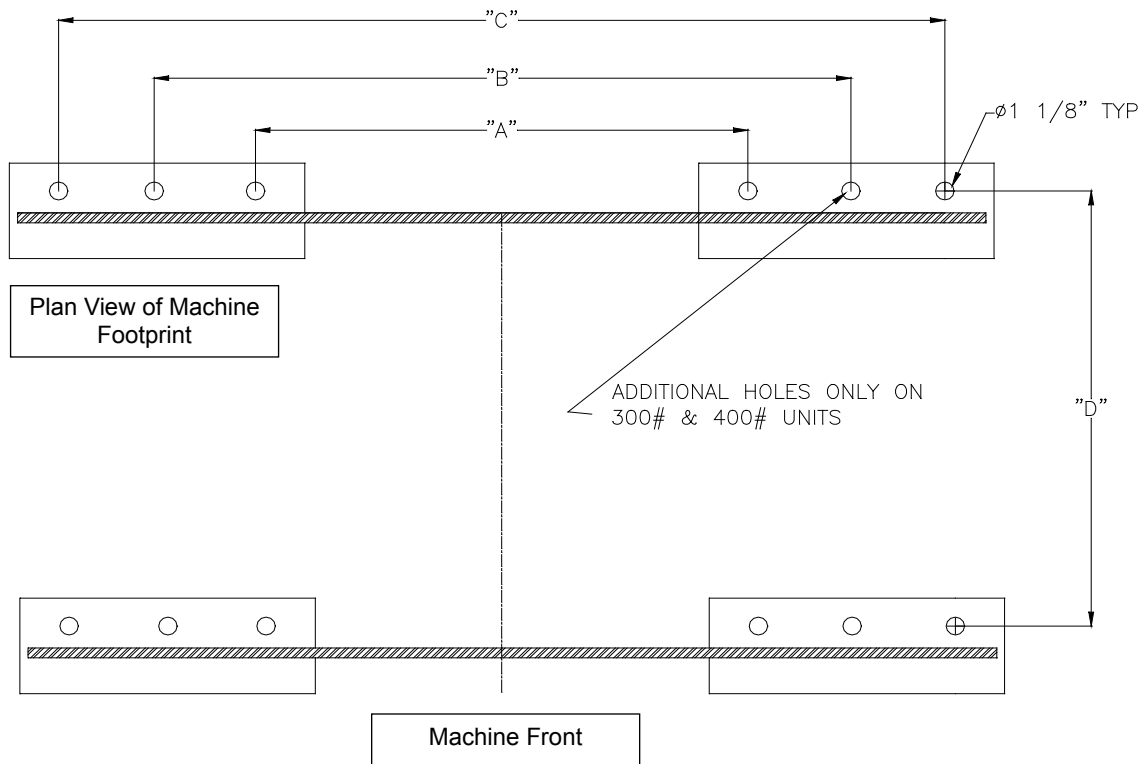
DW100	DW150	DW200	DW300	DW400
12"	16"	16"	18"	20"

MAXIMUM TRENCH WIDTH

DW100	DW150	DW200	DW300	DW400
18"	18"	20"	24"	24"

MAXIMUM TRENCH WIDTH

DW (End-Loading Rigid Mount) & DW_PT (PassThru Rigid Mount)

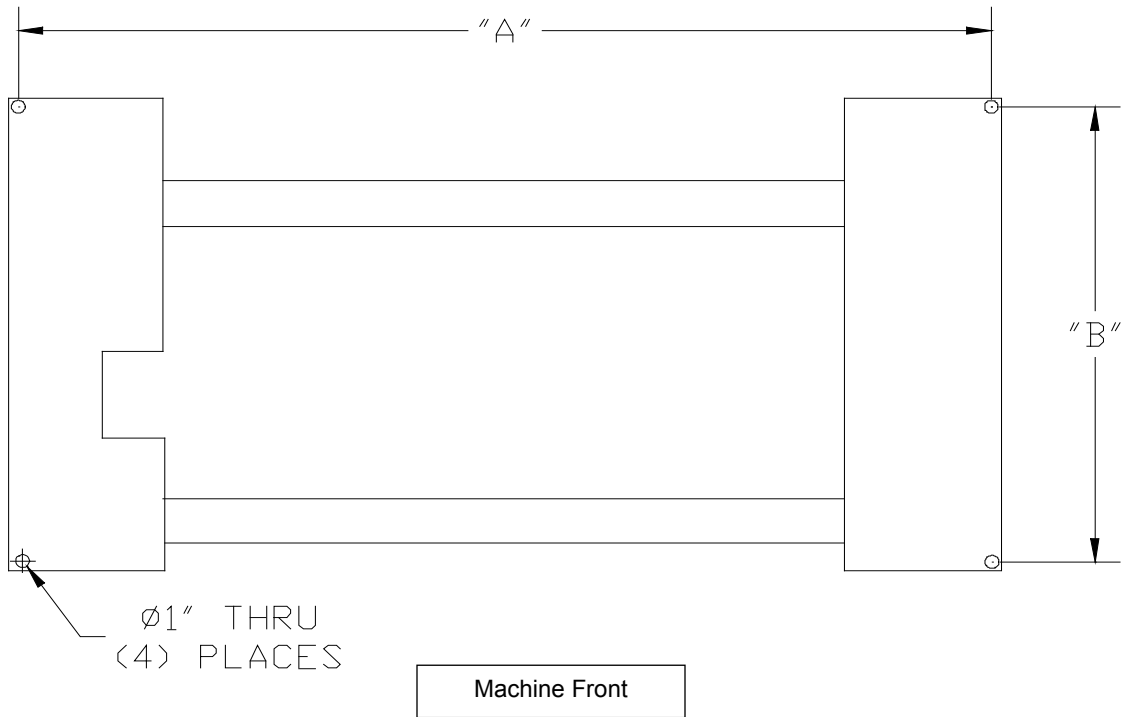


DW					
Dimension	100	150	200	300	400
A	23	30	30	35 ½	43
B	N/A	N/A	N/A	47 ½	55
C	47	54	54	59 ½	67
D	31	32 ⅝	39 ⅝	49 ¼	49 ¼

DW_PT					
Dimension	100	150	200	300	400
A	35 ½	49	49	N/A	N/A
B	N/A	N/A	N/A	N/A	N/A
C	59 ½	73	73	N/A	N/A
D	27 ⅞	29	36 ⅛	N/A	N/A

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DW_SM (End-Loading Soft Mount) & DW_PTSM (PassThru Soft Mount)



DW_SM

Dimension	100	150	200	300	400
A	82	88	90	92	100
B	38	41 5/8	48 3/8	57	57

DW_PTSM

Dimension	100	150	200	300	400
A	92	99	101	102 3/8	108
B	38	40 5/8	47 3/8	57	55

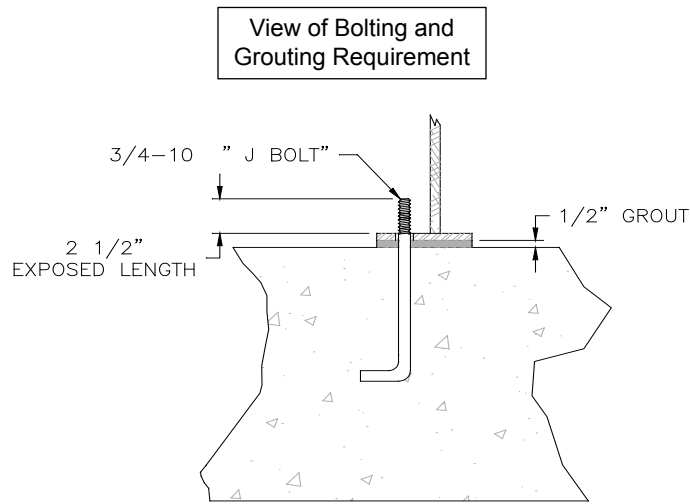
NOTE
Drawings reflect standard production models. Options such as Electrical Right (ER) will effect foundation layout.

NOTE
All dimensions are in inches.

NOTE
To avoid alignment errors install foundation bolts after machine placement.

GROUTING

It is very important to understand that proper grouting of DynaWash® machines will result in best performance. Correct grouting will assure perfect alignment of the machine with the floor.



NOTE

Reference installation drawings for proper length of J-bolt and concrete depth per model.

RIGID MOUNT MODELS (DW & DW_PT):

First, make the foundation level and flat. Next, pour grout in area that the base of the machine will be located. Then lower the machine on the grouted area evenly. Check level front to back and side to side. Pull down high side(s) using foundation bolts. Allow grout to harden. Install all flat washers and lock washers and tighten all nuts. After service connections are made run a cycle and recheck that all nuts are tight. Make periodically checks as follows:

1. Daily for one (1) week.
2. Weekly for one (1) month.
3. Set up periodic inspection. (Section 6).

DYNA•MOUNT SOFT MOUNT MODELS (DW_SM & DW_PTSM):

Install Soft Mount models as in paragraph above. Before loading and running the first cycle adjust the suspension system to the following measurements. Bottom of front plate to base must be 1 1/4" and front plate must be level side to side. Bottom of rear plate to base must be 1 1/8" and rear plate must be level side to side. When machine is fully loaded with water it should be level front to back.

STANDARD PLUMBING CONNECTIONS

	DW100	DW150	DW200	DW300	DW400
Inlet Valve	1 1/4"	2"	2"	2"	2"
Drain Valve	4"	6"	6"	8"	8"

PNEUMATIC CONNECTIONS

All DynaWash® machines require a single compressed air source of three-quarter (3/4") NPT at a minimum of 80 PSI (5.4 bar).

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STANDARD ELECTRICAL CONNECTIONS

2 MOTOR - 3 SPEED DRIVE

208 - 240 volts / 3 phase / 60 cycle:

	<u>DW100</u>	<u>DW150</u>	<u>DW200</u>	<u>DW300</u>	<u>DW400</u>
Wire Size	#6 AWG	#6 AWG	#6 AWG	#2 AWG	#2 AWG
Circuit Breaker	30 AMP	50 AMP	50 AMP	100 AMP	100 AMP

440 - 480 volts / 3 phase / 60 cycle:

	<u>DW100</u>	<u>DW150</u>	<u>DW200</u>	<u>DW300</u>	<u>DW400</u>
Wire Size	#12 AWG	#10 AWG	#10 AWG	#6 AWG	#6 AWG
Circuit Breaker	20 AMP	25 AMP	25 AMP	50 AMP	50 AMP

380 - 415 volts / 3 phase / 50 cycle:

	<u>DW100</u>	<u>DW150</u>	<u>DW200</u>	<u>DW300</u>	<u>DW400</u>
Wire Size	#10 AWG	#8 AWG	#8 AWG	#6 AWG	#6 AWG
Circuit Breaker	25 AMP	30 AMP	30 AMP	60 AMP	60 AMP

SINGLE MOTOR

230 volt / 3 phase / 60 cycle:

	<u>DW100</u>	<u>DW150</u>	<u>DW200</u>	<u>DW300</u>	<u>DW400</u>
Wire Size	#6 AWG	#6 AWG	#6 AWG	#2 AWG	#2 AWG
Circuit Breaker	30 AMP	30 AMP	50 AMP	80 AMP	100 AMP

460 volt / 3 phase / 60 cycle:

	<u>DW100</u>	<u>DW150</u>	<u>DW200</u>	<u>DW300</u>	<u>DW400</u>
Wire Size	#12 AWG	#10 AWG	#10 AWG	#6 AWG	#6 AWG
Circuit Breaker	20 AMP	20 AMP	25 AMP	40 AMP	50 AMP

NOTE

Options such as Water Reuse System and Electric Heating Element will require larger wire sizes and must be determined at site by a qualified electrician. Contact Factory for Electrical Connections not listed.

SERVICE CONNECTIONS

Plumbing

1. The hot water inlet feeds the automatic supply injection system, (optional).
2. EDRO supplies a valve for direct steam (optional); however, all DynaWash® machines are equipped with a built-in muffler so steam can be injected manually or an automatically controlled valve can be added anytime in the future.
3. All DynaWash® machines are equipped with an air filter, oiler, and pressure regulator. DynaWash® machines require 80 to 100 PSI, and consume, on the average, 3.5 cu. ft./hr. The air connection to the machine is ¼" NPT. Install a shut-off valve on air line.
4. All DynaWash® machines are equipped with DynOzone. No external connections to the machine are required for this feature.
5. Gate and globe valves as well as incoming hose lines are not supplied with the unit.

Electrical

Run the electrical cable to the washer's electrical panel and attach the wires to the terminal strip marked L1, L2, and L3.

NOTE

If cylinder does not spin clockwise (as viewed from front of machine) in forward wash mode or in extract, remove power, check phase connection or swap any two incoming wires to main power terminal or verify inverter settings.

Hold Down Bolts: Should be rechecked and tightened after running the first four (4) loads. Bushings, bearing bolts and bearing plate bolts should be checked per Section 6.

Air Pressure Safety Switch: De-energizes the machine when air pressure drops below 50 PSI (2.5 bar). To adjust the air pressure switch, turn the knurled adjustment screw clockwise (in) to raise setting and counter-clockwise to reduce setting.

Vibration Switch or Sensor: Is preset to stop the machine when it becomes out of balance.

Rigid mount models (DW & DW_PT) have a factory preset sensor located in the electrical panel. Adjust for sensitivity by tilting angle of sensor.

Soft mount models (DW_SM & DW_PTSM) have a sensor located between the frame and floating tub. Adjust sensitivity by placing activating rod in microswitch.

Complete Warranty Registration Card and Return to EDRO: This is located in the document package shipped in the machine's electrical panel box.

Installation, On-Site Testing & Operational Checkout Form

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	SERIAL No.:																																																																																				
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SECTION 3

THEORY OF OPERATION

DynaWash® washer-extractors are designed for cleaning laundry only. The machine performs the following principle functions: water and chemical injection, wash/clean, rinse, drain, and water extraction. The washer-extractor is comprised of two basic parts: an outer shell or tub and a revolving cylinder within the tub. The shell holds the water and chemicals and the revolving cylinder holds the clothing. The cylinder is highly perforated with small holes on its outer surface. These small holes allow the chemicals and water to enter, saturate and pass through the clothing within the cylinder. The cylinder is divided into three compartments each rated at $\frac{1}{3}$ the total machine capacity. Multi-pocket machines provide greater operational flexibility, allowing the operator to segregate multiple divisional loads into individual pockets, which is not possible in open pocket machines.

The wash load is cleaned by chemical and mechanical action. The mechanical action is dependent on the number and height of the rises and falls of the clothing per unit of time within the cylinder. Chemical action is dependent on the correct amount of chemical product per unit volume of water. Too much chemical product per unit volume of water causes chemical particle entrapment within the garment fibers, which cause yellowing of the garment during drying and finishing. Too little chemical product per unit volume of water decreases chemical cleaning action.

Extraction is performed after the tub has been drained to remove large amounts of water from the clothing. The extraction process is created by the acceleration of the cylinder from the slow rotation of washing to a much faster rotation. With the cylinder rotating at such a high rate of speed, the centrifugal force removes a majority of water from the clothing.

DynaWash® washer-extractors employ a fully automatic control with the ability to control all operating features of the machine. The control controls the Wash Motor Rotation Sequence (forward / pause / reverse) Extract Motor Speeds, Water Levels, Hot and Cold Water Valves, Extra Water Inlet, Sewer Drain, Extra Drain, Internal and External Chemical Signals, Heating device, DynOzone and the Door Lock. The control panel also contains Emergency Stop, Forward and Reverse and Jogging push buttons.

The machines may be optionally equipped with a supplemental booster heater; direct or indirect steam or electric immersion heater, capable of increasing the temperature of the bath water in the event the hot water is inadequate. An optional Water Reuse System (or extra drain and extra water inlet) provides the means to recapture rinse water, store it and supply it for future wash steps. The extra hardware is controlled by the control.

DESIGN AND CONSTRUCTION

The design of the DynaWash® machine emphasizes performance reliability and long service life. All fabricated wetted parts are stainless steel, and wetted component parts are either brass or bronze.

The cylinder is driven by one of two methods DW_PT & DW_PTSM models have a set of belts going through an extract motor, a clutch and brake assembly, and wash motor. The DW & DW_SM models have an inverter with a single motor drive. The flywheel is supported via the shaft by flange-mounted spherical roller bearings bolted to the front and back plates of the machine. The cylinder is constructed of formed baffles and ribs that lift the laundry from the bath solution when it rotates at slow speed then allowing the laundry to tumble back into the bath. This mechanical action accomplishes the washing function. The cylinder is perforated, allowing the water to drain from within during the wash and extract steps. The shaft, bearing and seal assembly includes a full length stainless steel shaft supported on both ends by flanged bearings mounted in a precision machined stainless steel bearing adapter housing. The cavity in the housing allows for the installation of two, single lip seals, which maintain contact with the bearing on the shaft and separate the wash water from entering the bearing and the bearing grease from entering the wash water.

The electrical controls for DynaWash® machines are housed in a separate enclosure located on the side of the machine. Turning the key on panel cover and opening the panel door provides access to the electrical components. These include the control, PLC and other control components.

Chemicals may be added to the machine in a variety of methods. The standard system supplied with DynaWash® consists of a manual hopper either located on the right side of the machine (DW and DW_SM models) or on the soiled side plate (DW and DW_SM models), and 10 ports for liquid supplies located on the right side of the machine. A terminal strip located in the control panel provides connection points for the external signals. An optional flushing supply system consists of a stainless steel supply hopper and flushing solenoid valves connected to the hot water valve. The dispenser has five supply compartments. The compartments hold plastic supply cups that may be used for either liquid or dry supplies. A nozzle flushes the supplies from the cups with water for a predetermined programmed time. Dry supplies are placed in the supply dispenser compartment cups at the start of each cycle. Ports for liquid chemicals are also provided with the supply hopper.

Standard production of DynaWash® use one single drain valve. The drain valve is normally open, which means that it closes only when power is applied, thus allowing the machine to drain in the event of a power failure.

The wash load should be divided into three equal parts, not more than 10% difference in weights and between 95 and 105% of total rated capacity. Best results are obtained when the load is kept within the machine's full rated capacity. Do not mix loads. Use the same type of washable material for each load (towels only, sheets only, etc.). If the fabric to be washed is quite dense and heavily soiled overloading can result in an inferior wash. The operator may need to experiment to determine load size based on fabric content, soil content, and level of cleanliness required. When loading is complete, ensure that all fabric is inside the cylinder. Then close and lock the door.

NOTE

When washing items, which may disintegrate or fragment, such as mop heads, use laundry nets to prevent drain blockage.

CAUTION

Be careful around the open door, particularly when loading from a level below the door. Impact with door edges can cause personal injury.

DYNOZONE - DYNAWASH® OZONE SYSTEM

Your new EDRO washer-extractor is equipped with a revolutionary on board ozone system, the DynOzone – DynaWash® Ozone System. This exclusive system features our patent pending PowerCell ozone generators and is completely integrated within the machine. There are no separate controls, hookups, floor or wall space required. The system is extremely simple, yet amazingly effective.

PROGRAMMING - DYNOZONE

DynOzone is a machine feature that can be programmed in any wash/rinse step. To activate DynOzone, you must enter the programming mode. Selecting the “Ozone” button on the wash/rinse setup screen will activate the PowerCells and pump. They will simultaneously run for the programmed time of the step selected.

NOTE

DynOzone will only be activated if you program it.
DynOzone can be programmed in any wash/rinse step.
DynOzone will shut off if the temperature is set above the configured setting.
DynOzone and heat can be programmed in the same step.

THEORY OF OPERATION - DYNOZONE

Benefits of ozone applications in laundry have been well documented. These systems provide a washing process that allows the laundry to be sterilized, disinfected, bleached and deodorized with reduced water, chemicals and heat. However, until now all ozone systems have been externally connected to washing machines, require extra wiring, floor and wall space and much maintenance to properly operate. The DynOzone – DynaWash® Ozone System is different. Besides using patent pending PowerCell ozone generators which create a special activated oxygen gas, it is the only system available that is built onto and fully integrated into a washing machine, and controlled and monitored by the machine’s fully programmable control. For best results, the DynOzone – DynaWash® Ozone System needs the proper chemistry and wash programs. Therefore we recommend consulting your chemical supplier before using the system. Maximum efficiency will depend on the chemicals you use, and the wash programs you create.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

Here are some helpful hints on using DynOzone.

DynOzone works best in cold water. This is because DynOzone adds molecular energy to the water in the form of a many activated oxygen species as a diffused gas. The hotter the water quicker the gas diffuses. Since you want to maintain maximum surface exposure of the gas bubbles and the water so that proper saturation is attained, it is recommended to wash in temperatures below 120°F. One aspect of the DynOzone gas is to act as a water purifier, allowing the water to hold dirt particles in suspension permitting the water to absorb more. In essence, this means fewer rinses are required in your wash program. DynOzone is a special gas created by ultra violet radiation. The PowerCells contain a special VH quartz crystal glass that emits specific UV wavelengths creating both ozone and germicidal oxygen species. The ozone producing wavelength is an effective oxidizer, while the germicidal producing wavelength is extremely effective in killing microorganisms. This special gas when combined with water yields remarkable results. After using DynOzone you will notice a fresh clean scent to the laundry, similar to the outside air right after a lightening storm or the scent of clothes drying in sunshine on a clothesline.

DynOzone – DynaWash® Ozone System has many practical uses in the laundry.

1. It can be used to reduce hot water consumption because the molecular energy of the gas replaces the energy of the heated water (heat = energy).
2. It improves the “hand” or feel of the laundry because washing in cold water relaxes fibers and is not as harsh on the fibers as hot water and laundry chemicals such as bleach.
3. It acts as an effective bleaching agent to brighten laundry. This is due to the fact that singlet oxygen molecules are produced by the PowerCell generators. When these molecules combine with water (H₂O), hydrogen peroxide (H₂O₂) is made.
4. It destroys bacteria more effectively than heat and chlorine bleach through oxidation and germicidal kills.
5. It can be used as an odor remover. For instance, item’s washed & dried, can be returned back to the washer for a final non-fill “DynOzone” odor removal program.
6. It can be used in smoke restoration in a specially designed over night soak program.

SYSTEM MONITORING DURING OPERATION

Your DynOzone equipped washer-extractor incorporates a monitoring system for each Power-Cell and each pump (as applicable). If any part of the system fails, the red lights on the DynOzone monitoring display will turn yellow. If the PowerCell bank falls below 50% capacity, the machine will shut down and an error screen will appear. The PowerCells and ballast wiring should be checked immediately. If the PowerCell has failed, contact EDRO parts department for a replacement PowerCell. The pump(s) is also monitored during operation. If failed, it will stop all machine functions, go to an error Stop screen and sound an audible alarm. Press the Return to reset. Call your serviceman to repair. You can however elect to run the machine in non-ozone wash programs.

DYNOZONE - DYNAWASH® OZONE SYSTEM MAINTENANCE

The washing efficiency also depends on how well DynOzone system maintenance is performed. Here is a list of system maintenance.

1. PowerCell. PowerCell life is 5,000 hours, or approximately 18 months of operation. After that point the quartz crystal of the UV lamp loses its effectiveness in emitting the required light wavelengths. After the expiration date on the PowerCell label or if the PowerCell fails, it should be replaced.
 - a. Air intake filter. The air intake filter is located on the bottom end of each PowerCell. Note that on some models you will need to remove panels to reveal the PowerCells. These should be clean and free of lint in order to provide a free and clear path for the ambient room air to be drawn in and supercharged by the PowerCells. It is a good idea to keep a few of these air filters on hand, to avoid down-time.

NOTE

Part number for 24" PowerCell is 3720-1
Part number for 36" PowerCell is 3720-2

2. Pump. The specially designed ozone safe air pump requires annual maintenance for peak performance. Annually check to make sure air flow is unobstructed by removing the tubing and running the system in manual operation. If noticeably less airflow or excessive noise is observed, the valve plate or waved diaphragm may need replacement. These items should be replaced every (2) years.
3. Tubing. The tubing used to deliver the gas is made of a special material. This tubing, especially between the backflow preventor and diffuser, should be replaced every (3) years or when noticeably deteriorated.
4. Fittings. There are fittings on the PowerCells, pump and within the tubing. There is also a check valve prior to the diffuser. These items should be checked annually and replaced as required.
5. Ballast. The ballast used to power the PowerCells are smart electronic type ballasts. They regulate the voltage required to fire the PowerCells and maintain operating current. No maintenance is necessary.

OPTIONS

Heating: Steam / Electric

The steam injection option provides for simple, efficient, and accurate generation of hot water. There are two (2) designs: direct steam injection and indirect steam injection. Direct steam injection injects live steam into the shell through a automatic steam solenoid valve. The live steam is then sent through a stainless steel noise silencer and generates hot water through direct steam diffused with the water. Indirect steam injection utilizes a steam coil in the shell of the machine to generate hot water and return the steam back to the steam generating source (boiler). A valve, steam coil, and steam trap are provided with this (indirect) option.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

Electric Heat Generation uses a flange mounted electric immersion heater. It is capable of increasing the temperature of the bath without the use of live steam. Use of this heating element is for heating boost only! The electric immersion heater is not intended for use as a sole source for hot water generation. When in the operating mode, the heating element must be submerged in the water. Minimum water level is 8" on sight glass.

Extra Drain & Extra Water Inlet (Water Reuse System)

DynaWash® may be equipped with an Extra Drain and Extra Water Inlet to form the Water Reuse Option; a system that provides a way to store separate batches of reusable rinse drain water for use in a later wash step. A complete Water Reuse System (WRS) includes storage tank, a pump assembly and drain valves for saving water from previous programmed rinse step. In some instances where the temperature of the reclaimed water is maintained, the storage tank should be equipped with a tank heater. When gravity filling or draining is not available, pumps are required in the re-circulating piping. Pump contractors can be interfaced with the Extra Drain and/or Extra Water Inlet.

Automatic Positioning

Automatic Positioning assists in aligning the cylinder doors with the main door when jogging the machine during loading and unloading. It operates through a sensing switch located on the machine's back plate which senses a positioning device located on the flywheel. A button to engage Automatic Positioning is located on the machine's control panel.

SAFETY FEATURES

Automatic Braking on Power Failure

In case of power failure or if the master switch is turned off, the brake will automatically engage and will stay on until power is restored or the control is activated. Because of this feature, in order to release the brake, shut off the main air source to the machine and release the air connection to the machine's pneumatic system. The machine will not start unless air is admitted once again.

Positioning Interlock – Cylinder Jog

In order to rotate the cylinder for loading and unloading, a two-hand operation is required. Both the jog and **ONE** direction push-button (FWD for forward or REV for reverse) must be depressed in order to rotate cylinder. **Be sure to close the cylinder door before jogging the cylinder to the next position.**

Door Lock

An interlocking door-lock system prevents opening of the main door when the machine is in operation. It also prevents program or manual operation when the door is open.

Emergency Stop

A red Emergency Stop button is located on the control dashboard and Clean room control for *PassThru* models. Push the button to stop machine and pull out to reset. An alarm screen will appear on the touch screen and the machine will come to a safe operating mode when engaged.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

Vibration Switch or Sensor

A vibration switch/sensor is installed in the electrical panel (on Rigid Mount models: DW & DW_PT) or on the rear corner suspension tower (on Soft Mount models: DW_SM & DW_PTSM) and signals the control to stop the machine when an unbalanced load occurs during extract. When tripped (or activated), this switch/sensor sends a signal to the control which shuts down the machine for a vibration fault sequence. Once timed out, the machine will resume in the step it was last in before the error occurred and finish the program for that particular cycle.

CUSTOMER SERVICE

For technical support or replacement parts, contact the source from whom the washer-extractor was purchased. Contact EDRO DynaWash® Service Department for the name and address of nearest authorized service and parts distributor. Contact information is;

The EDRO Corporation

37 Commerce Street - P.O. Box 308

East Berlin, CT 06023-0308 USA

Web www.edrocorp.com

Telephone (860) 828-0311

Fax (860) 828-5984

Email parts@edrocorp.com, service@edrocorp.com

NOTE

A record of each DynaWash® machine is on file with EDRO. Be prepared to provide the serial number and model number when ordering parts or when seeking technical support.

SECTION 4

MACHINE OPERATION

NOTE

Read this manual thoroughly before attempting to operate the machine or program the control.

NOTE

Do not use this manual in conjunction with any earlier model machine or control on DynaWash®. Do not use technical literature intended for earlier models when operating this machine.

NOTE

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of printing and subject to change without notice.

BEFORE OPERATION

Even though DynaWash® machines are equipped with many safety features and interlocking safety devices, which prevent the machine from being operated improperly, it is advisable to check the condition of the machine before engaging the main switch.

Start-Up Procedures

Once the machine is set in place and service connections completed, proceed with checking out the installation and operating functions, making necessary corrections and adjustments.

Following are a few hints that will make final testing simpler, safer, and more thorough:

- Make sure that all three (3) compartments are empty and that all doors are securely locked.
- Check air pressure (should be 80 PSI on pressure gauge) on the machine.
- Open main water source to machine.
- Turn the main circuit breaker power switch on.
- Turn the control dashboard rocker switch on. Control will respond with splash screen and power indicator.
- Navigate through screens to Test Program (#50).

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

- Check the rotation of the cylinder. Open door and JOG in forward rotation. The cylinder should rotate in a clockwise direction or in the direction of the drain. If direction of rotation is counterclockwise or away from the drain, interchange any two lead-in wires or verify inverter settings.
- Test the alignment of the machine with the foundation. Leave floor bolts loose. Run the machine empty in full extraction. Tighten the nuts and check after the first few loads.
- Check the forward and reverse JOG switches.
- Check and adjust water levels (See DynaTrol configuration).
- Run the machine through the test program (Number 50).
- Before washing the first load, thoroughly clean and flush the machine using hot water, soap, and alkali. Place a few rags into each compartment. Rinse with clean water.

LOADING

Because of the patented “3-D” cylinder construction of DynaWash®, the wash load should be divided into three equal parts, not more than 10% difference in weights and between 95 and 105% of total rated capacity. Best results are obtained when the load is kept within the machine’s full rated capacity. Do not mix loads. Load each compartment with an equal amount of laundry. Use the same type of washable material for each load.

AUTOMATIC OPERATION

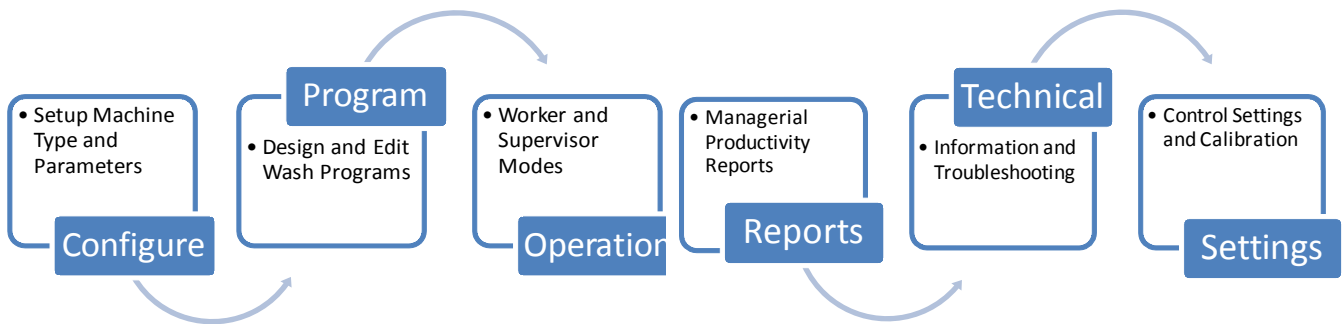
Except for positioning for loading and unloading, all other operations of DynaWash® are performed automatically according to the selected wash program. Many other secondary or supplementary operations are controlled by DynaWash’s® electronic system such as applying and releasing the brake, locking the door, reversing the motor rotation, etc. (See Section 5 for more on this feature).

SECTION 5

DYNATROL TOUCH SCREEN CONTROL VERSION 2.0



The DynaTrol touch screen control features the latest HMI (Human Machine Interface) control technology. It is based on a Programmable Logic Controller using ladder logic code. Select a link from the table of contents below to continue or browse with the navigation keys.



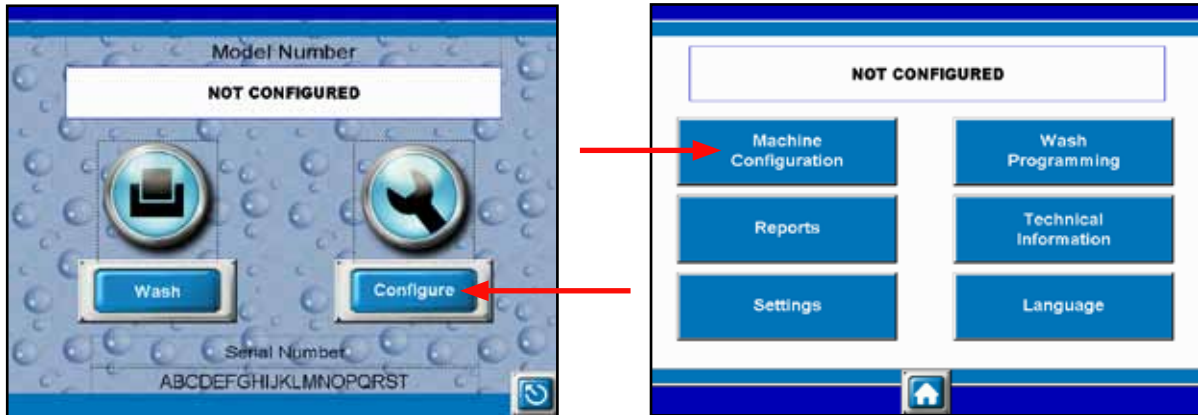
The DynaTrol touch screen control can be setup to work on any DynaWash® washer-extractor. It must be properly configured to take full advantage of its capabilities.



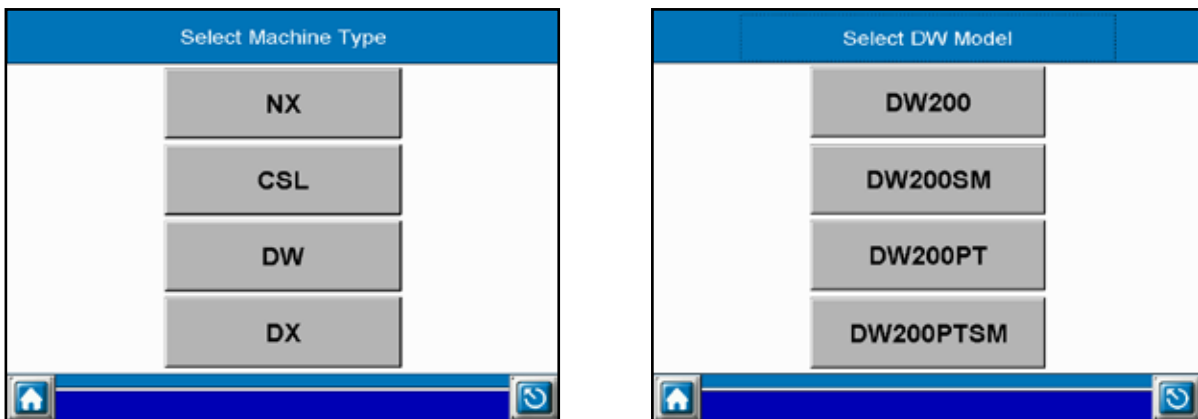
DISCLAIMER!
THIS MANUAL COVERS SOFTWARE VERSION V2.00.
IT CONTAINS OPTIONS THAT YOUR MACHINE MAY NOT BE EQUIPPED WITH.

MACHINE CONFIGURATION

To enter Machine Configuration, press the Configure button from the Home screen, then select Machine Configuration. You will need a Level 3 password to continue.



Once you have entered Machine Configuration, you will need to select a machine type and a machine model to properly configure background control functions:



The next screens contain information on specific machine parameters which provide unique model characteristics. They are broken down into the following sub sections:

- Motor Setup
- Water Level Setup
- Ozone / Signal Setup
- Timers Setup
- Miscellaneous Configurable Parameters

NOTE

A help button is located next to each parameter which further describes the necessary input or provides a means to set the value.

Enter or change a value by pressing the corresponding number box on the right side of the screen. A popup window will appear with the current parameter value. Enter a new value and press ENT to accept, CLR to clear and the X to return without saving.

MOTOR SETUP

Configures motor design and speed settings for the machine.

RPM at Distribution Speed

This setting is used to set the distribution basket speed of the washer. Set a value between 45 and 120.

Setting for inverter drive models only.

Motor Configurable Parameters		
/	Machine Motor Configuration	#
/	Minimum Basket RPM	##
/	Basket RPM of Wash/Rinse Step	##
/	Basket RPM of Drain Step	###
/	Basket RPM for Distribution Speed	###
/	Extract Ramp Slope	##
/	AutoJog Limit Bypass	#
/	VFD Extract Speed Time Split	##
/	Laundry Unbalanced Software	#

Help Button →

WATER LEVEL SETUP

Configures values which are affected by level sensing.

Level Offset

Close drain and adjust water level to the bottom of wash drum.

Press enter to set value.

Close Drain

Enter

Water Level

Raise

1234

Lower

Water Level Configurable Parameters		
/	Level Offset	####
/	Safety Level	####
/	100% Full Level	####
/	Overflow Level	####
/	Water Deadband Temperature F	##
/	Water Deadband Level	##
/	Extract Fill Level	##
/	Extract Delay for Safety Water Level	##
/	Maximum Temperature to Open Door F	###

Click here to go to Water Level setup.

OZONE/SIGNAL SETUP

Configures DynOzone system and Signals working parameters.

DynOzone Step Start Parameter

Set the step starting time of the DynOzone System.

0 = Beginning of step
1 = After temperature
2 = After level
3 = After temperature and level

Ozone/Signal Configurable Parameters		
/	Number of PowerCells	#
/	Number of DynOzone Pumps	#
/	DynOzone Step Start Parameter	#
/	DynOzone Maximum Operating Temperature F	###
/	Number of Signals	#
/	Default Signal Time	##
/	Signal Step Start Parameter 1	#
/	Signal Step Start Parameter 2	#

Help Button →

TIMERS SETUP

Configures values which are affected by timers.

Timer Configurable Parameters		
/	Signal Buzzer ON Time at End of Program	##
/	Signal Buzzer OFF Time at End of Program	###
/	Door Lock Pin Time	##
/	Brake Time from Extract Speed	###
/	Extract Agitate Time	##
/	Extract Distribution Time	###
/	Extract Time to Open Drain	##
/	Extract Delay for Speed Ramp	##
/	Service Maintenance Timer	####

Timer Configurable Parameters		
/	PowerCell Alarm Timer	##
/	Ozone Pump Alarm Timer	##
/	Low Air Alarm Timer	##
/	Safety Timeout Timer	##
/	Maximum Fill/Drain Timer	##
/	Maximum Heating Timer	##
/	Water Level Adjust Timer	##
/	Maximum Water Reuse Fill Timer	##
/	Default Drain Time	##

MISCELLANEOUS CONFIGURABLE PARAMETERS

Configures miscellaneous parameters.

Fahrenheit / Celsius

Sets the temperature reading for all control activities.
Enter 0 for Fahrenheit.
Enter 1 for Celsius.

Help Button →

Miscellaneous Configurable Parameters		
/	Password Overload Alarms	#
/	Fahrenheit / Celsius Display	#
/	Override Door Tilt	#
/	EBCSL Configuration	#
/	DynaCop Hold/Release Option	#
/	Remote Pendant Operator Option	#
/	Laundry Chute Option	#
/	VFD HSB Option	#

Machines can be reloaded with factory default settings by going through the Settings → Factory Process.

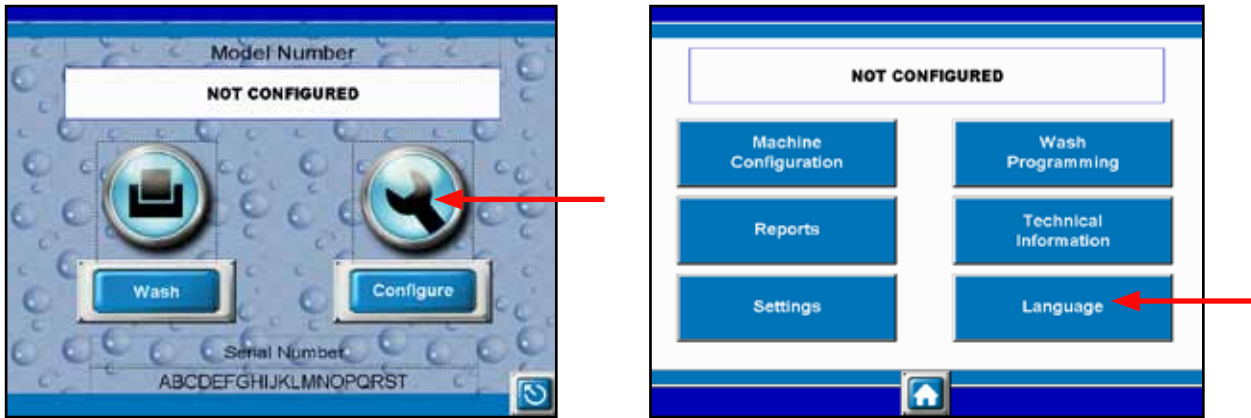
Enter machine and HMI serial numbers then press Next or Return to go back to previous menu.
NOTE: HMI CAN ONLY BE SET BY EDRO

Machine Serial Number

HMI Serial Number

LANGUAGE SETUP

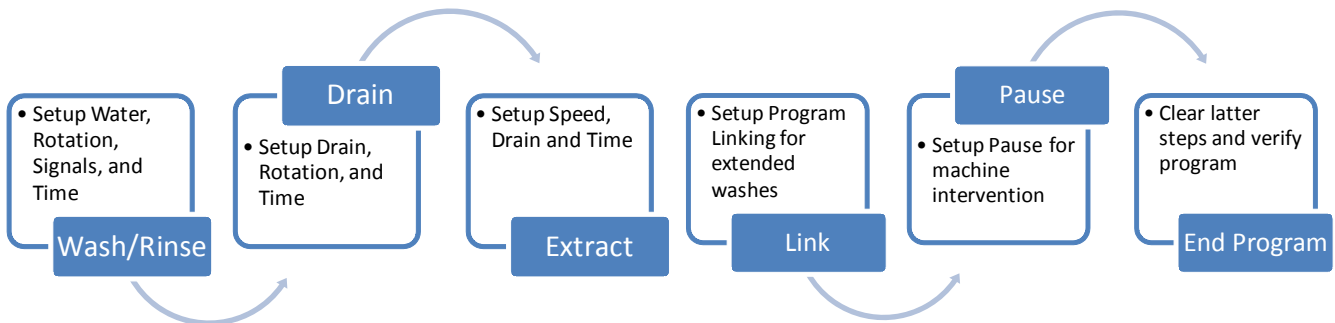
To choose Language, press the Configuration button from the Home screen, then select the Language button. A level 3 password is required to enter.



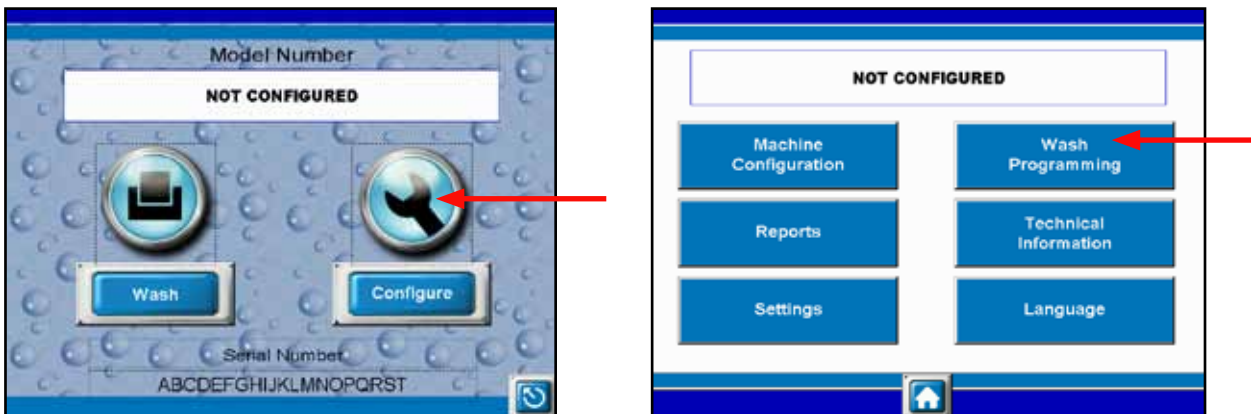
Select an available language. This will change all screens except technical information screens to the selected language. Technical information screens are by default English.

PROGRAMMING

The DynaTrol touch screen allows for the entry of up to 50 wash programs with 25 steps per program, as well as the ability to link programs. Wash programs may contain any of the following steps:

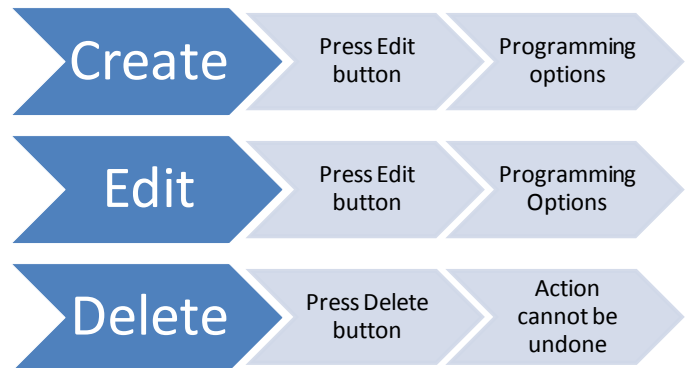
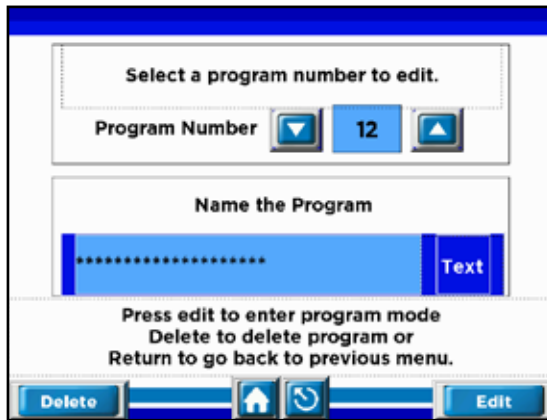


To enter Wash Programming, press the Configuration button from the Home screen. Then select the Wash Programming button. A Level 2 password is required to enter.



EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

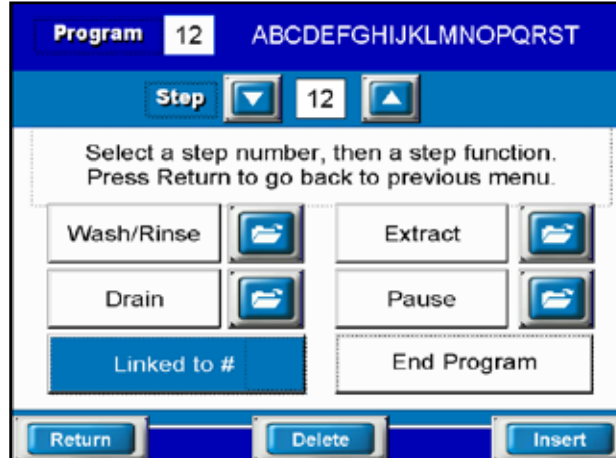
Begin by selecting a wash program number. Use the up / down arrows buttons to scroll. Program Names appear in the text box. Twenty-one factory programs are preloaded. These may be edited, deleted or re-loaded. To edit name, press the text box.



From this screen you can create a program, select a program to edit, delete a program, change program name, return to previous menu or return to home screen.

The main wash programming screen contains six operations:

- Wash / Rinse
- Extract
- Drain
- Pause
- Link Program
- End Program



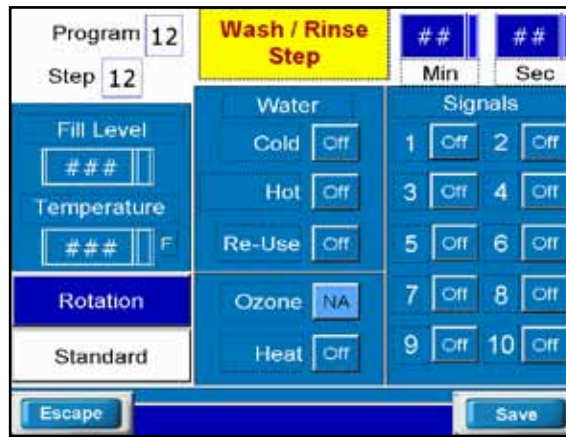
Press the blue open button next to the operation you wish to perform. A blue operation box indicates the current step function. From this screen you can press the return button which will load a program summary screen, delete button which will delete the current step, or insert button which will insert a step. Press the blue operation box to edit the functions of that operation.

WASH/RINSE STEP

A Wash / Rinse step may contain the following operations:

- Water fill • Temperature control • Rotation control • DynOzone control • Signal control

A time must be entered for any wash/rinse step.



WATER FILL

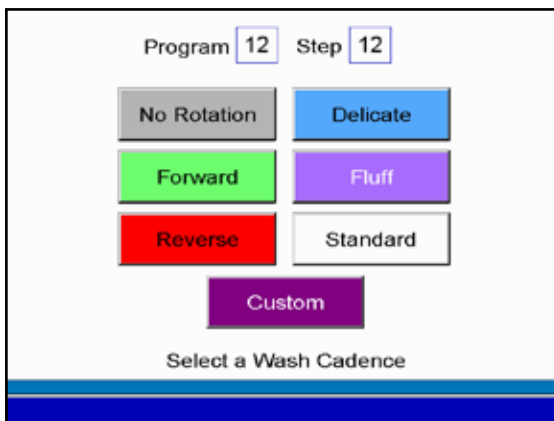
Press Cold to activate cold valve; Hot for hot valve, and Reuse for optional reuse valve. Water fills can be programmed to level and temperature with level being the determining completion factor.

TEMPERATURE CONTROL

Programming a temperature and the Heat button will activate the heating device. This setting will be maintained for the duration of the step.

ROTATION CONTROL

The step programmable wash cadence is set to a default standard wash rotation. By pressing the Rotation button a screen with six options will appear. The setting is step local. Available selections include: Standard Wash; Delicate Wash; Fluff; Forward Only; Reverse Only; No Rotation. When selecting Custom rotation a new screen will popup with the last loaded rotation settings which can then be accepted or modified.



DYNOZONE CONTROL

Selecting the Ozone button will activate the DynOzone system during the wash step. System will start based on the configured step start parameters and continue for the duration of step.

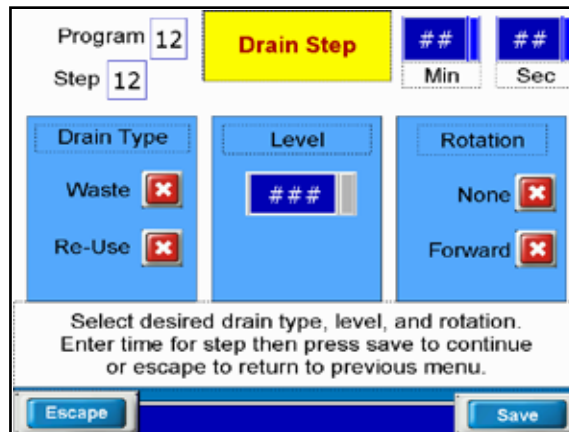
SIGNAL CONTROL

Up to 10 signal outputs (depending on model) may be programmed per step. A popup screen allows for global naming of the signal as well as time entry. A signal time cannot exceed step time. Signals can be configured to inject on a per step or global basis. See Ozone/Signal Setup Configuration for options.



DRAIN STEP

A Drain step may contain the following operations: • Sewer Drain • Reuse Drain (option) • Rotation control. A time may be entered for a drain step.



DRAIN CONTROL

Select either sewer drain or reuse Drain (option).

LEVEL CONTROL

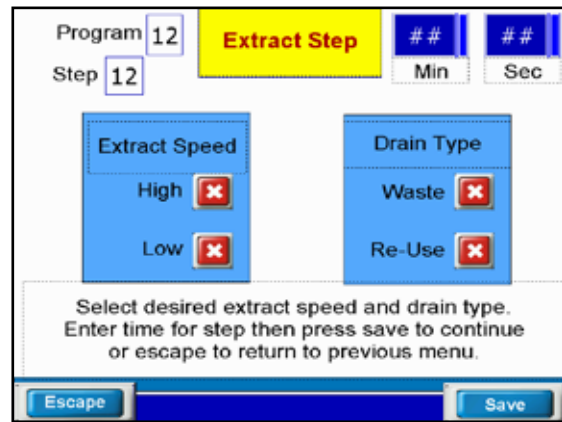
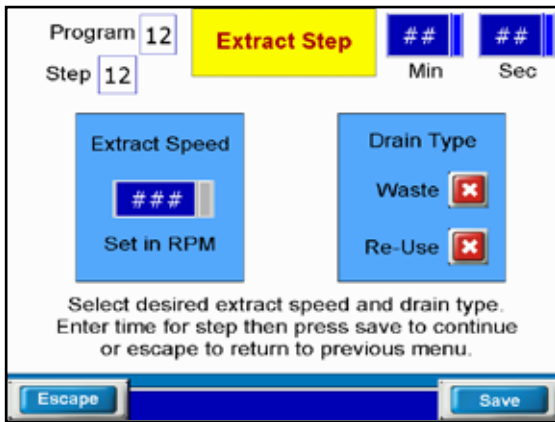
Program a time and select level or select a water level without time to drain to a set point.

ROTATION CONTROL

Forward rotation or still.

EXTRACT STEP

An Extract step may contain the following operations: • Speed selection • Sewer Drain • Reuse Drain (option). A time must be entered for an extract step.



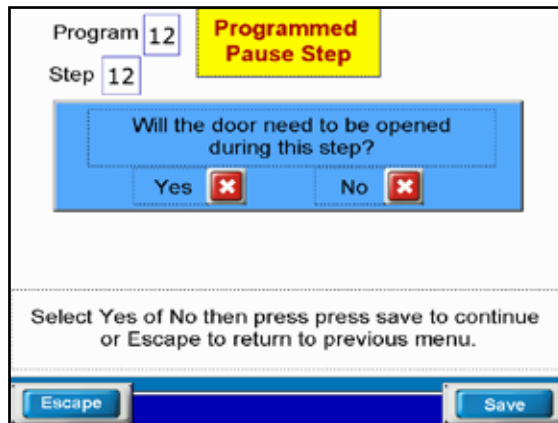
SPEED SELECTION

Depending on motor configuration, select a speed for extraction.

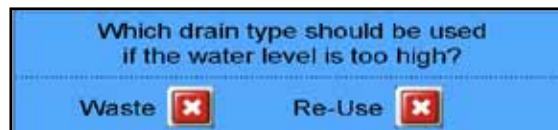
DRAIN CONTROL

Select either sewer drain or reuse Drain (option).

A Pause step may contain the following operations: • Pause • Door Open • Sewer Drain • Reuse Drain (option)

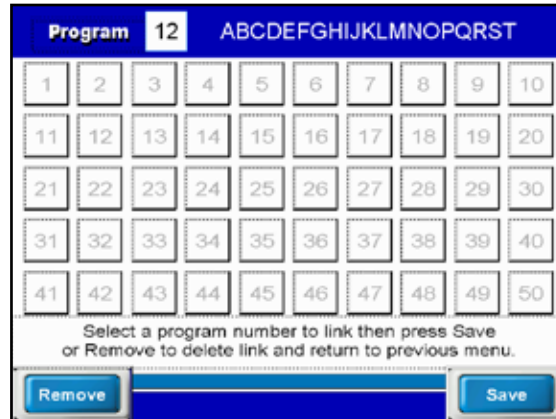


If door open is selected, a drain must be selected to attain door open safety level.



LINK PROGRAM

Pressing the Link Program button create a program link to any program in memory.



END PROGRAM

Pressing the End Program button will delete all latter steps of the program.

PROGRAM SUMMARY

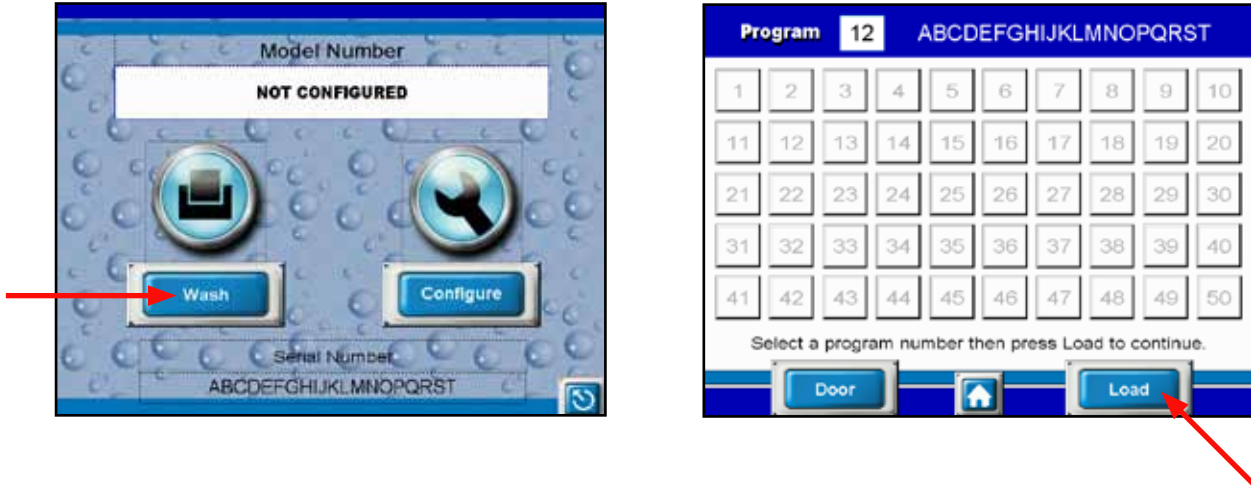
When the Return button is pressed from the main wash programming screen, a program summary will appear detailing all programmed steps. Press the forward and reverse arrows to scroll through all 25 steps or Home or Return buttons to return to Configuration menu or programming screen.

Program Summary				
Step	Name	Level	Temp F	Time
1	Wash/Rinse	123	123	123:12
2	Drain	123	123	123:12
3	Wash/Rinse	123	123	123:12
4	Drain	123	123	123:12
5	Wash/Rinse	123	123	123:12

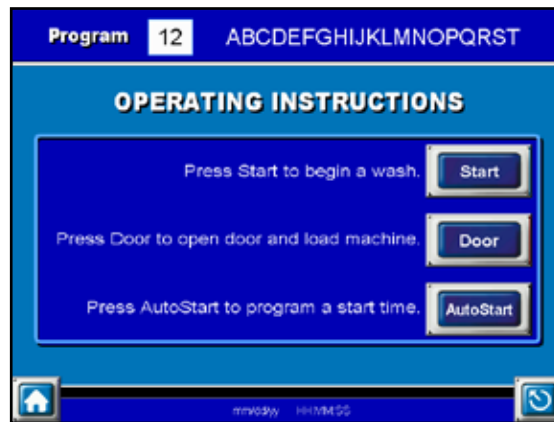
Program Summary				
Step	Name	Level	Temp F	Time
21	Wash/Rinse	123	123	123:12
22	Extract	123	123	123:12
23	End Program	123	123	123:12
24	Empty	123	123	123:12
25	Empty	123	123	123:12
Total Program Time				123:12

OPERATION

To begin wash operation, select the Wash Programs button from the home screen. This will load the available wash program screen. An available wash program is one that has already been programmed. Corresponding numbers and program names will appear in the text box when selected. On this screen, the function key Door is active to allow opening of the door for loading machine.



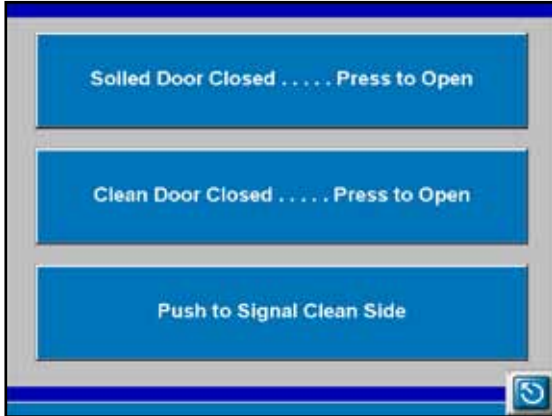
Press the Door button to activate door functions, home button to return to home screen, or Load button to go to Start screen. Select the appropriate operation.



- START begins program operation.
- DOOR activates door lock screen.
- AUTOSTART allows for starting the machine at a time in the future.
 - A popup screen contains date, time and activation key.

CSL tilting models and DW_PT, *PassThru* models have additional control screens for the tilting, jog and Clean/Soil side controls machine functions.

PassThru models Door Screen



CSL Tilting models Door Screen

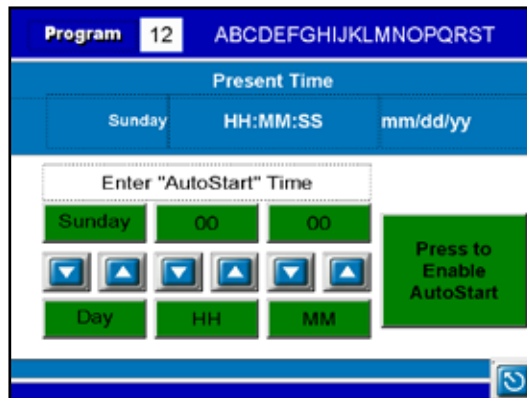


Non-Tilting Door Screen



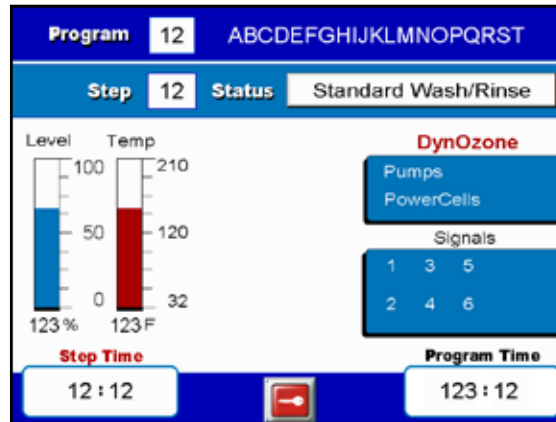
AUTOSTART

The header includes current loaded program and program name. The body contains present system time and settings for AutoStart time. Select a day, hour and minute to program and press ENABLE to activate. Pressing Return button will deactivate AutoStart and go back to Start screen.



WASH SCREEN

The header indicates the program number, program name, step number and step status. The body contains bar graphs indicating current water level and current temperature with a grey bar for programmed set points. Flashing indicators illuminate for water fill valves, heating, DynOzone operation, and signal outputs. The footer indicates step time and program time. Pressing step time pops out a step view window of programmed step functions. Times indicate remaining time. Supervisor override button (key) halts machine operation for machine override functions.



The Override button allows changes to the following functions:

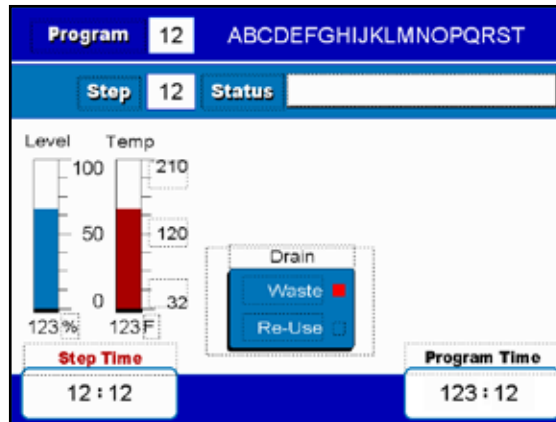
- water level
- temperature
- DynOzone
- heating
- rotation
- step time
- step up or down
- end program

Access to these functions requires a Level 1 password. The machine is in a pause mode during override function and requires the Return button and Resume button to continue or Stop button to abort.



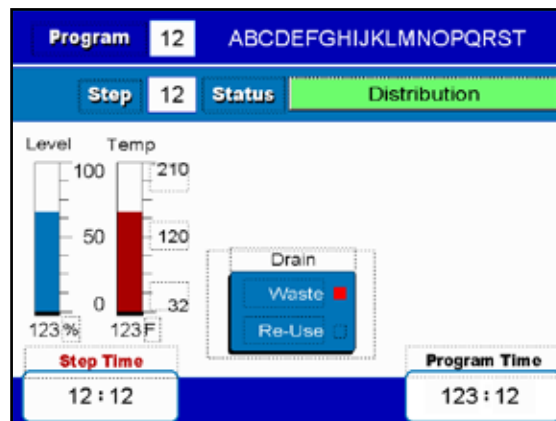
DRAIN SCREEN

The header indicates the program number, program name, step number and step status. The body contains bar graphs indicating current water level and current temperature with a grey bar for programmed set points. The footer indicates step time and program time. Times indicate remaining time. The override function is not available in a drain step.



EXTRACT SCREEN

The header indicates the program number, program name, step number and step status. The body contains bar graphs indicating current water level and current temperature, and indicator for drain type. A display indicates cylinder speed. The footer indicates step time and program time. Times indicate remaining time. The override function is not available in an extract step.



PROGRAM COMPLETE

At end of program, a Program Complete screen will appear and buzzer will sound. After safety brake time and safe mode conditions are met the door can be opened and goods removed. Door button activated door lock screen. Return button on goes to Load Program screen with most recent run program pre-loaded.



ALARMS AND WARNINGS

During operation safety alarms will appear if a malfunction occurs. Alarms are fatal and will abort program. Warnings can be reset, by-passed or aborted. Follow screen instructions for appropriate action required.

Sample Alarm: E-Stop engaged. Machine sent to safe mode. Reset component. Alarm History screen appears with list of last 10,000 alarms.



List of Alarms:

- Emergency Stop
- Wash Motor Overload
- Extract Motor Overload
- VFD Overload
- Door Open During Operation
- Low Air Supply
- Ozone Pump #1 Failure
- Ozone Pump #2 Failure
- PowerCell bank less than 50%
- Out of Balance Failure

Sample Warning: Water Level Timeout. Machine sent to pause mode. Reset timer, or override warning



List of Warnings:

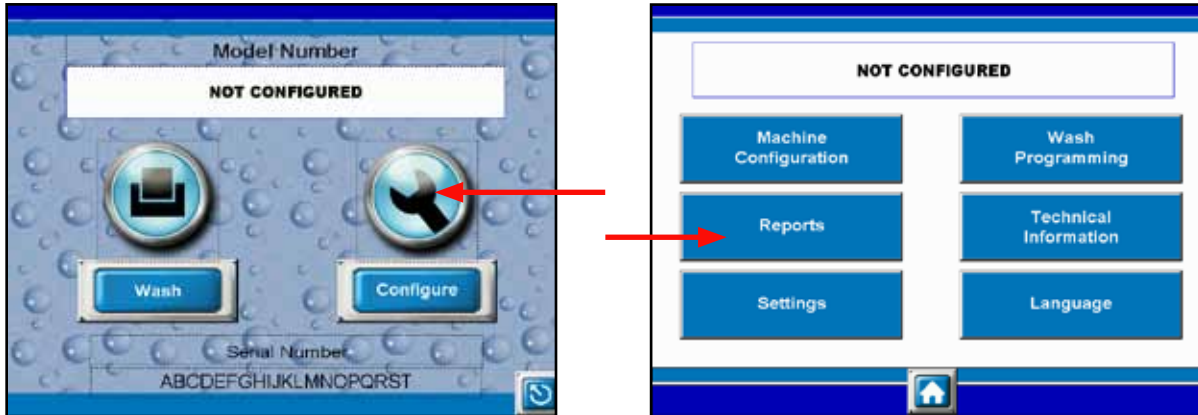
- Temperature Timeout
- Water Level Timeout
- High Temperature in Wash Tub
- High Water Level in Wash Tub

REPORTS

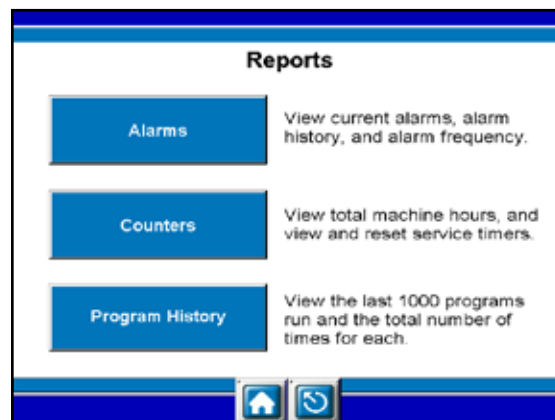
The following reports categories are available for viewing the machine's history of operation:

- Alarms
- Counters
- Program History

To view Reports, press the Configure button from the Home screen, then select Reports.



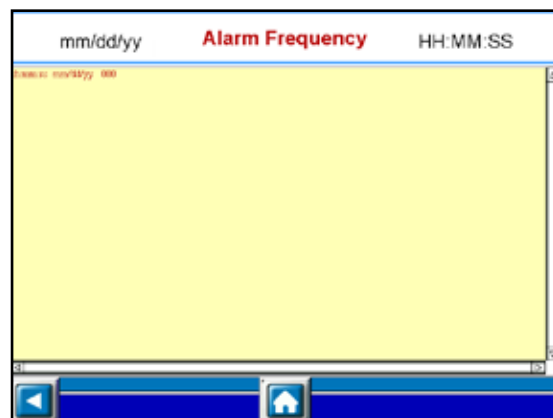
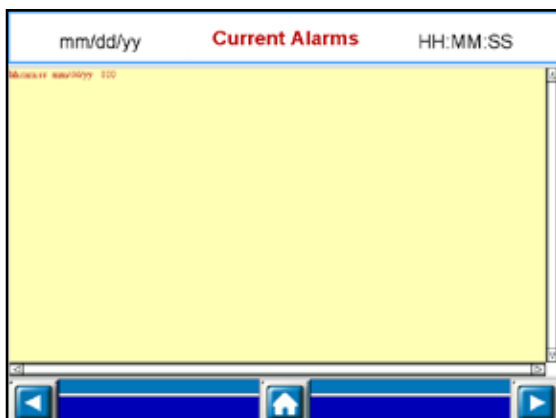
- Alarms
View current alarms, alarm history and alarm frequency
- Counters
View total machine hours, and view and reset service timers
- Program History
View last 10,000 programs run, total times, and cumulative data log with stop mode actions



ALARMS

There are three alarm reports:

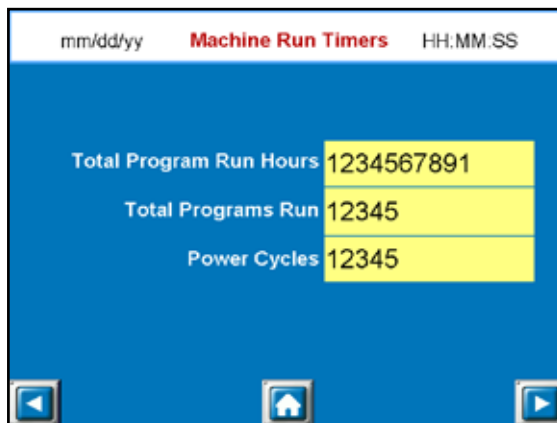
- Current Alarms are active machine alarms.
- Alarm History contains the last 10,000 alarms.
- Alarm Frequency details the number of times a particular alarm occurred.



COUNTERS

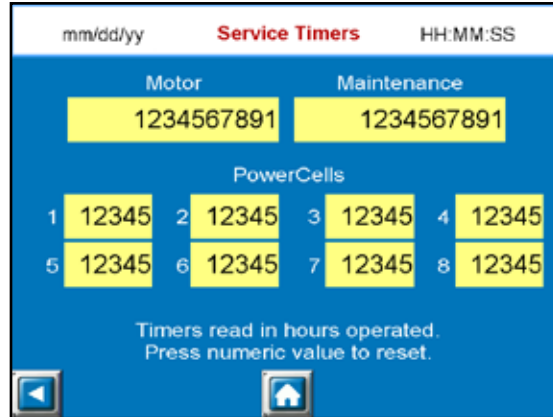
There are three counters. These cannot be reset.

- Total Machine Run Time counts hours of machine operation
- Total Programs Run counts total programs
- Power Cycles count On/Off.



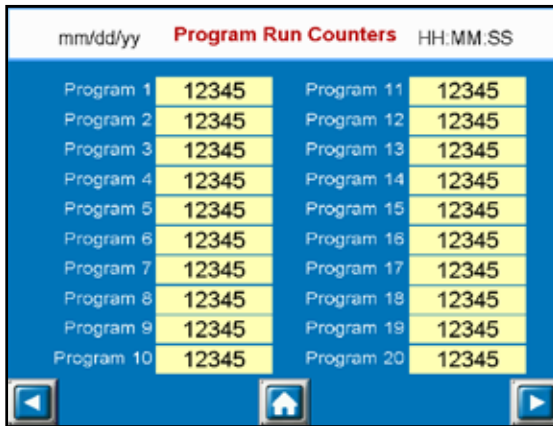
EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

Service Timers count the hours of operation from the last reset. These timers are tied into the service maintenance pop up screens and are re-settable with password security.

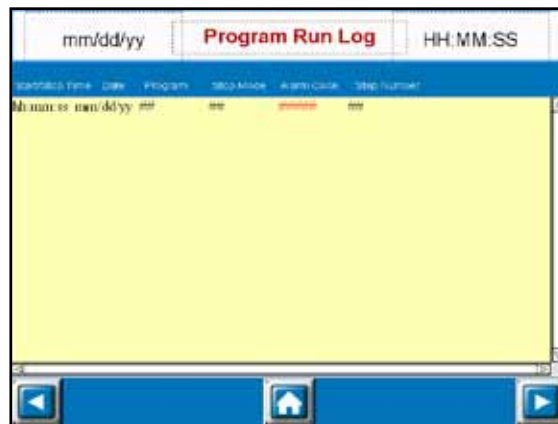


PROGRAM HISTORY

View the last 50 programs run with a time stamp, and the total number of times for each.



Program Run Counters may be reset to zero by pressing the program count number and entering a Level 2 password. On page 3 of the Run Counters, a master reset is located as well as an Export to USB feature to move data out of the control.



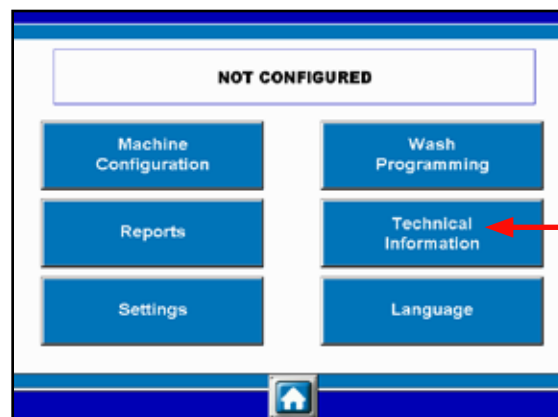
Program Run Log date/time stamps each program start/stop with following data:

- Program Number
- Stop Mode
- Alarm Code (if applicable)
- Step Number (of step when program was stopped or cycle completed)

This data is stored in the HMI but can be copied to a SD card in CSV format for exporting in Microsoft Excel for viewing.

TECHNICAL INFORMATION

DynaTrol provides several means for technical assistance and troubleshooting. First, each machine is configured with the Model Number and Serial Number on the Home screen. Use this information whenever contacting EDRO technical support for assistance. To enter DynaTrol's technical information section, press the Configure button from the Home screen. Then select the Technical Information button. A password is not required to continue.



A copy of the Control Manual is located in this section.

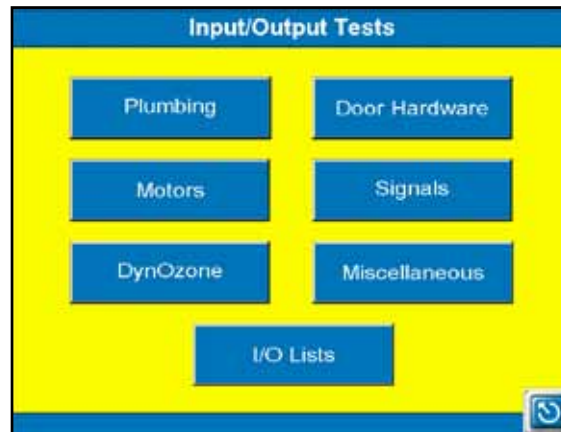
EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

The Debug Screens are for advanced troubleshooting. A level 3 password is required to continue. These screens allow the service technician to view and activate most inputs and outputs.

- Proceed with caution as interlocking safety features are disabled.
- Do not wash clothes using the Debug Screens.



Debug Screen home page.

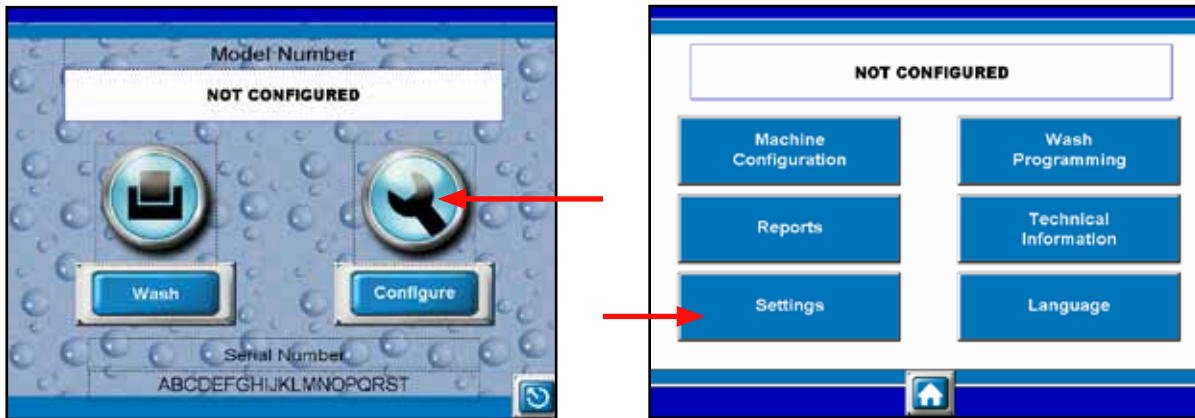


Select a range of inputs/outputs for troubleshooting. A red light will appear next to the active relays, meaning the control circuitry is firing. Refer to the machine schematic for X (input) and Y (output) descriptions. The I/O Lists illustrates all inputs and outputs of the control's PLC expander relays. Refer to the machine schematic for X (input) and Y (output) descriptions.



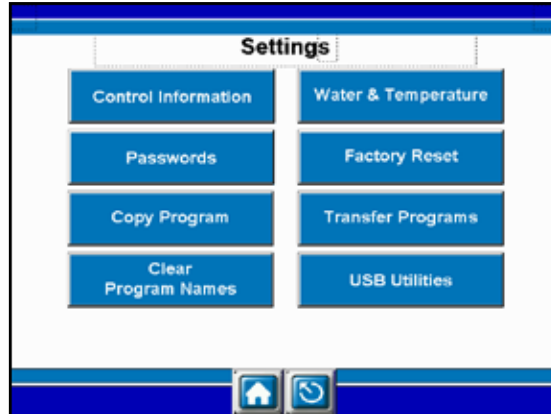
SETTINGS

To enter DynaTrol code settings, press the Configure button on the Home screen, then select the Settings button. A password is not required to continue.



HMI System Doctor settings can be accessed via the reset button located in the back of the control unit. Consult factory for proper configuration of System Doctor settings.

DynaTrol code settings allow for access to Password Management, Water & Temperature Settings, Time and Date settings, Control Software version, Screen Calibration, Copy and Transfer Programs, Resetting of Factory Programs and Machine Configuration, and USB Utilities for configuring media and off loading Report data.



CONTROL INFORMATION

Displays the software version of the PLC and HMI.

TIME & DATE SETTINGS

Set the current time and date for report accuracy.

SCREEN CALIBRATION & BRIGHTNESS/CONTRAST

Sets screen for best performance.

PASSWORD MANAGEMENT

DynaTrol is equipped with 4 levels of security. A user can only operate screens granted by their security level. Higher level passwords control all functions and settings of lower level passwords. For example, a level 2 user has all the authority of level 2 and level 1 users, and ability to change both level 2 and level 1 passwords. Machines are shipped from the factory with the following passwords settings:

Level	Description	Default Password
0	User	00000000
1	Supervisor*	11111111 *Override Mode
2	Programmer	22222222
3	Maintenance	33333333
4	Owner	44444444

To change your password, select Passwords from the Settings Home page and enter your password to continue. Follow screen instructions.

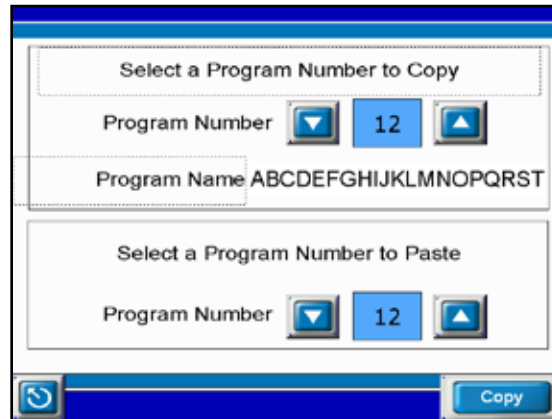


There is also a Master Password Reset feature. Contact EDRO service for Reset Code.



COPY PROGRAM

To speed programming of similar wash programs, select the copy program function. A level 2 password is required. After copy function is complete, copied program is fully editable.

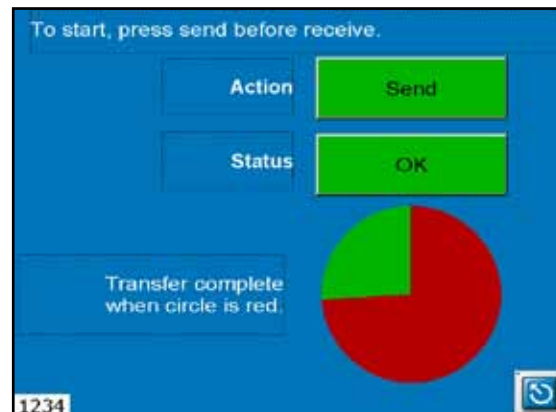
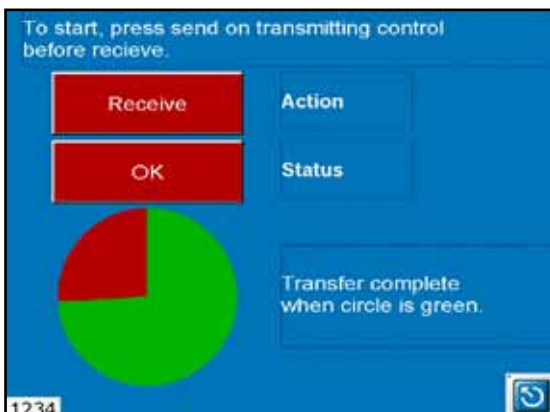
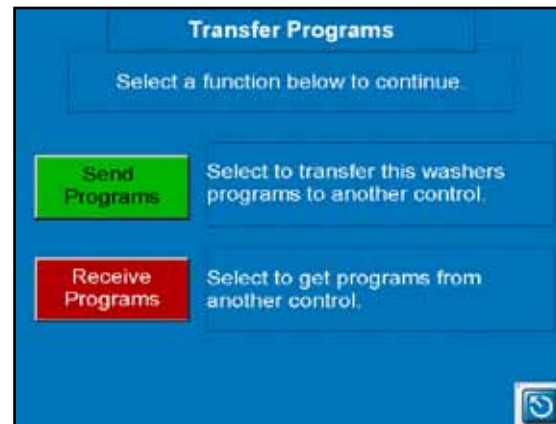


CLEAR PROGRAM NAMES

Clears all wash program names and reverts to "Program 1", "Program 2", "Program 3", etc. A level 2 password is required. This action cannot be undone.

TRANSFER PROGRAMS

Wash programs can be transferred from one HMI control to another either through cable connections or USB. From Settings screen select USB or Cable connection.



USB UTILITIES

Transferring wash programs via USB requires a properly formatted media device. Start by Formatting USB via the USB Utilities screen. Navigate from the Settings screen to USB. You can then transfer programs to and from the HMI and USB.



RESET FACTORY PROGRAMS

Resets wash programs to factory defaults. A level 2 password is required. This action cannot be undone.

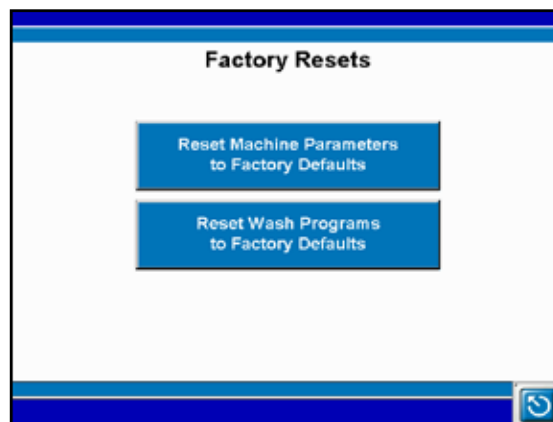
DEFAULT FACTORY PROGRAMS

- | | |
|---------------------------|--------------------|
| 1. Light Soil - Ozone | 11. Light Soil |
| 2. Light Soil - Ozone | 12. Light Soil 2 |
| 3. Medium Soil - Ozone | 13. Medium Soil |
| 4. Medium Soil 2 -Ozone | 14. Medium Soil 2 |
| 5. Heavy Soil - Ozone | 15. Heavy Soil |
| 6. Delicates - Ozone | 16. Delicates |
| 7. Delicates 2 -Ozone | 17. Delicates 2 |
| 8. 3 Hour Soak - Ozone | 18. 3 Hour Soak |
| 9. Rinse and Spin - Ozone | 19. Rinse and Spin |
| 10. Stain Buster - Ozone | 20. Stain Buster |

If the machine is not equipped with DynOzone or the ozone system is not functioning, run only programs 11 through 20.

RESET MACHINE DEFAULTS

From the Settings screen select Factory Resets, then Reset Machine Parameters to Factory Defaults. A level 4 password is required. Follow screen instructions for model specific machine characteristics.



SECTION 6

GENERAL MAINTENANCE

The following schedule should be followed to insure a long life of trouble free operation for your DynaWash® washer-extractor. A sound and consistent maintenance schedule will assure many years of useful service.

Troubleshooting.

If the machine fails to operate, check the following before trying to locate the cause of trouble:

- Power Source: Check all switches, circuit breaker and voltage.
- Control Circuit: Check all fuses, and the reset button, PLC Run/Stop Switch.
- Air Supply: Check the air pressure. It should be at 80 PSI.

If after checking the above, the machine still fails to operate, refer to the Troubleshooting Guide, found later in this section, for causes and corrective measures to resume operation.

PERIODIC MAINTENANCE

Initial Post-Installation Maintenance Requirements:

For the first week or two following the initial installation, your DynaWash® washer/extractor requires attention and frequent check-ups. A number of adjustments should be made and the bolts and nuts tightened if found loose. This is due to the setting of the machine in place as well as expansion from heat and motion. Keep checking the following:

- The floor bolts must be kept tight and checked periodically.
- The nuts on the front plate may come loose from the softening of the gasket and should be gone over at least once even though no leaks develop.
- Check the taperlock bushing screws on all pulleys, especially the main drive. If any looseness is observed, re-check once more - - if found tight, no need to inspect again. See that pulleys have not moved from the original position.
- Check both the front and rear main bearings for alignment and fit.
- Check the tension of the belts on main pulleys. These steel cable belts have very little stretch and usually one adjustment is all that will be necessary. Recommended belt deflection is $\frac{1}{4}$ ".

NOTE

Start with the screw nearest the driver pulley, when desired tension is obtained, lock in place. With the remaining screws, adjust until contact with block. This will keep the motor plate level and prevent any distortion.

- After two weeks or 100 operating hours, grease bearings, and put a few drops of oil on the door hinges, door lock and index mechanism rods.

2 - Motor Drive Models Only (Below)

- Check at least once the similar taper bushing screws on the clutch, as they have a tendency to loosen up from heat and constant jogging.
- The initial wear on the disc brake will be more rapid in the first few weeks and the brake should be adjusted as needed. Air pressure regulator gauge should be adjusted to at least 40 PSI.
- The brake on the wash motor needs less adjustment and should not be tampered with unless the indicator on the motor points to “adjust”. When adjusting, make sure the electricity is off and that the gap between the coil and lever is ½” so the braking action will work at its best.

Inverter with Single Motor Drive Models Only (Below)

- Monitor/Adjust the Y36 & Y20 brake pressure gauge outputs for the best site specific performance.

PERIODIC MAINTENANCE REQUIREMENTS

- Grease bearings every 50 hours of operation. If bearings become noisy, it does not necessarily mean they have to be replaced. Usually it is a lack of grease, but sometimes they may have to be adjusted for less clearance. Check the weep hole in the bearing adapter frequently for leaks. Water droppings from this area indicate seal failure.
- Change oil in the reducer after the first 100 hours of operation, then once every six months. **(2 - Motor Drive Models Only)**
- Motors should be greased only once a year.
- Drain water from air filter and refill oil jar as needed.
- Keep belts tight, especially on wash motor.

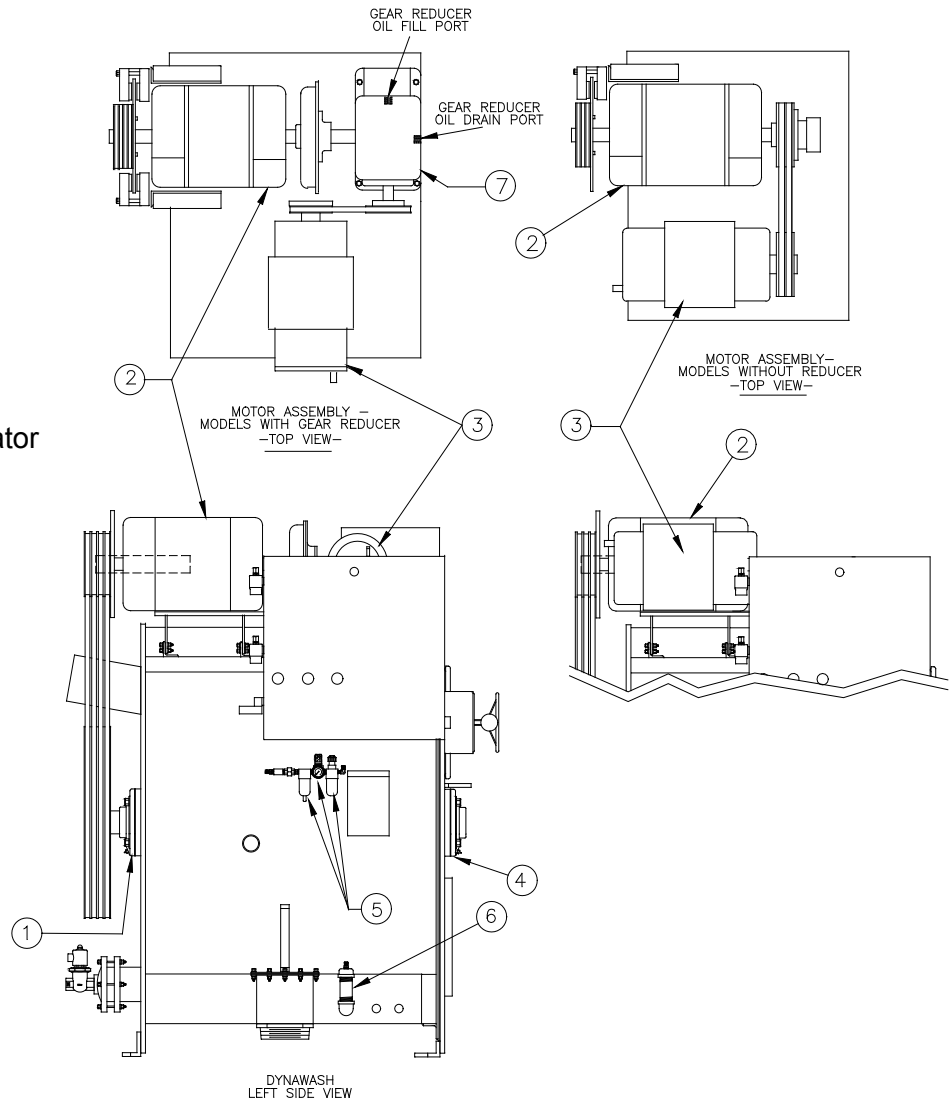
EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

LUBRICATION DIAGRAM

- Grease motors (Items 2 and 3 below) once a year or or every 2500 hours of operation. Use grade #2, high temperature, water resistant, **Non-lithium** grease.
- Grease bearings (Items 1 and 4) every 50 hours of operation. Use grade #2, high temperature, water resistant, lithium grease.
- **DW150 – DW400 with 2 - Motor Drive Models ONLY-**
Change oil in gear reducer (Item 7) every six (6) months. Use SHC634 SYNTHETIC GEAR OIL
- Adjust oil regulator (See Item 5) to permit one (1) drop of oil every five (5) minutes. Refill with S.A.E. No. 10 as needed. Drain filter bowl as required.

Item	Description
1	Rear Bearing
2	Extract Motor
3	Wash Motor
4	Front Bearing
5	Air Filter/Oiler/Regulator
6	Pressure Bowl / Water Level Sensor
7	Gear Reducer

3 & 7 - 2 - Motor Drive Models Only



MAINTAINING THE CLUTCH - 2 - MOTOR DRIVE MODELS ONLY

For models DW100

Installation

Slide the clutch over the key on the shaft and tighten set screws. Be sure that shaft and key are smooth. NEVER force or hammer clutch onto shaft. NEVER hit air seal shaft when installing or removing clutch as air seal separation and/or breakage is likely to occur. Connect air line to seal shaft. To prevent seal shaft from rotating, install a safety wire and connect to machine frame or other nearby object. Allow some slack for seal movement. NEVER use rigid piping to clutch.

NOTE

Seals may be stiff at first, but will loosen up as clutch is operated.

Cycle clutch at rest to confirm engagement and release. Check the set screws for tightness after a short running period. Filtered, lubricated, regulated air should always be used to extend clutch life and provide air seal lubrication. Clutch output torque is proportional to air pressure.

To replace discs or repair clutch.

For best results, remove clutch from shaft and hold in a vertical position. Remove retainer ring from seal end of clutch and disassemble. If friction discs are worn, replace. Check steel drive plates for foreign matter, burrs, or wear. The front and center drive plates must move freely on drive hub hex for proper release. Check friction disc lugs in pulley slots for freedom of movement. When assembling, lightly coat the drive hub hex with a moly type grease. Take care not to get grease on the face of the steel drive plates or friction discs. Replace rubber "U" cup in air cylinder if torn or worn from dirt in air supply. "U" cup should be lubricated with Dow Corning #4 Compound or equivalent.

To remove air seal assembly, remove internal retainer ring. Hold air shaft and pull complete assembly out of clutch. This should come out easily, but if there is some sticking, apply side pressure with your hands or LIGHTLY tap as you pull.

IF DOWN TIME MUST BE KEPT TO A MINIMUM, it is recommended that a standard clutch repair kit be kept on hand. Repair kits contain Friction Discs, "U" Cup, Retainer Rings, "O" Rings, and Release Springs. It is further recommended that on installations requiring several clutches, that a spare clutch be kept on hand.

For models DW150, DW200, DW300, DW400

The air operated clutch, gear reducer, and wash and extract motors work together to generate the three (3) speeds. Maintenance of the clutch is simply providing a clean, regulated flow of air to the clutch. Additional recommended maintenance procedures require maintaining an adequate level of oil in the gear reducer as well as proper tension of drive belts.

MAINTAINING THE BRAKE - 2 - MOTOR DRIVE MODELS ONLY

Installation

A disc of some previously specified diameter is supplied with the disc caliper brake. This disc can either be mounted to the customer's own hub with steel flat head machine screws, or it can be mounted with a QD bushing. To attach a QD bushing to the shaft proceed as follows:

1. Use a clean dry cloth to remove dirt or foreign particles from the taper on the QD bushing and the disc hub.
2. Position the QD bushing on the shaft and assemble the key.
3. Slide the disc hub into position over the QD bushing, aligning the untapped holes in the bushing's flange with the tapped holes in the disc hub and assemble the pull-up bolts and lock washers.
4. Tighten the pull-up bolts alternately and evenly. Run out is minimized if a dial indicator is used as the pull-up bolts are tightened. Use the perpendicular surface of the disc as a reference. After tightening there must be a gap between the disc hub and the QD bushing to insure satisfactory fit.

The disc should run perpendicular to the shaft within .010 T.I.R. Mount the caliper brake so that the outside radius of the disc runs approximately $\frac{1}{16}$ " below the outside radius of the shoe assembly. It should be placed so there is equal distance between the disc and the shoe assembly on both sides of the disc. Use $\frac{3}{8}$ " diameter bolts to mount the "T" support to a solid base on the machine's motor plate. Each air chamber is tapped $\frac{1}{8}$ " NPT for air connection.

Lubrication

All pneumatic devices require clean, pressure regulated and lubricated air for maximum performance and long life. Use of an air line filter, regulator and lubricator on the air line is standard on all DynaWash® machines. These should be regularly monitored.

Maintenance

The only maintenance required on this unit will be to replace the shoe assembly when the facings are worn to approximately $\frac{3}{16}$ " thick. This prevents scoring of the disc by the machine screws. To disassemble the unit, remove cap screws that secure caliper brake to the "T" support. Remove cap screws and replace the shoe assembly.

Failure of the brake to operate may be due to faulty or broken "O" Rings or a weak or broken return spring. If these parts are checked and found to be in satisfactory condition, then the trouble may be caused by dirt in the air line or faulty air controls.

INVERTER WITH SINGLE MOTOR DRIVE MODELS ONLY

Inverter with single motor drive models only are equipped with electronic braking and dual solenoids for extract brake and JOG positioning brake.

1. Brakes and pads are mounted on flywheel or disc brake.
2. Set the solenoid gauge pressures as follows:
 - A. Y36 (DW VFD HSB) / Hi Slip brake output for VFD setting is between 10-20 psi.
 - B. Y20 (Brake) / JOG Positioning Brake setting is between 70-90 psi.

MAINTAINING THE BEARINGS

Lubrication

Bearings are pre-lubricated. No additional lubricant is required for start-up. As a precaution, if the equipment is to be left idle for any extended period of time prior to actual use, the bearings should be filled 100% full to provide maximum protection from corrosion.

The specific conditions on an application such as exact hours of operation, temperature, moisture, speed and dirt govern the required lubrication cycle. We recommend lubrication of the bearings every fifty hours of operation. Frequency can also be determined by inspection of the flushed out lubricant during a trial period of operation. Use a sufficient volume of grease to purge the bearing seals of old lubricant. It is preferable to rotate bearings during re-lubrication where good safety practice permits. Use the same number of strokes on the rear bearing as on the front bearing.

Inspection of bearing installations at least every six (6) months is recommended. Any unusual noise or vibration change should be immediately investigated.

NOTE

Suggested starting interval for maintenance program. Check grease condition for low viscosity and dirt and adjust greasing frequency accordingly. Watch operation temperatures. Sudden rises may show need for grease or indicate over lubrication. Use grade #2, high temperature, water resistant, lithium grease.

Removal

Front Bearing: remove bearing cover, and grease line from grease fitting. Rear Bearing: remove belt guard, belts and flywheel. Proceed by removing mounting bolts and place them into existing tapped holes on the bearing flange. Use bolts to jack bearing from bearing adapter. When bearing does not move freely, use a puller.

Installation

Check to make sure the shaft is clean and free of burrs and nicks. Coat the shaft and bearing bore with grease or oil to facilitate assembly. If it is necessary to tap or press units on the shaft, use a hardwood block, soft steel bar or tube against the end of the inner ring. **DO NOT EXERT PRESSURE ON HOUSING OR SEALS.** Bolt bearings securely to the bearing adapter. Use Grade 5 mounting bolts adjusted to the proper torque. Establish final shaft position and secure locking collar to the fixed bearing and shaft. Tighten collar set screws to the torque values given in table below. Rotate shaft slowly, under load if possible, for several revolutions to properly center the roller elements with respect to the raceways. Securely tighten collar set screws.

NOTE

Any condition of strain, irregular rotational torque, abnormal sound or vibration may be due to improper alignment, improper location, bent shaft, etc. Installation should be rechecked and corrections made as required.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

Solid Seals

1. Point seal lip in correct direction; away from the cylinder, facing the bearing.
2. Protect seal lip against damage from sharp keyways, splines, screw-threads.
3. Start seal into cavity by finger pressure, then tap evenly all around until seated or flush with housing face. Tap only on outer edge of seal.

NOTE

Lubricate shaft and lip of seal. Always clean cavity and shaft when replacing seals or bearings.

WARNING

Never cut solid seals for adjustment to fit on shaft.

BEARING TORQUE REQUIREMENTS

Model	<u>DW100</u>	<u>DW150</u>	<u>DW200</u>	<u>DW300</u>	<u>DW400</u>
Shaft Size	2-½	3"	3"	3-½	3-½
Collar Set Screws	680 in./lbs.	680 in./lbs.	680 in./lbs.	680 in./lbs.	680 in./lbs.
Mounting Bolts	90 ft.lbs.	140 ft.lbs.	140 ft.lbs.	320 ft.lbs.	320 ft.lbs.

SECTION 7

TROUBLESHOOTING GUIDE

INTRODUCTION

This chapter provides troubleshooting procedures, information and instructions to identify and correct equipment malfunctions. Troubleshooting is the systematic analysis of a malfunction to identify the cause of the malfunction. It requires a thorough understanding of the equipment operation and an ability to recognize the symptoms of a faulty operation. Troubleshooting procedures are divided into three phases: identification of the symptom or malfunction, identification of the probable cause and performance of the corrective action. This chapter describes operational characteristics and general troubleshooting procedures. A troubleshooting table to assist in systematically identifying and correcting operational problems and equipment malfunctions is provided at the end of this chapter.

DYNATROL

The technology inherent in the modern electronic logic controller eliminates the requirement for electro-mechanical devices such as control relays and timers and allows for exact operation of the pre-programmed formulas through integrated electronic circuits, timers and counters. The programming logic of the HMi DynaTrol control is a sequence design method for applications, where outputs (motor starters, solenoid valves, LED's, etc.) are activated according to the status of specific achieved events or inputs (switches, push buttons, operator controls, etc.), consistent with rules stored in the control's ladder logic program. The ladder logic and its internal rules and instructions, thus combine to form an all-electronic control able to monitor, and more importantly, manage every operating aspect of the machine.

PRELIMINARY TROUBLESHOOTING

The HMi DynaTrol is fitted with a multitude of warning and alarm screens for notification of most machine symptoms and malfunctions. Warnings are resettable conditions such as failure to reach water level in a predetermined configured time. Once reset, warning screens return to operation screens and continue machine operation. Alarms are fatal errors which halt machine operation such as activation of the emergency stop button. Once reset, alarm screens go to alarm log screens. Navigation through these screens show current alarms, history of last 100 alarms, and total count of alarm frequency. See lists of warning and alarm screens.

When troubleshooting alarm conditions, most symptoms/malfunctions may be detected by sight, sound, smell and touch. First, check components indicating failure. When a variation from the normal operating condition is noted, the symptoms and causes must be determined. Attempts should be made to reduce the most likely causes of a malfunction. Unusual sounds or overheating may point directly to certain components or parts. Also, components that have been recently installed or serviced are possibly the source of failure.

NOTE

In many troubleshooting cases the apparent malfunction may in fact be a result of a specific program feature or interlock. If the program does not appear to be advancing properly and the cause of the malfunction is not obvious refer to the symptoms in .

GENERAL PLC TROUBLESHOOTING

The contents of RAM program memory are retained by battery back-up as the contents of the memory may be lost in the event of power loss to the PLC. The battery is not used while the PLC is energized. The life cycle of the battery is dependent on how often the power to the PLC is disconnected. The battery should last a minimum of three years without power to the PLC and up to ten years if the PLC is continually energized. If power is lost and the battery is dead the program is lost and must be reloaded. This can be easily accomplished by use of PLC transfer module. If it is determined the battery backup is not dead and the PLC fault remains, the problem is inside the PLC and the PLC input/output unit must be replaced.

When a electronic logic-controlled machine or process stops, it is almost invariably a field device, such as a limit switch, solenoid valve, or tripped overload, that has caused the action. These field devices can be on the input or output side of the control. Electronic relays for input and outputs have proven themselves to be very reliable and have a wide range of complex applications. However, logic controllers and their associated circuitry, do sometimes fail. If a failure does occur, it is important to be able to first make a decision as to whether the problem is in the electronic control or in the field. The first thing to check when troubleshooting a electronic logic-based control is to confirm the control power on is off. If the control power light is off, there is likely an open circuit in the supply power or control circuitry (see troubleshooting guide). A status bar on the touch screen indicates current machine functions during program operation. If the control is not responding, caught in a loop or not indicative of the machine's action (status bar say Extract and machine is stuck in wash speed for over 90 seconds), press the System function button, then press Run to re-boot the HMI software, and navigate to reload a program. An error screen will appear to disallow loading of the program and then allow you to end the existing program.

In order to facilitate troubleshooting, the maintenance personnel must have an understanding of the operation of the machine corresponding to the programmed formulas (i.e. knowing what the machine is supposed to be doing at a certain point in the formula and why). If an output such as a solenoid valve, motor contactor, etc. is not activated and the corresponding Y output indicator light is off (indicating the output terminal is not energized) you must search backwards to determine what conditions are preventing the output from coming on. In most cases, the search will lead to an input (level or setting) that is not in the correct state to satisfy the programming requirements. Refer to the control schematic identifying the specific input and output terminals corresponding to each field device. When an X input, such as the level switch, is preventing the formula from proceeding, the specific physical input must be checked for continuity.

If the inputs are in the correct state (i.e. water level is attained), and an output does not energize as shown by the control's indicator light, check the corresponding voltage at the output terminal on expander unit. If voltage is not present, the expander unit relay may be loose or faulty and must be re-seated or replaced. If voltage is present on the Y output, the problem is an open circuit in the field wiring or a faulty field device such as an external relay, a stuck solenoid, or a tripped overload. Although the control's X and Y indicator lights corresponding to each individual input or output are a convenient troubleshooting tool, they do not guarantee that an internal output relay has closed. The indicator lights are controlled independently of the corresponding output relay - the light only indicates the program has sent the signal to close the relay. The actual voltage must be measured at the terminal in question in order to verify the state of the terminal. If voltage is present, there is either a break in the circuit going to the solenoid or the valve itself is stuck closed. If a Y output relay is damaged, it may be the result of an electrical short in the field device it is connected to. Therefore, it is imperative to troubleshoot and correct any electrical problem with the field device prior to replacing the expander unit or PLC control otherwise the new control will also fail. In the majority of troubleshooting cases, the underlying cause of the problem will be in the field devices or an open circuit in the field input/output wiring to the control.

TROUBLESHOOTING PROCEDURES

A list of symptoms directs attention to specific components and possible causes of the machine problems. The type of malfunction and identification of the component then permits a logical decision to repair, replace or investigate further in order to correct the fault. A complete loss of control may be caused by two malfunctioning components acting together, repair of one cause may restore operation, but it may also permit a recurrence if the second malfunctioning component is not repaired. For reference the following is a complete listing of PLC input and output devices. Refer to electrical schematic for additional details on machine wiring logic.

PLC INPUT FUNCTIONAL DESCRIPTION

- X0: Wash Overload
- X1: Extract Overload
- X2: VFD Overload
- X3: Vibration
- X10: Drive Running
- X20: Door Position Closed
- X21: Ozone Pump 1 C.O.S.
- X22: Powercell 1
- X23: Powercell 2
- X24: Powercell 3
- X25: Ozone Pump 2 C.O.S.
- X26: Powercell 4
- X27: Powercell 5
- X30: Powercell 6
- X31: Supply Air Pressure Sensor
- X32: Door Open Limit Switch
- X33: E-Stop 1
- X34: Tilt HOME Limit Switch
- X35: Flasher Limit Switch
- X36: Tilted Limit Switch
- X37: Door Pin Sensor
- X40: Jog (WS)
- X41: Powercell 7
- X42: Powercell 8
- X43: E-Stop 2
- X44: E-Stop 3
- X45: E-Stop 4
- X46: FWD Tilting Bearing (Locked)
- X47: FWD Tilting Bearing (UnLocked)
- X50: REV Tilting Bearing (Locked)
- X51: REV Tilting Bearing (UnLocked)
- X52: Index Proxy Sensor
- X53: Thermguard Switch Extract MTR
- X54: Index Switch PB (CS)
- X55: Forward (CS)
- X56: Reverse (CS)
- X57: Switch 0
- X60: Switch 1
- X61: Lock (WS)
- X62: Job (CS)
- X63: Signal (WS)
- X64: PT CS Button
- X65: Clutch Air Pressure Sense
- X66: Door Open Prox Switch (CS)
- X67: Door Closed Switch (CS)

PLC OUTPUT FUNCTIONAL DESCRIPTION

- Y0: Forward
- Y1: Reverse
- Y20: Brake
- Y21: Waste Drain
- Y22: Ozone
- Y23: Buzzer 1
- Y24: Door Pin
- Y25: Cold Water Valve
- Y26: Hot Water Valve
- Y27: Door Auto Swing
- Y30: Chemical 1
- Y31: Chemical 2
- Y32: Chemical 3
- Y33: Chemical 4
- Y34: Chemical 5
- Y35: Auxiliary Supply 1
- Y36: DW VFD HSB
- Y37: Electric Heat/Steam
- Y40: Auxiliary Supply 2
- Y41: Auxiliary Supply 3
- Y42: Auxiliary Supply 4
- Y43: Auxiliary Supply 5
- Y44: Tilting Air Bag - Inflate
- Y45: Water Reuse (WRS) Drain
- Y46: Water Reuse (WRS) Valve
- Y47: Index Door Seal (CSL-T)
- Y50: Tilt FWD - Locked Cylinder 1 (CSL350/450)
- Y51: Tilt REV - Locked Cylinder 2 (CSL350/450)
- Y52: Green Light
- Y53: Yellow Light
- Y54: Red Light
- Y55: Air Source Shutoff Valve
- Y56: Spray / DW Jog Valve
- Y57: Tilting Air Bag - Deflate
- Y60: Doorpin 2 (CS)
- Y61: High Extract
- Y62: Low Extract
- Y63: Clutch
- Y64: Buzzer 2
- Y65: In Use Light
- Y66: Lock Light
- Y67: PT CS Lite

TROUBLESHOOTING GUIDE

NOTE

Before attempting any repairs, consult this trouble shooting guide by locating the symptom closest to the symptom of your washer. Then, check each probable cause until you find the source of the problem. Once the problem is found, proceed to its elimination by adjusting, repairing, or replacing the item in question.

SYMPTOM	PROBABLE CAUSE
A. Washer will not start. Power On light is off.	Defective power supply cable. Power supply circuit open. Loose or broken wire.
B. Washer will not start; Power On light is "ON".	Fuse in 220 volt line blown. Loose or broken wire.
C. Wash starts, then stops completely with intermittent COM error box on screen.	Voltage feedback into expander unit, check all Y output devices for continuity.
D. Fuses blow continuously.	Incorrect fuse size. Short circuit.
E. Water enters washer when not in operation.	Dirt inside fill valve. Broken fill valve diaphragm.
F. Washer does not fill with water.	Water line valve closed. Fill valve screen clogged. Dirt clogging fill valve diaphragm. Defective fill valve coil. Defective level switch. Defective valve relay output.
G. Water does not drain.	Drain valve or drain line clogged. Defective drain valve. Defective drain control relay output.
H. Cylinder does not reverse; rotates in one direction with long pauses during wash steps.	Defective reversing contactor. Defective reverse control relay output.
I. Program does not advance.	Loose or broken wires. Defective level switch.
J. (2-Motor) Drive motor does not operate.	Motor overheated. Defective motor.
K. (2-Motor) Drive motor goes on and off erratically in both directions while in low speed.	High or low power supply voltage. Defective motor.
L. (2-Motor) Drive motor fails to turn in high speed.	Defective high speed contactor. Defective safety level switch. Defective high speed control relay. Defective motor winding.
M. (2-Motor) Drive motor fails to turn in low speed.	Defective low speed contactor. Defective "interlocking" contact in low speed contactor. Defective motor winding.

TROUBLESHOOTING GUIDE - CONTINUED

SYMPTOM	PROBABLE CAUSE
N. (2-Motor) High or low speed is too slow.	Belt tension spring broken or loose. Loose pulley. Motor voltage too low. Belt worn out. Defective motor.
O. (Inverter w/Single Motor) Motor in <u>Wash Step</u> . Will not start.	Door not properly closed or safety switch not released. Check for obstructions, check safety door switch.
P. (Inverter w/Single Motor) Motor in <u>Extract Step</u> . Will not start.	Motor overload, variable frequency drive overload. Reset Drive, measure motor / drive current.
Q. (Inverter w/Single Motor) Will not start and no error appears either on operator panel or drive display panel.	Extract relay operates but no drive response, drive displays a frequency but no motor response. Check circuit from PLC to terminals on drive. Motor leads disconnected or loose. Check connections from drive to motor.
R. (Inverter w/Single Motor) Will not accelerate.	Low line voltage, check line voltage, do not exceed load rating of machine. Extract step programmed incorrectly, reduce load if material is very water absorbent. Loss of speed command voltage at terminal drive, check DC voltage between points D/A CHØ VO+zero and less than 10 VDC for the drive to accelerate the motor.
S. (Inverter w/Single Motor) Accelerates too fast.	Acceleration parameters of drive or control is set incorrectly. Check parameters for agreement with factory settings.
T. (Inverter w/Single Motor) Motor overheating.	Line voltage low, low voltage puts extra strain on motor. Faulty or incorrect type of motor, check nameplate for proper motor type and size. Load too heavy, reduce load keep within rating of machine.
U. Excessive vibration.	Mounting bolts loose. Laundry load not balanced.
V. Water fill valve fails to close.	Foreign material in fill valve. Defective level switch. Verify configuration settings for water levels.
W. Water does not maintain its level.	Material in drain valve holding it open. Check drain. Air leaking between the pressure bowl and the pressure transducer. Verify connections are tight.
X. Door does not open.	Too much water in cylinder. Time delay after extract not complete. Defective door pin solenoid or control relay. Broken wire or bad connection.
Y. Door does not close properly.	Damaged door. Door seal not seating properly.

TROUBLESHOOTING GUIDE - CONTINUED

SYMPTOM	PROBABLE CAUSE
Z. Multiple X inputs or Y outputs are not functioning.	Ensure the green plugs are fully seated. If non functional signals appear to be in the same plug, check the common to that plug. X inputs are 24VDC and are labeled 20B. Y outputs are 24VAC and are labeled 20.
AA. Communication on Communication Port 2.	COM plug not fully seated. Check for tightness. Disconnected wire in the communication. Check for disconnected wire on the PLC side of the cable. Verify correct voltage terminals on transformer.
AB. No power to PLC (Green power light not on)	Check for 220VAC power to the power supply. Check the power plug from the power supply to the PLC. Remove the 24VDC and 0VDC wires from the power supply and repower washer. If there is now power to the PLC, there is a short in the 24VDC circuit. Troubleshoot to identify location.

See ALARMS AND WARNINGS for listing of machine failure conditions.

SECTION 8

PASSTHRU MODELS ONLY

The *PassThru* option of DynaWash® machines, DW_PT and DW_PTSM, differs from the other models by its construction - allowing the machine to be loaded from one side and unloaded from the other - thus adding greatly to the convenience and hygienic conditions of the laundry. The operation and performance characteristics of these machines are identical with the standard DynaWash® models, both in the quality of wash and production capabilities.

Operation

Since the machine has two sets of access doors, one on the soiled side (loading) and one on the clean room side (unloading), a set of interlocking controls and a signal system are provided to prevent the opening of doors or running of the motors from both operator panels at the same time. All program operations are controlled from the soiled side. The only operations allowed on the clean room side are the opening of the door on that side, the positioning of the cylinder compartments by use of the Jog buttons and Emergency Stopping. Indicators on each operator's panel show which side is currently in control. Neither access door can be opened unless the other side has its door securely closed and releases control of the machine.

PASSTHRU CONTROL SYSTEM – PUSHBUTTON AND INDICATOR FUNCTIONS

- POWER ON INDICATOR** A light located on touch screen (Soiled side) and clean side LED indicate that electrical power to the unit is on.
- DYNATROL PASSTHRU DOOR CONTROL (Soiled Side)** Access *PassThru* Door Controls Screen from Start Screen.



- LOCK INDICATOR (Clean Side)** When lighted, notifies the operator that the Clean Side **does not** have control and cannot open its access door.
- IN USE INDICATOR (Clean Side)** When lighted, notifies the operator that the Soiled Side has control of machine operations and its access door is open.
- SIGNAL INDICATOR (Clean Side)** A signal switch and indicator on both sides of the machine enable either side to communicate both audibly and visually with the other side.

Unloading (Clean or Unload Side) Operations.

1. Wait for the Soiled side operator to enable Clean side operations. The door lock on the Clean side door is released and the door can be opened during a 10 second interval each time the door opening button on the control panel at the Soiled side is pushed.
2. With the door lock released, open the access door by pushing in on the door handle.
3. If machine is equipped with Auto Index press and hold the “JOG” and “INDEX” buttons at the same time to align a pocket. Press the “JOG” button and “FORWARD” or “REVERSE” buttons to correct any misalignment. If not equipped with Auto Index then just press “JOG” and “FORWARD” or “REVERSE” to align pockets.
4. Open the pocket door, and unload the pocket. Close the pocket door.
5. Repeat steps 3 and 4 until all three pockets in the machine are unloaded.
6. Close the access door. This will allow the Soiled side operator to regain control of the load side door and to run another wash program.

NOTE

Clean side door status is monitored by the touch screen control.

SECTION 9

PARTS REFERENCE AND DRAWINGS

CONTROL DASHBOARD FOR - DW & DW_SM
(SOILED ROOM CONTROL) For *PassThru* Models - DW_PT & DW_PTSM

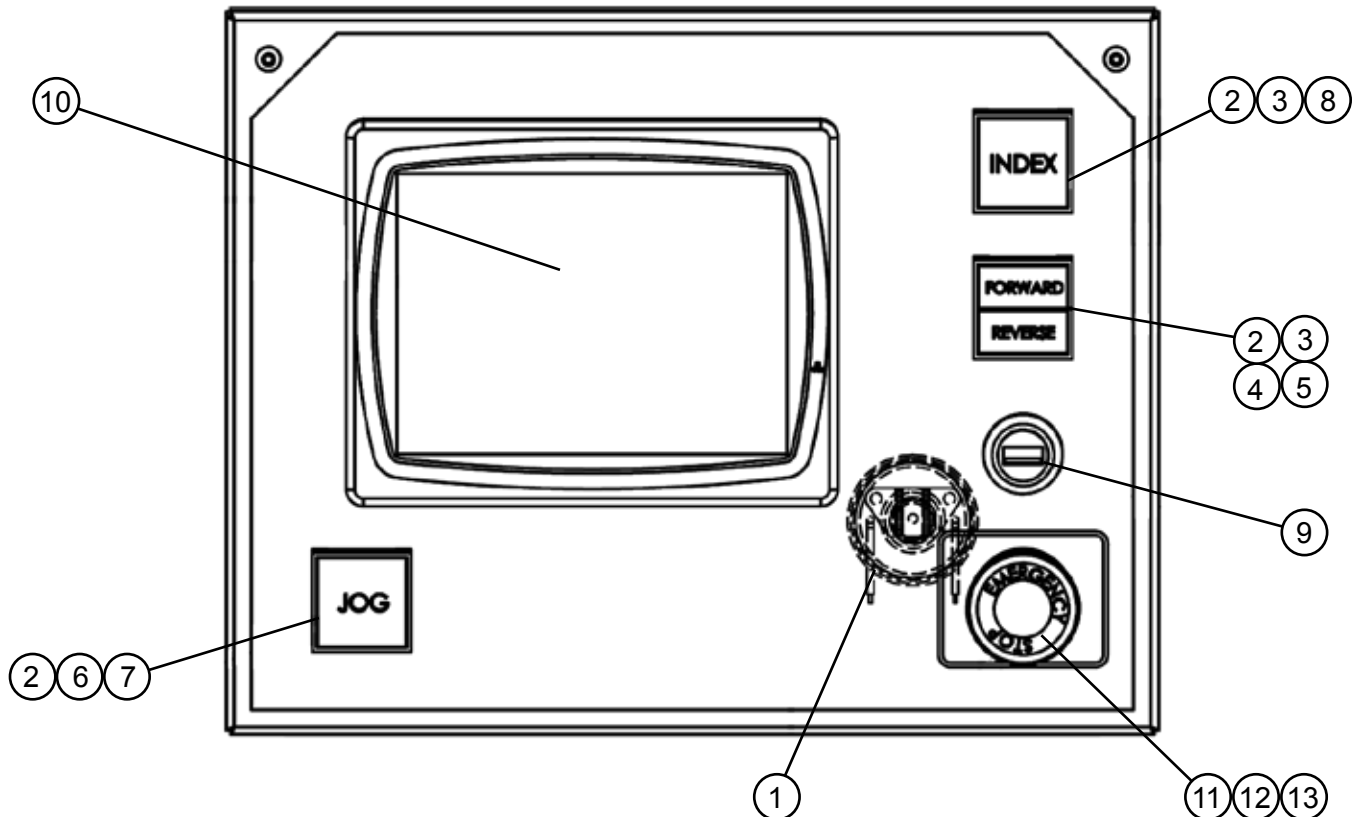


Figure	Part No.	Description	Qty
1	6092	Buzzer 24 V/C 120 DB	1
2	6292-1	Block, Contact	4
3	6296	Operator Momentary - Double	1
4	6298	Legend Cap - Forward	1
5	6298-1	Legend Cap - Reverse	1
6	6301	Operator Switch - Push/Button	2
7	6302	Legend Lens - Jog	1
8	6303	Legend Lens - Index	1
9	6537-33	USB Socket	1
10	6537-TS7	Touch Screen Control - 7in	1
11	6640	Contact Block - NO/NC	1
12	6831	Switch Operater - Momentary	1
13	6832	Button, Emergency Stop	1

CLEAN ROOM CONTROL OPERATION LIGHTS AND SWITCHES - PassThru Models Only

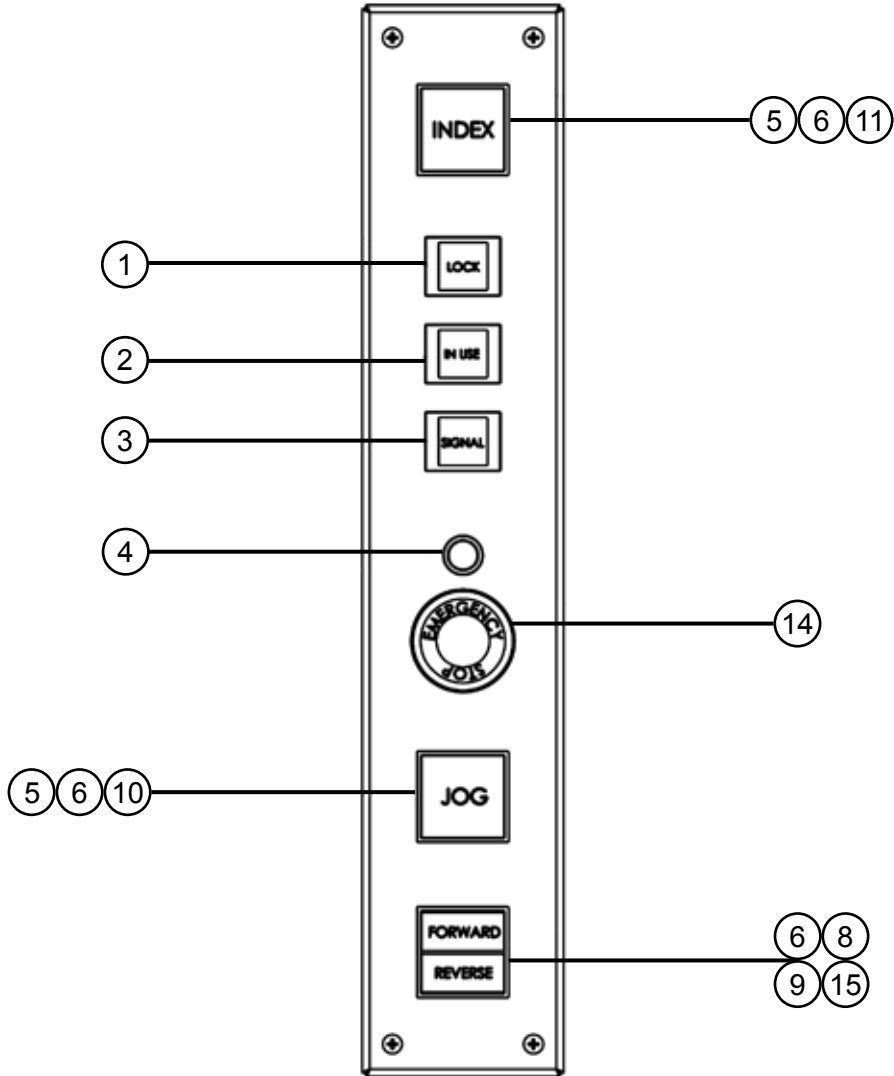
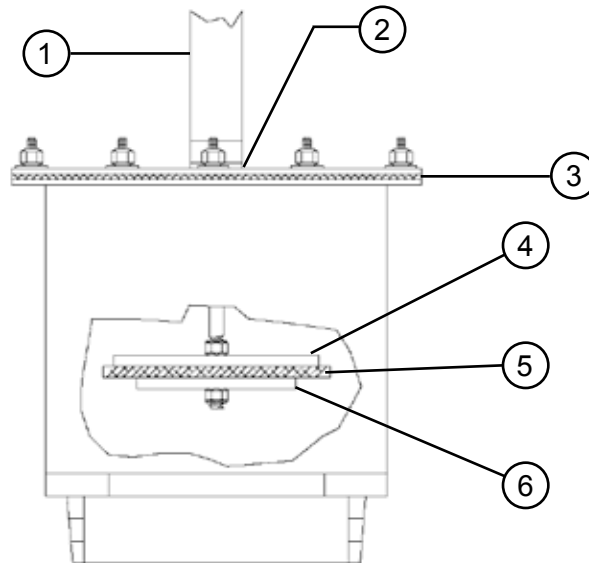


Figure	Part No.	Description	Qty
1	6284-4	Switch Push/Button - Lock	1
2	6281	Light Indicator - In Use	1
3	6809	Switch P/B Momentary - Signal	1
4	6609-1	Light Indicator - Red ½ RD	1
5	6301	Operator Switch - Start Push / Button	2
6	6292-1	Block, Contact	4
7	6092	Buzzer, Audio (120 DB), 24 VAC	1
8	6298	Legend Cap - Forward	1
9	6298-1	Legend Cap - Reverse	1
10	6302	Legend Lens - Jog	1
11	6303	Legend - Index	1
12	6640	Contact Block - NO/NC	1
13	6831	Switch Operator - Push/Pull	1
14	6832	Button, Emergency Stop	1
15	6296	Operator Momentary - Double	1
16	6160-1234PT	Box Manual Switch	1

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

DRAIN ASSEMBLY



MAIN DRAIN ASSEMBLY

DW100

Figure	Part No.	Description	Qty
1	1130	Air Cylinder, 1-1/16" Dia X 6" Stroke Thread Mount	1
2	1134	Gasket Drain - Air Cylinder	1
3	1117-1-610	Gasket, Dump Cover	1
4	1133-610	Plate, Top Drain - B/P	1
5	1132-610	Gasket Seal - B/P	1
6	1131-610	Plate, Bottom Drain	1

DW150, DW200

Figure	Part No.	Description	Qty
1	1130	Air Cylinder, 1-1/16" Dia X 6" Stroke Thread Mount	1
2	1134	Gasket Drain - Air Cylinder	1
3	1117-1-1520	Gasket Drain Cover - B/P	1
4	1133-1520	Plate Top Drain	1
5	1132-1520	Gasket Seal - B/P	1
6	1133-610	Plate Top Drain - B/P	1

DW300, DW400

Figure	Part No.	Description	Qty
1	1130	Air Cylinder, 1-1/16" Dia X 6" Stroke Thread Mount	1
2	1134	Gasket Drain - Air Cylinder	1
3	1117-1-3040	Gasket Drain Cover - B/P	1
4	1133-3040	Plate Top Drain	1
5	1132-3040	Gasket Seal - B/P	1
6	1133-1520	Plate Top Drain	1

Common parts required for re-assembly: P/N 9539 Hex Nut (1/4 - 20); P/N 9556 Lock Washer (1/4); P/N 9557 Hex Nut (5/16-18) and 9540 Lock Washer (5/16).

DRAIN ASSEMBLY - CONTINUED

WATER REUSE DRAIN ASSEMBLY - (2ND DRAIN)

DW100

Figure	Part No.	Description	Qty
1	1130	Air Cylinder, 1-1/16" Dia X 6" Stroke Thread Mount	1
2	1134	Gasket Drain - Air Cylinder	1
3	1117-1-610	Gasket, Dump Cover	1
4	1133-610	Plate, Top Drain - B/P	1
5	1132-610	Gasket Seal - B/P	1
6	1131-610	Plate, Bottom Drain	1

DW150, DW200

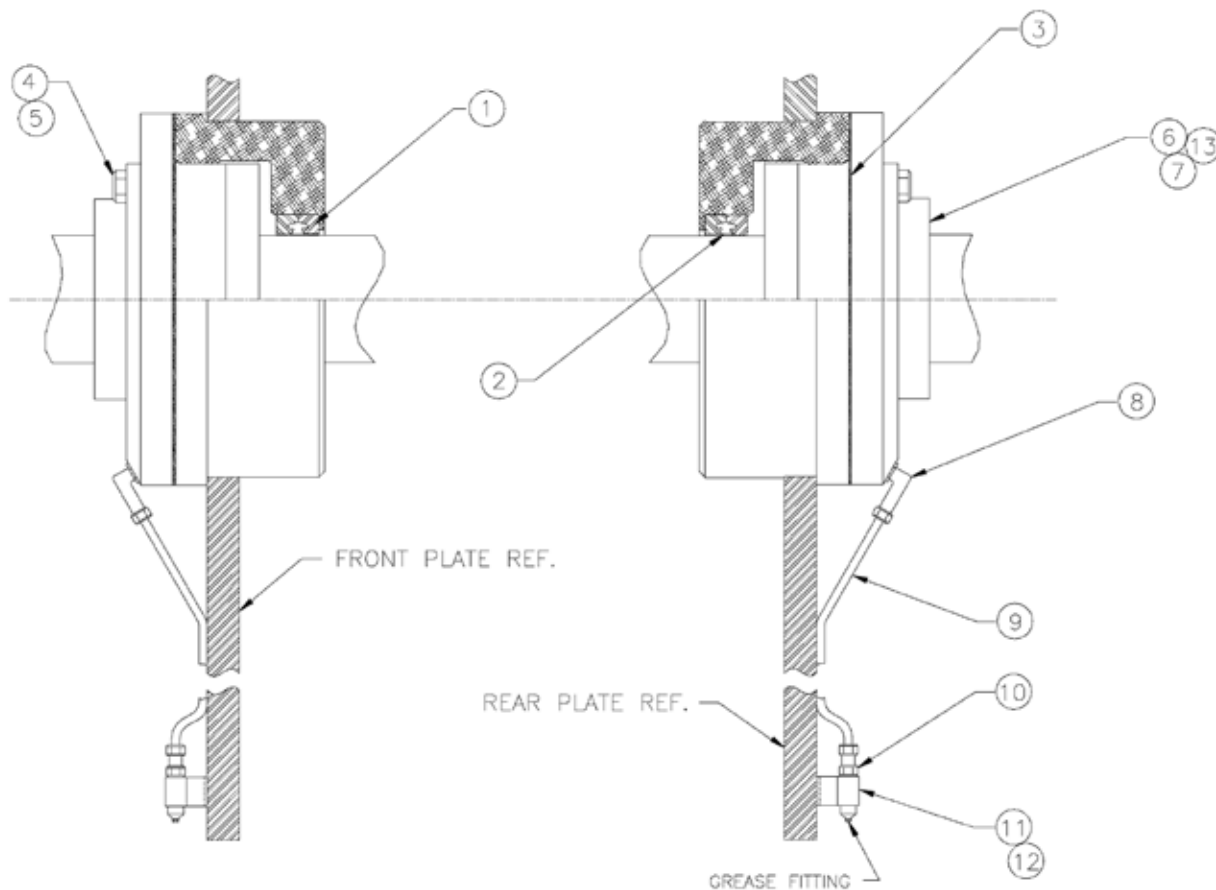
Figure	Part No.	Description	Qty
1	1130	Air Cylinder, 1-1/16" Dia X 6" Stroke Thread Mount	1
2	1134	Gasket Drain - Air Cylinder	1
3	1117-1-610	Gasket, Dump Cover	1
4	1133-610	Plate, Top Drain - B/P	1
5	1132-610	Gasket Seal - B/P	1
6	1131-610	Plate Top Drain - B/P	1

DW300, DW400

Figure	Part No.	Description	Qty
1	1130	Air Cylinder, 1-1/16" Dia X 6" Stroke Thread Mount	1
2	1134	Gasket Drain - Air Cylinder	1
3	1117-1-1520	Gasket Drain Cover - B/P	1
4	1133-1520	Plate Top Drain	1
5	1132-1520	Gasket Seal - B/P	1
6	1133-610	Plate Top Drain - B/P	1

Common parts required for re-assembly: P/N 9539 Hex Nut (1/4 - 20); P/N 9556 Lock Washer (1/4); P/N 9557 Hex Nut (5/16-18) and 9540 Lock Washer (5/16).

BEARING ASSEMBLY



DW100

Figure	Part No.	Description	Qty
1	1515-1-10C	Seal Bearing Adapter	2
2	S10C-1515-2	Sleeve Speedi 2-1/2 ID	1
3	1509-10C	Gasket Bearing	1
4	9757	Bolt Hex (Head)	4
5	9560	Washer Lock Half 1/2 Plated	4
6, 7 & 13	1501-10C	Bearing Slotted	1
8	7022	Elbow Male	1
9	7021	Tubing Copper	1
10	7023	Connector Straight	1
11 & 12	1530-1	Block Grease Fitting	1

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

BEARING ASSEMBLY - CONTINUED

DW150, DW200

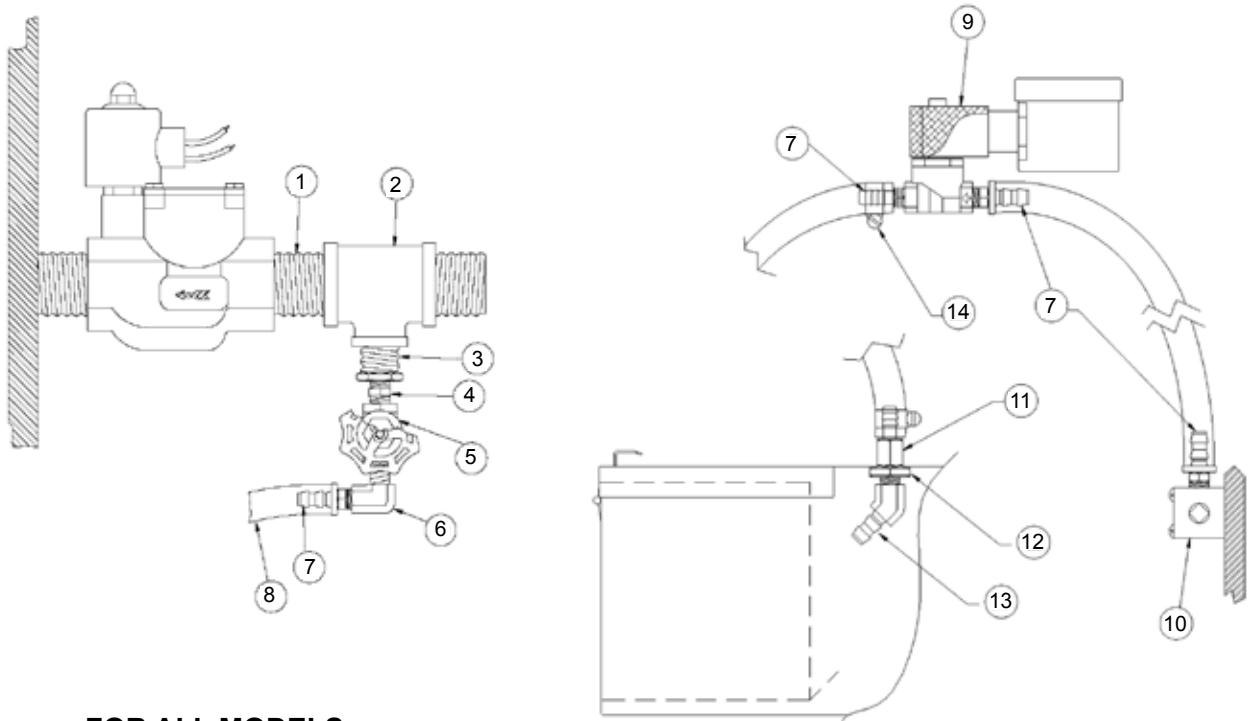
Figure	Part No.	Description	Qty
1	1515-1-1520	Seal Bearing Adapter	2
2	S1520-1515-2	Sleeve Speedi 2-1/2 ID	1
3	1509-1520	Gasket Bearing	1
4	9758	Bolt Hex (Head)	4
5	9561	Washer Lock Half ½ Plated	4
6, 7 & 13	1501-1520	Bearing Slotted	1
8	7022	Elbow Male	1
9	7021	Tubing Copper	1
10	7023	Connector Straight	1
11 & 12	1530-1	Block Grease Fitting	1

DW300, DW400

Figure	Part No.	Description	Qty
1	1515-3040	Seal Bearing Adapter	2
2	S3040-1515-2	Sleeve Speedi 2-1/2 ID	1
3	1509-3040C	Gasket Bearing	1
4	9729-1	Bolt Hex (Head)	4
5	9563	Washer Lock Half ½ Plated	4
6, 7 & 13	1501-3040C	Bearing Slotted	1
8	7022	Elbow Male	1
9	7021	Tubing Copper	1
10	7023	Connector Straight	1
11 & 12	1530-1	Block Grease Fitting	1

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

MAIN WATER AND AUTOMATIC SUPPLY VALVES



FOR ALL MODELS

Figure	Part No.	Description	Qty
1	3310-1234	Tee Bronze 2 X 2 X 3/4	1
2	3311-1234	Nipple Close 2 NPT Brass	1
3	3271	Bushing Reducing 3/4 NPT M X 1/4 NPT F Brass	1
4	7014	Nipple, Hex 1/4 NPT Brass	1
5	7164	Valve Water Gate 1/4 NPT Bronze	1
6	7003	Elbow M X F - 1/4 NPT X 90° Brass	1
7	3193	Adapter, Brass 3/8 Hose X 1/4NPT	22
8	3194	Hose 3/8 ID 200 PSI 212~ F	15 FT
9	3235	Valve, Water, 2-Way - 1/4 NPT, 24VAC	5
10	3008	Manifold, Supply - B/P	1
11	3196	Fitting Hose 1/4 NPT X 3/8 BARB	5
12	3591	Nut Lock 1/4 NPT Brass	5
13	3178	Fitting Hose 1/4 NPT X 3/8 H - 45 DEG	5
14	3347	Clamp Hose (1/2 I.D. TO 29/32 I.D.)	22
15	3315-610*	Valve Water - Main (1-1/4" NPT)	2
16	3315-1234**	Valve, Water - Main (2" NPT), 24VAC COIL	2

*SKSRK-110-F:

Repair Kit for DW 100, #3315-610 Main Water Valves Includes;
Piston Assembly, Plunger, O-Rings, Seat, Washer, Teflon Rings.

**SHSRK-2110-2F:

Repair Kit for DW150, 200, 300, 400, #3315-1234 Main Water Valves Includes;
Piston Assembly, Plunger, O-Rings, Seat, Washer, Teflon Rings.

DIRECT STEAM INJECTION

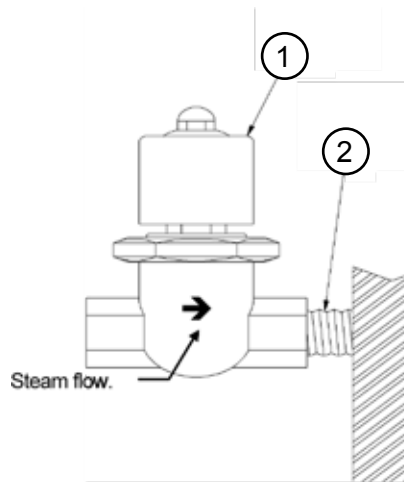


Figure	Part No.	Description	Qty
1	3340	Valve, Steam (3/4 NPT, 24VAC)	1
2	3036	Nipple Close Bronze 3/4 NPT	1

NOTE

Steam will not be introduced to the shell until the low water level is reached. Maximum steam pressure = 80 PSI.

WARNING

Introduction of steam into the wash tub may create hot surfaces that could cause serious burns. Steel and steam lines can become extremely hot and should not be touched.



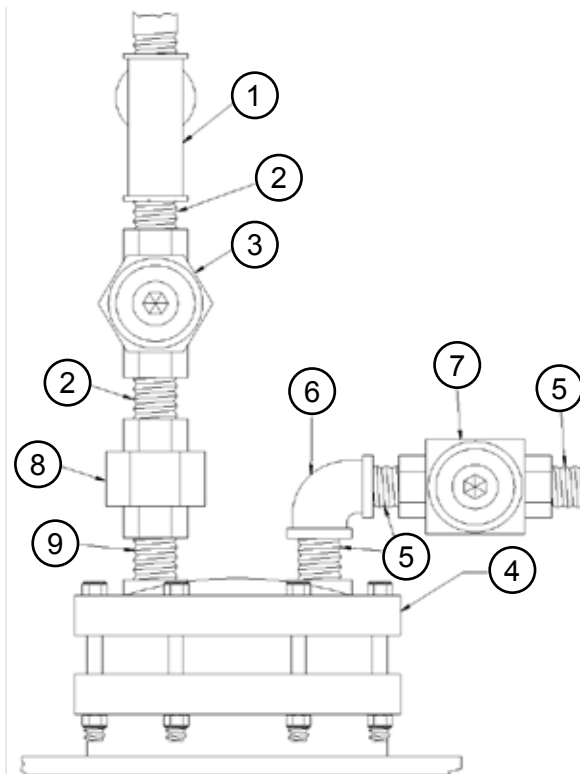
**SHSRK-2192-75:
Repair Kit for DW 100, #3340 Direct Steam Valves Includes;
Piston Assembly, Plunger, O-Rings, Seat, Washer, Teflon Rings.

**SHSRK-2192-75:
Repair Kit for DW150, 200, 300, 400, #3428 Direct Steam Valves Includes;
Piston Assembly, Plunger, O-Rings, Seat, Washer, Teflon Rings.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

INDIRECT STEAM INJECTION

DW100 - DW150 - DW200 - DW300 - DW400



DW100

Figure	Part No.	Description	Qty
1	3434	Strainer, Bronze 3/4 NPT	1
2	3036	Nipple, Close Bronze 3/4 NPT	3
3	3340	Valve, Steam (3/4 NPT, 24VAC)	1
4	3430-610	Coil, Tank Heater Steam	1
5	3036-1	Nipple, Close 3/4 NPT 316SS	2
6	3035	Elbow 3/4 NPT X 90° 316SS	1
7	3436	Trap Steam - 3/4 NPT Cast Iron	1
8	3037	Union, Bronze 3/4 NPT	1
9	3435	Bushing Reducing 1-1/4 NPT M TO 3/4 NPT F 304SS	1

INDIRECT STEAM INJECTION - CONTINUED

DW150, DW200, DW300, DW400

Figure	Part No.	Description	Qty
1	3429	Strainer, Bronze 1-1/4" NPT	1
2	3311-1-610	Nipple, Close Bronze 1-1/4 NPT	3
3	3428	Valve, Steam 1-1/4" Bronze	1
4	3430-3040	Coil, Tank Heater Steam	1
5	3036-1	Nipple, Close 3/4 NPT 316SS	3
6	3035	Elbow 3/4 NPT X 90° 316SS	1
7	3436	Trap Steam - 3/4 NPT Cast Iron	1
8	3317-610	Union, Bronze 1-1/4 NPT	1
9	---	Not Used	0

NOTE

Steam will not be introduced to the shell until the low water level is reached. Maximum steam pressure = 80 PSI.

WARNING

Introduction of steam into the wash tub may create hot surfaces that could cause serious burns. Steel and steam lines can become extremely hot and should not be touched.



**SHSRK-2192-1.25F:

Repair Kit for DW150, 200, 300, 400, #3428 In-Direct Steam Valves Includes; Piston Assembly, Plunger, O-Rings, Seat, Washer, Teflon Rings.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

MAIN DOOR ASSEMBLY

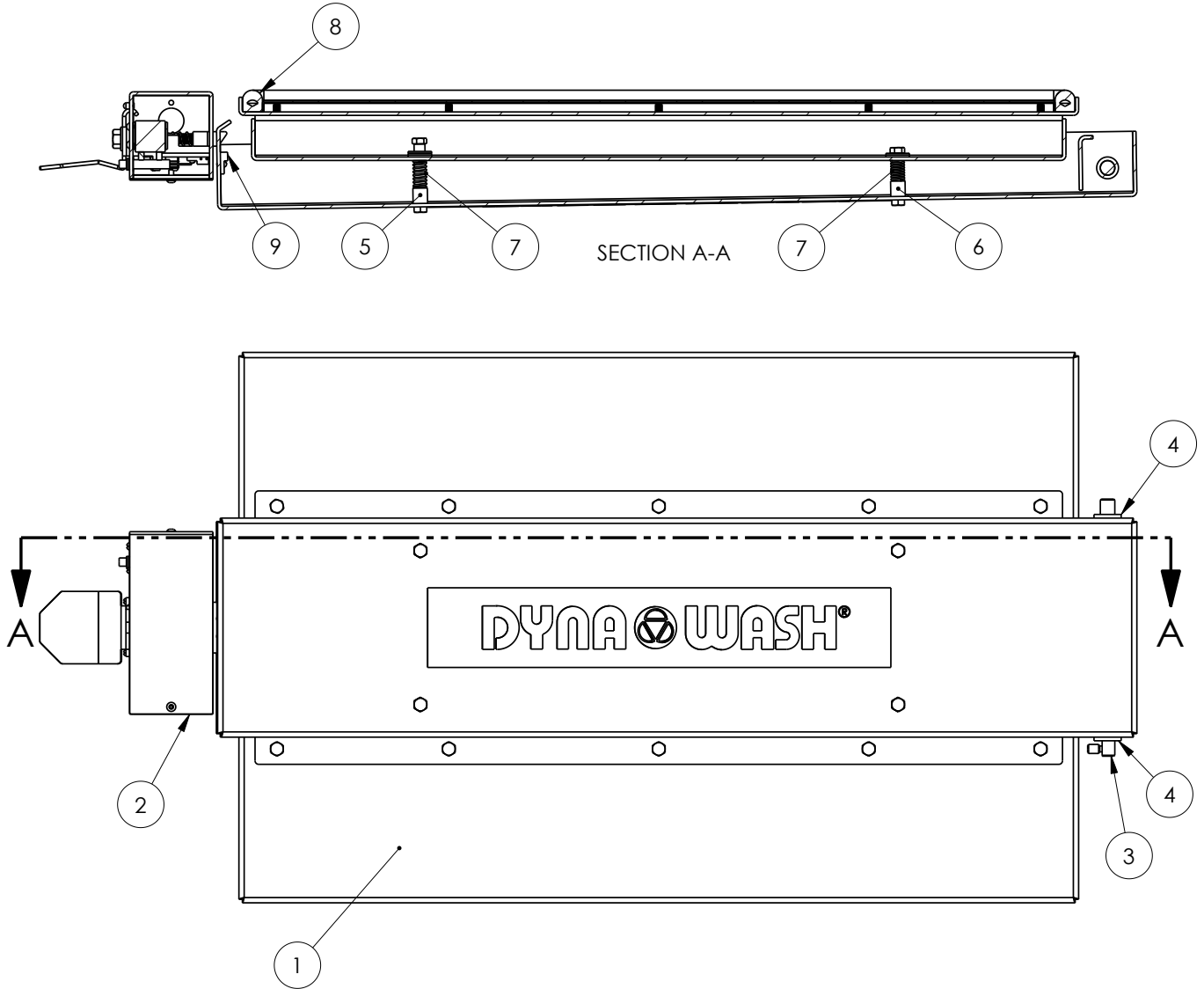
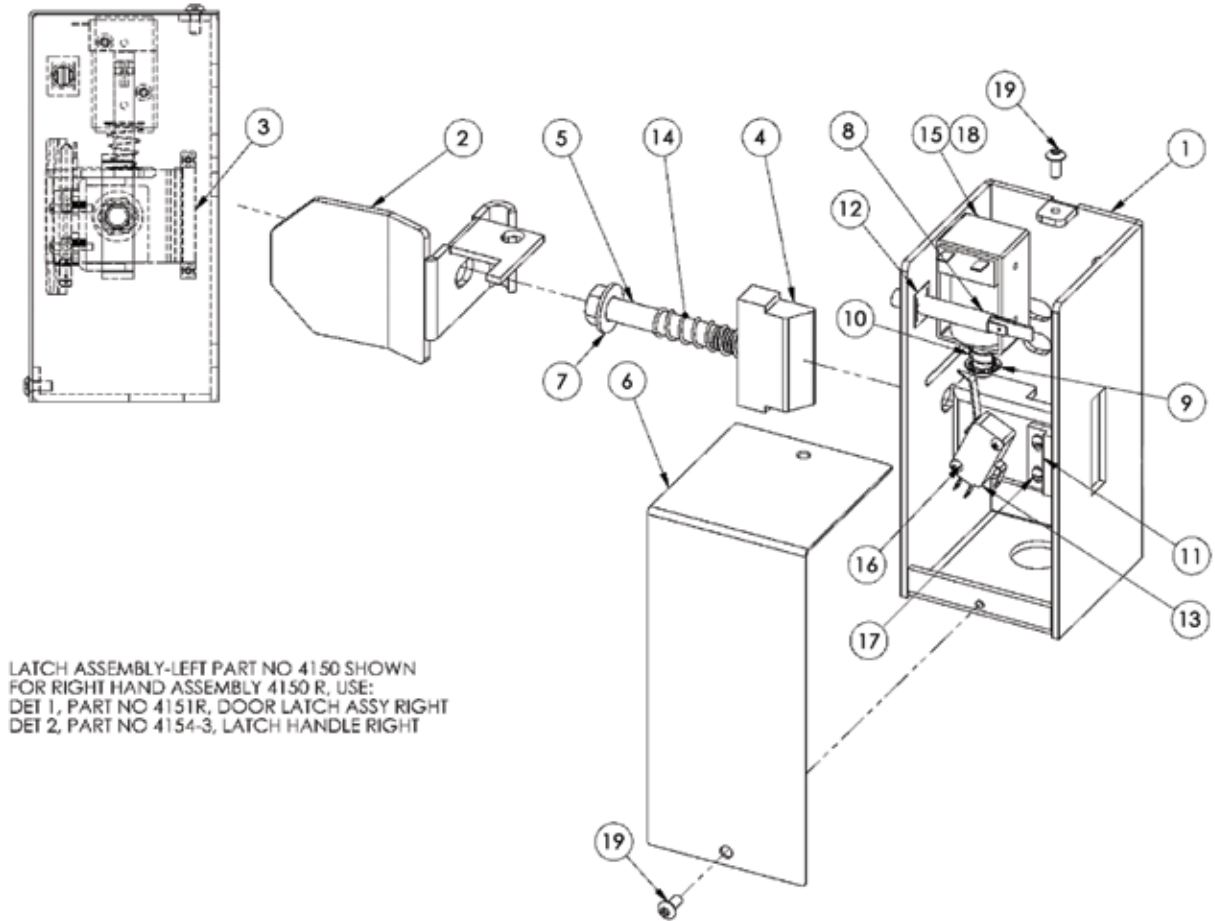


Fig.	Part No.	Description	DW100	DW150	DW200	DW300	DW400
1	4050-610	Main Door Assembly (Spring Loaded)	X				
	4050-1520	Main Door Assembly (Spring Loaded)		X	X		
	4050-30Y	Main Door Assembly (Spring Loaded)				X	
	4050-40E	Main Door Assembly (Spring Loaded)					X
2	4150	Door Latch Assembly (Spring Loaded) - Left	Common to all machines, see next page for component break down.				
	4150R	Door Latch Assembly (Spring Loaded) - Right					
3	4010-1234	Hinge Rod	These components are common to all main door assemblies.				
4	4013	Bushing Bronze - 1/2 ID X 1 Long					
5	4054-1234	Rod Spring (Latch Side) - B/P					
6	4055-1234	Rod Spring (Hinge Side) - B/P					
7	2423	Spring, 3/8" I.D. X 2" Long					
8	4004-1234	Gasket, 3/4 D-Section (Main Door)					
9	6269-1	Actuator Proximity Switch					

DOOR LATCH ASSEMBLY

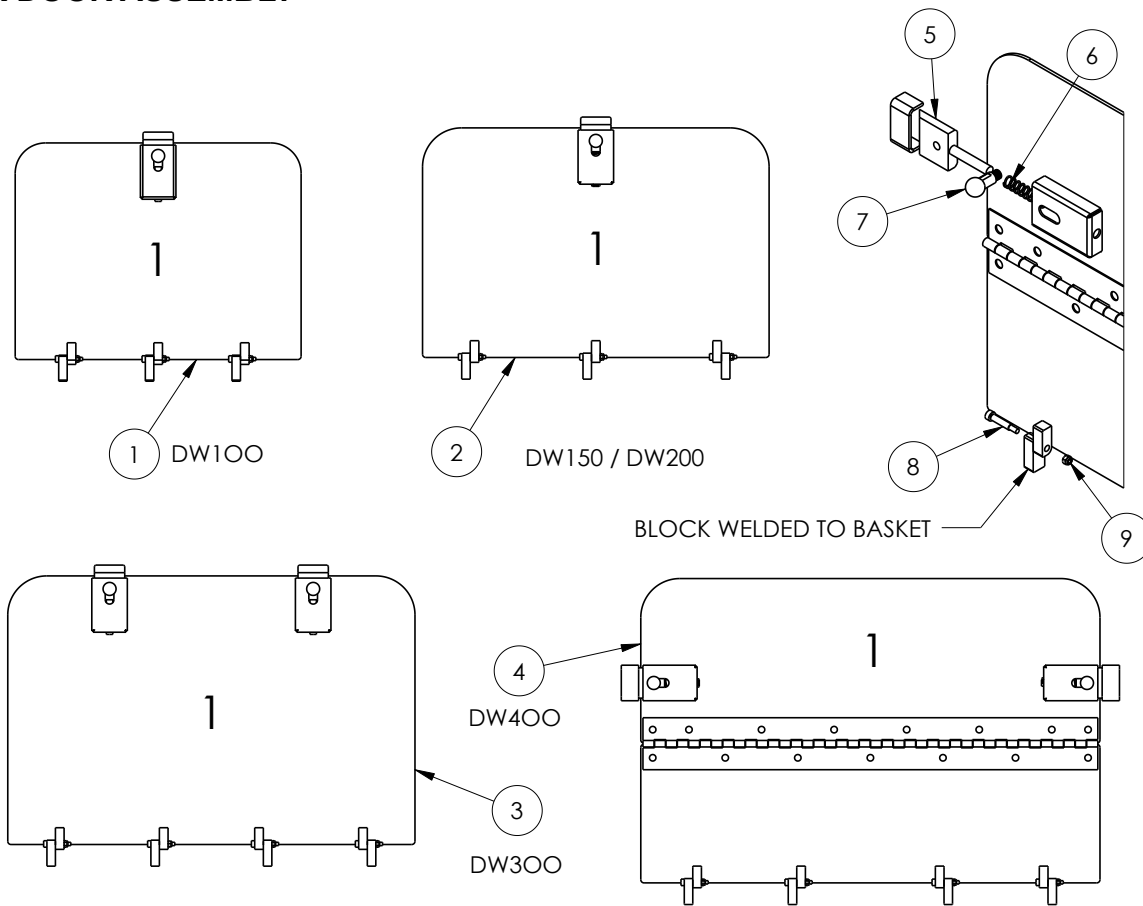


LATCH ASSEMBLY-LEFT PART NO 4150 SHOWN
 FOR RIGHT HAND ASSEMBLY 4150 R, USE:
 DET 1, PART NO 4151R, DOOR LATCH ASSY RIGHT
 DET 2, PART NO 4154-3, LATCH HANDLE RIGHT

Figure	Part No.	Description	Qty
1	4151	Body Door Latch (LF)	1
2	4154	Handle, Latch Door	1
3	4153	Support Latch Handle - B/P	1
4	4152	Striker, Door Latch	1
5	9647	Bolt Hex HD 3/8-16 X 3 X 1 THD GR5 Zinc	1
6	4155	Cover Door Latch Body	1
7	9572	Washer Flat 3/8 SAE SS	2
8	6813	Light Indicator (Clear) 24VAC	1
9	6268-3	Clip Spring Retainer - B/P	1
10	6268-4	Spring Door Lock Shaft - B/P	1
11	6269	Switch Proximity (Hermetic)	1
12	9568	Clip, Retaining Light Indicator	1
13	6090-1	Switch - Latch Box	1
14	2423	Spring, 3/8" I.D. X 2" LG.	1
15	6268-1	Solenoid Door LOCK - 24VAC	1
16	9626-2	Screw RD HD 4-40 X 5/8	1
17	9594	Screw RD #4-40 X 1/4	2
18	9580	Screw Round HD SS 6-32 X 1/4	2
19	9614	Screw SOC BT HD CAP #8-32 X 3/8	2

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

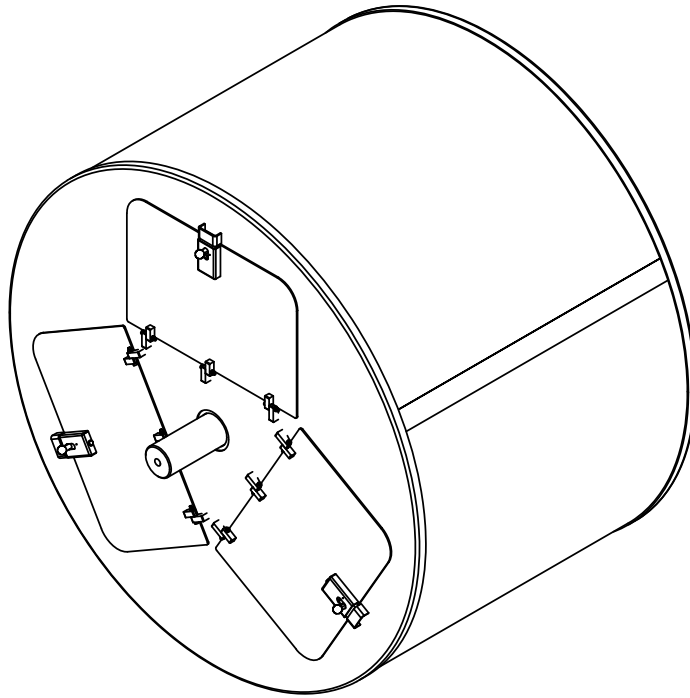
INNER DOOR ASSEMBLY



INNER DOOR ASSEMBLIES ARE MARKED WITH THE POCKET NUMBER TO INDICATE THE CYLINDER POSITION. PLEASE BE SURE TO ORDER THE CORRECT DOOR NUMBER FOR REPLACEMENT, #1, #2, OR #3.

Fig.	Part No.	Description	DW100	DW150	DW200	DW300	DW400
1	2400-1-610	Inner Door Assembly, #1	X				
	2400-2-610	Inner Door Assembly, #2	X				
	2400-3-610	Inner Door Assembly, #3	X				
2	2400-1-1520	Inner Door Assembly, #1		X	X		
	2400-2-1520	Inner Door Assembly, #2		X	X		
	2400-3-1520	Inner Door Assembly, #3		X	X		
3	2400-1-30Y	Inner Door Assembly, #1				X	
	2400-2-30Y	Inner Door Assembly, #2				X	
	2400-3-30Y	Inner Door Assembly, #3				X	
4	2400-1-40E	Inner Door Assembly, #1					X
	2400-2-40E	Inner Door Assembly, #2					X
	2400-3-40E	Inner Door Assembly, #3					X
5	2421	Bolt Assembly, Cylinder Door	These components are common to all inner door assemblies.				
6	2423	Spring, 3/8" I.D. X 2" Long					
7	2424	Handle Inner Door					
8	9605	Bolt, Shoulder 1/4 SST					
9	9537-2	Nut Hex Nyloc #10-24 SS					
10	2410	Hinge Basket					

CYLINDER ASSEMBLY

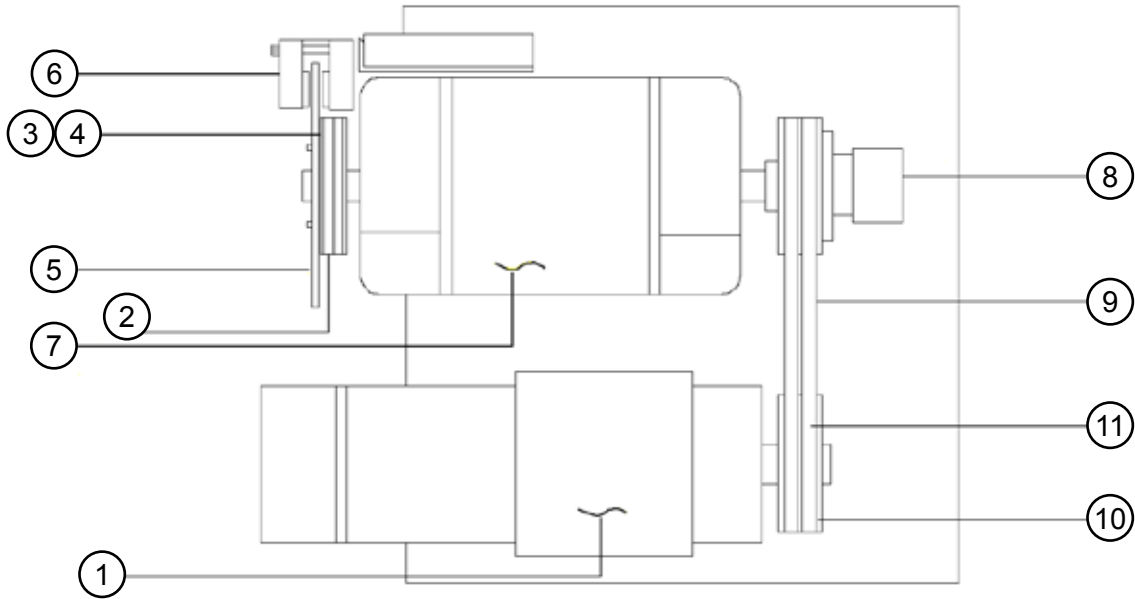


DW200 CYLINDER ASSEMBLY SHOWN

DW Series Cylinder Assemblies		
<u>Part No.</u>	<u>Description</u>	<u>Machine Series</u>
2000-10C	Cylinder Assembly	DW100, DW100SM
2000-10PT	Cylinder Assembly	DW100PT, DW100PTSM
2003-15H	Cylinder Assembly	DW150, DW150SM
2000-15H*	Cylinder Assembly	DW150, DW150SM*
2000-15PT	Cylinder Assembly	DW140SM, DW150PTSM
2003-20M	Cylinder Assembly	DW200, DW200SM
2000-20M*	Cylinder Assembly	DW200, DW200SM*
2000-20PT	Cylinder Assembly	DW200PT, DW200PTSM
2000-30Y	Cylinder Assembly	DW300, DW300SM
2000-30PT	Cylinder Assembly	DW300PTSM
2000-40E	Cylinder Assembly	DW400, DW400SM
2000-40PT	Cylinder Assembly	DW400-40PTSM

* Use in machines with a 2-motor drive system.

MOTOR ASSEMBLY- PassThru Models Only



DW100PT

Figure	Part No.	Description	Qty
1*	5400-	Wash Motor	1
2	5830-610	Belt, Main Drive (Not Shown)	1
3	5311-10PT	Bushing Extract 1-1/8 Bore SDS	1
4	5310-10PT	Sheave Extract (2A4.2B4.6-SDS)	1
5	5731-610	Disc Brake (5/16X12) - B/P	1
6	5729	Brake Assembly Unit	1
7*	5300-	Extract Motor	1
8	5600-1-610	Spare Part Air Clutch Kit	1
9	5860N-610	Belt Wash Motor #B-46	2
10	5410N-610	Sheave Wash (2GR BQ 5.8 QD)	1
11	5411N-610	Bushing Wash (SDS X 1-1/4 QD)	1

NOTE

*Contact Customer Service with model and serial number of machine for specific part number.

Wash Motor Brake Assembly (Not shown - Internal to Wash Motor) Replacement Parts List

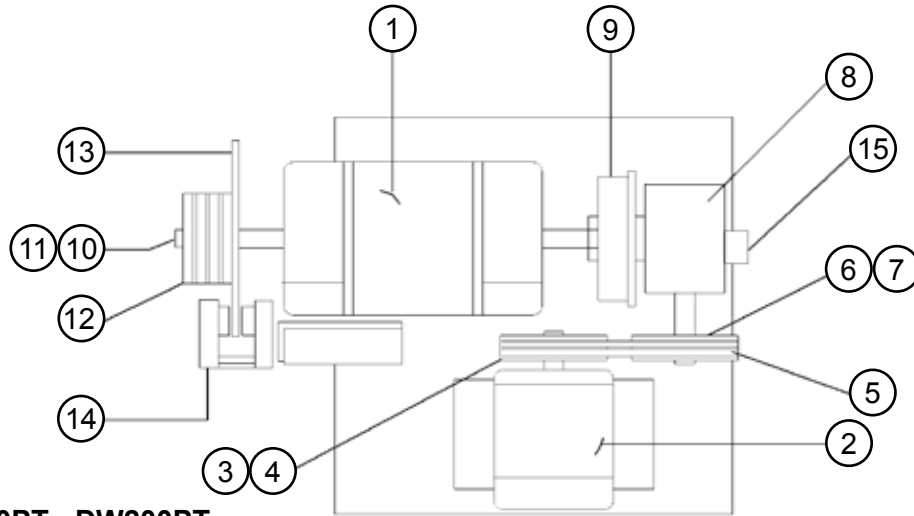
Part No.	Description	Qty
S1-055-331-00	Wash Motor Brake with Hub 230V/460V/3PH/60Hz	1

NOTE

When ordering spare parts for Wash Motor Brake, specify Coil Kit number and voltage, and complete model and serial number off brake.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

MOTOR ASSEMBLY- PassThru Models Only



DW150PT - DW200PT

Figure	Part No.	Description	Qty
1*	5300-	Motor Extract	1
2*	5400-1520	Motor Wash - 2 HP	1
3	5410-1520	Sheave Wash (3V3.35 TL 1 GR)	1
4	5411-1520	Bushing Wash (1610 X 7/8 TL)	1
5	5840-1234	Belt Wash Motor #3VX250	2
6	5510-1520	Sheave Reducer (3V5.0 TL 1GR)	1
7	5411-1520	Bushing Wash (1610 X 7/8 TL)	1
8	5500-1520	Reducer Gear	1
9	5600-1520	Clutch, Air	1
10	5310-1520PT	Sheave Extract (4A5.6/B6.0 TL)	1
10	5310-50-1520PT	Sheave Extract (4A7.0/B7.4 TL)	1
11	5311-1520	Bushing Extract(SK X 2.0 QD)	1
12	5830-1520PT	Belt Main Drive (Not Shown)	4
12	5830-50-1520PT	Belt Main Drive #B-116	1
13	5731-1520	Disc Brake - B/P	1
14	5729	Brake Assembly Unit	1
15	7160	Valve Quick Exhaust	1

NOTE

*Contact Customer Service with model and serial number of machine for specific part number.

Wash Motor Brake Assembly (Not shown - Internal to Wash Motor) Replacement Parts List

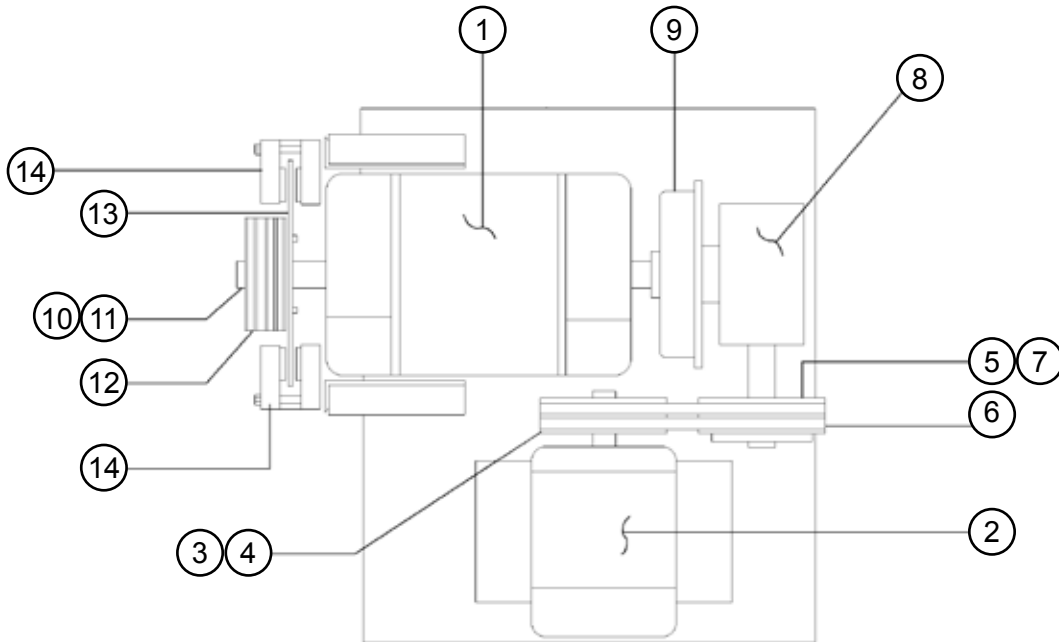
Part No.	Description	Qty
S1-055-331-00	Wash Motor Brake with Hub 230V/460V/3PH/60Hz	1

NOTE

When ordering spare parts for Wash Motor Brake, specify Coil Kit number and voltage, and complete model and serial number off brake.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

MOTOR ASSEMBLY- PassThru Models Only



DW300PT

Figure	Part No.	Description	Qty
1*	5300-	Motor Extract	1
2*	5400-3040	Motor Wash 3HP 220/380/50	1
3	5410-3040	Sheave Wash (2GR 3V3.0 TL)	1
4	5411-3040	Bushing Wash (1210 X 1-1/8)	1
5	5840-1234	Belt Wash Motor #3VX250	2
6	5510-3040	Sheave Reducer (3V4.5 2GR TL)	1
7	5511-3040	Bushing Taper-Lock (1610 X 1-3/16)	1
8	5500-3040	Reducer Gear	1
9	5600-3040	Clutch, Air	1
10	5310-30PT	Sheave Extract (5V7.5P 3GR)	1
11	5311-3040	Bushing Extract (E X 2.0)	1
12	5830-30Y	Belt, Main Drive (Not Shown)	3
13	5743-30PT	Belt Drive #5V-1320	1
14	5729	Brake Assembly Unit	2
15	7160	Valve Quick Exhaust (Not Shown)	1

NOTE

Contact Customer Service with model and serial number of machine for specific part number.

MOTOR ASSEMBLY- PassThru Models Only

DW400PT

Figure	Part No.	Description	Qty
1*	5300-	Motor Extract	1
2*	5400-3040	Motor Wash 3HP 220/380/50	1
3	5410-3040	Sheave Wash (2GR 3V3.0 TL)	1
4	5411-3040	Bushing Wash (1210 X 1-1/8)	1
5	5840-1234	Belt Wash Motor #3VX250	2
6	5510-3040	Sheave Reducer (3V4.5 2GR TL)	1
7	5511-3040	Bushing Taper-Lock (1610 X 1-3/16)	1
8	5500-3040	Reducer Gear	1
9	5600-3040	Clutch, Air	1
10*	5310-30Y	Sheave Extract (CQ9.5 QD 3GR)	1
11	5311-3040	Bushing Extract (E X 2.0)	1
12	5830-30Y	Belt, Main Drive (Not Shown)	3
13	5731-3040	Disc Brake	1
14	5729	Brake Assembly Unit	2
15	7160	Valve Quick Exhaust (Not Shown)	1

NOTE

Contact Customer Service with model and serial number of machine for specific part number.

Wash Motor Brake Assembly (Not shown - Internal to Wash Motor) Replacement Parts List

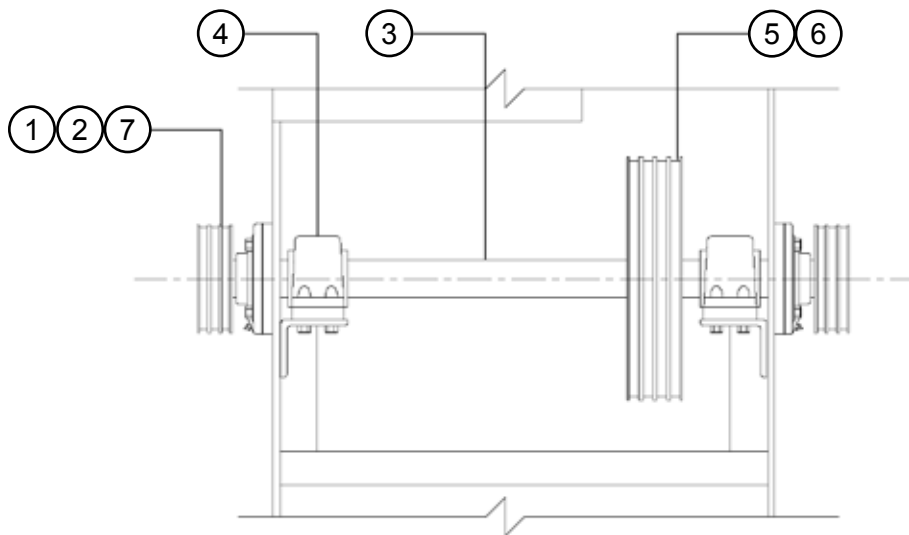
Part No.	Description	Qty
S1-055-331-00	Wash Motor Brake with Hub 230V/460V/3PH/60Hz	1

NOTE

When ordering spare parts for Wash Motor Brake, specify Coil Kit number and voltage, and complete model and serial number off brake.

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

TRANSFER SHAFT ASSEMBLY - PassThru Models Only



DW100PT

Figure	Part No.	Description	Qty
1	5746-10PT	Bushing (1-13/16 BORE SDS)	4
2	5744-10PT	Sheave (3GR 3V5.0 QD)	2
3	5741-10PT	Shaft Transfer - B/P	1
4	5740-10PT	Bearing Pillow Block (2")	2
5	5748-10PT	Flywheel (2A10.6B11.0-SK)	1
6	5749-10PT	Bushing (SK X 2.0 BORE)	1
7	5747-10PT	Belt Transfer Drive #3VX800	6
8	5830-10PT	Belt Main Drive #B-89	4

DW150PT, DW200PT

Figure	Part No.	Description	Qty
1	5746-1520PT	Bushing (SK X 2-1/2 BORE)	4
2	5745-1520PT	Sheave (3BQ7.0 3GR)	4
3*	5741-15PT	Shaft Transfer - B/P	1
3**	5741-20PT	Shaft Transfer - B/P	1
4	5740-1520PT	Bearing Pillow Block (2-1/2)	2
5	5748-1520PT	Flywheel (4B20.0 4GR QD)	1
6	5749-1520PT	Bushing (SF X 2-1/2 BORE)	1
7	5747-1520PT	Belt Transfer Drive #B-97	6
8	5830-1520PT	Belt Main Drive #B-112	4

NOTE

*5741SM-15PT for model DW150PTSM

**5741SM-20M for model DW200PTSM

Belts not shown

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

DW300PT

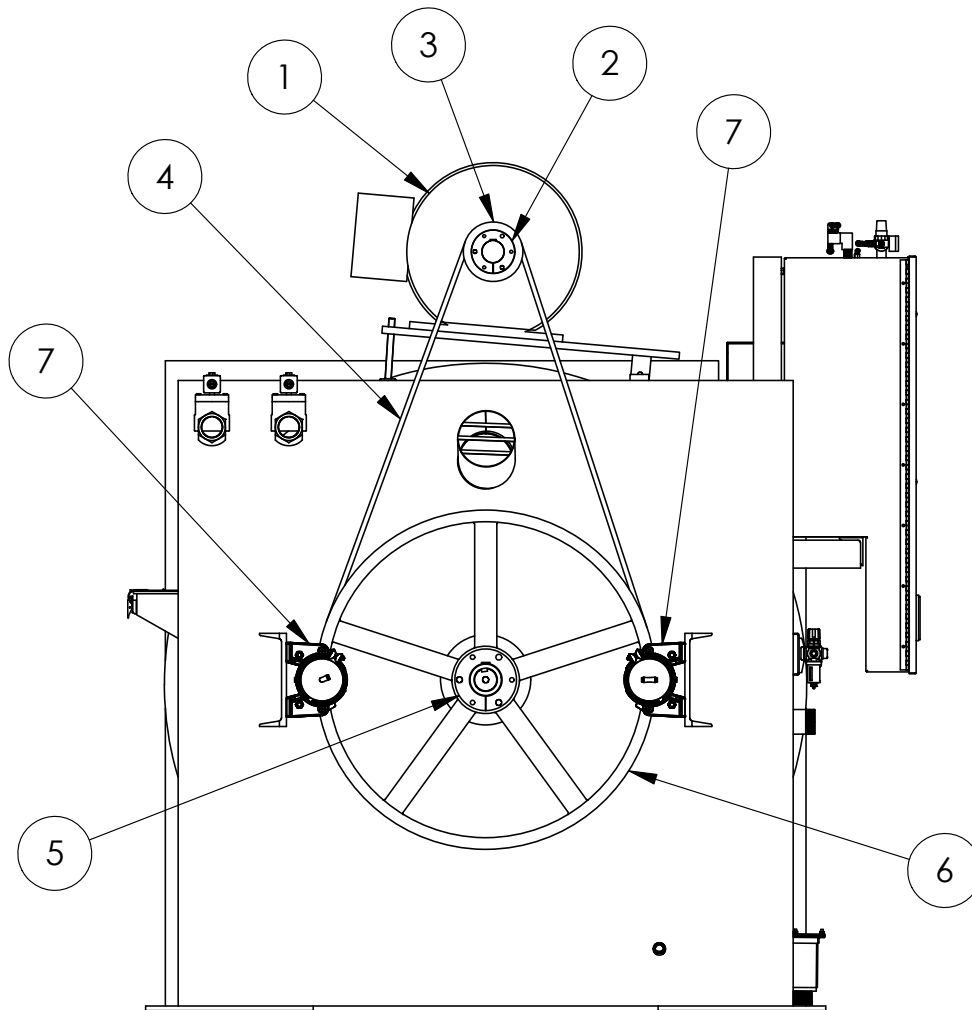
Figure	Part No.	Description	Qty
1	5746-30PT	Bushing SF X 2-1/2 Bore)	4
2	5744-30PT	Sheave (5V10.3 3GR QD)	2
3	5741SM-3040PT	Shaft Transfer - B/P	1
4	5740-1520PT	Bearing Pillow Block (2-1/2)	2
5	5748-30PT	Flywheel (5V21.2 3GR QD)	1
6	5746-40PT	Bushing (E X 2-1/2 Bore)	1
7	5747-30PT	Belt Transfer Drive #5VX1180	6
8	5743-30PT	Belt Drive #5V-1320	3

DW400PT

Figure	Part No.	Description	Qty
1	5746-40PT	Bushing (E X 2-1/2 Bore)	4
2	5744-40PT	Sheave (4GR 5V10.3 QD)	2
3	5741SM-3040PT	Shaft Transfer - B/P	1
4	5740-1520PT	Bearing Pillow Block (2-1/2)	2
5	5748-40PT	Flywheel (5V21.2 4GR QD)	1
6	5746-40PT	Bushing (E X 2-1/2 Bore)	1
7	5747-40PT	Belt, Transfer, 5VX1250	8
8	5830-40PT	Belt Main Drive #5VX1400	4

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

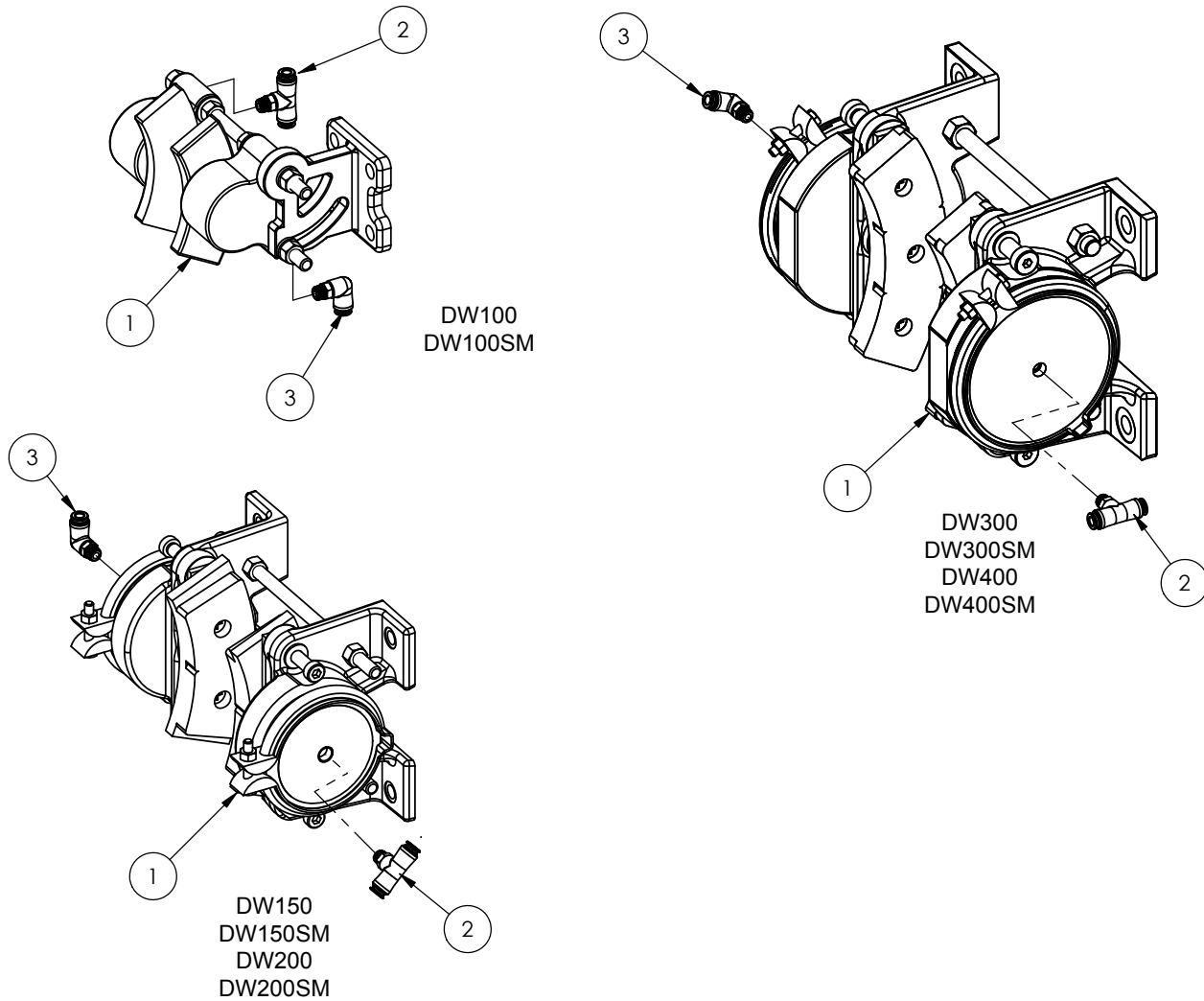
DRIVE ASSEMBLY- DW & DW_SM Models with Inverter and Single motor drive



Item	Part Description	DW100 DW100SM	DW150 DW150SM	DW200 DW200SM	DW300 DW300SM	DW400 DW400SM
1	Motor Extract	5300-1E-85X	5300-1E-20M	5300-1E-20M	5300-1E-30Y	5300-15E-40E
2	Sheave, Motor	5315-14XP	5310-1520	5310-1520	5310-3040	5310-3040
3	Bushing, Motor	5316-14XP	5311-1-1520	5311-1-1520	5311-30Y	5311-40E
4	Belt	5830-610	5830-1520	5830-1520	5830V-30Y	5830-40E
5	Bushing Flywheel	5702-10C	5702-1520	5702-1520	5702-3040	5702-3040
6	Flywheel	5701-67X	5701-1520	5701-1520	5701-3040	5701-3040
7	Brake Assembly	5729V-610	5729V-1520	5729V-1520	5729V-3040	5729V-3040

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

BRAKE ASSEMBLIES - DW & DW_SM Models with Inverter and Single motor drive



Item	Description	DW100 DW100SM	Qty	DW150 DW150SM DW200 DW200SM	Qty	DW300 DW300SM DW400 DW400SM	Qty
1	Brake Assembly	5729V-610	1	5729V-1520	2	5729V-3040	2
2	Tee Male Branch Swivel	7036	1	7036	2	7036	2
3	Elbow, Male Brass	7002	1	7002	2	7002	2

VIBRATION SENSOR

For machines with Rigid Mount only (DW & DW_PT)

The vibration sensor switch is located in the electrical panel box. It is pre-set at the factory for optimal machine performance. To adjust the sensor sensitivity loosen mounting bracket and tilt switch forward or backward. The further away from horizontal the sensor body is the less sensitive it becomes and the closer to horizontal it is the sensor is more sensitive. Test the sensor with the machine fully installed, leveled and bolted in place. Run a full load in high extract, monitoring excessive vibration during operation. Make any fine tuning adjustments after the cycle ends and the cylinder has stopped rotating.

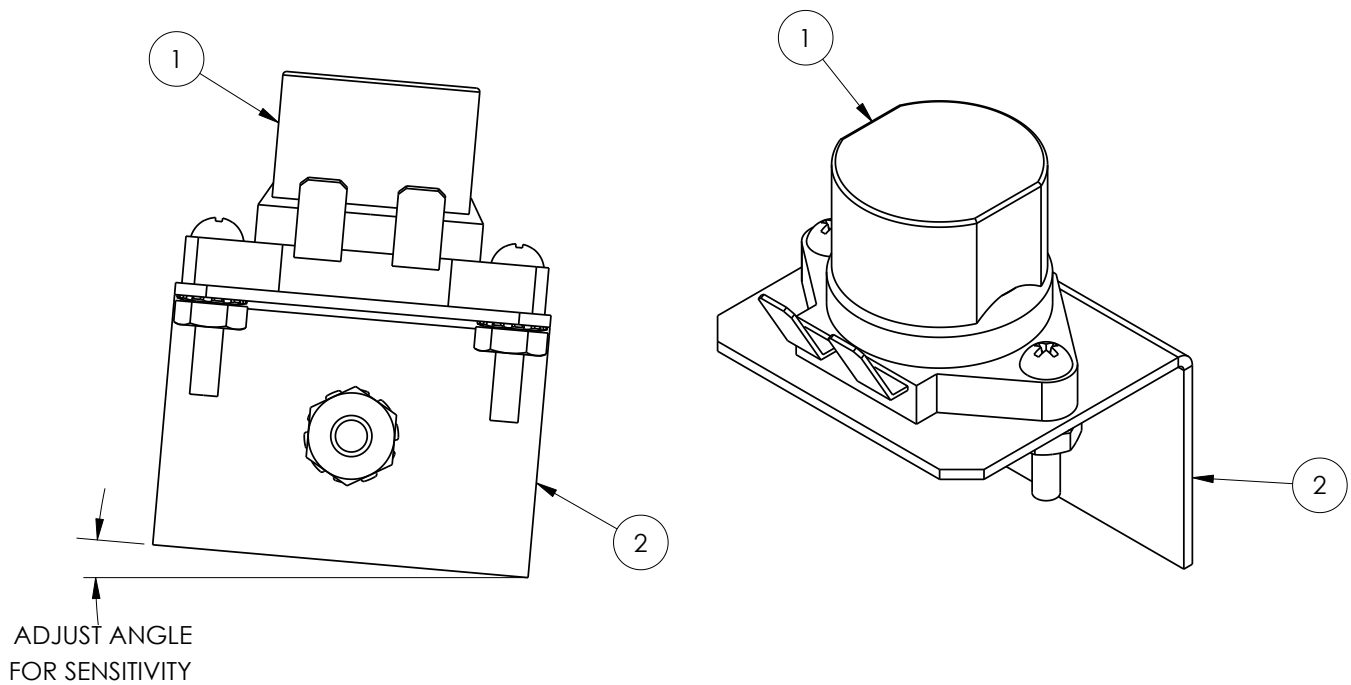


Figure	Part No.	Description	Qty
1	6621	Sensor Vibration (Tilt)	1
2	6622-6XP	Bracket, Vibration Switch (Tilt)	1

VIBRATION SWITCH

For machines with Dyna♦Mount suspension only (DW_SM & DW_PTSM)

The Vibration Switch, located at the left rear corner of the machine, is removed for shipping. However, after making adjustments to the spring rod and snubber assemblies, the vibration switch may have to be adjusted. It has both a vertical and horizontal motion control. The vibration switch can be adjusted both vertically and horizontally. The vibration rod should be centered in the bracket's hole. For proper adjustment, the screws can be loosened, allowing the rod to slide up or down within the bracket. To adjust horizontally, the vibration rod should be $\frac{1}{4}$ " from the head of the bolt. Either tighten or loosen the screw to attain proper measure. This vibration switch will trip off the machine if any excessive motion occurs during its operation and does not require any reset.

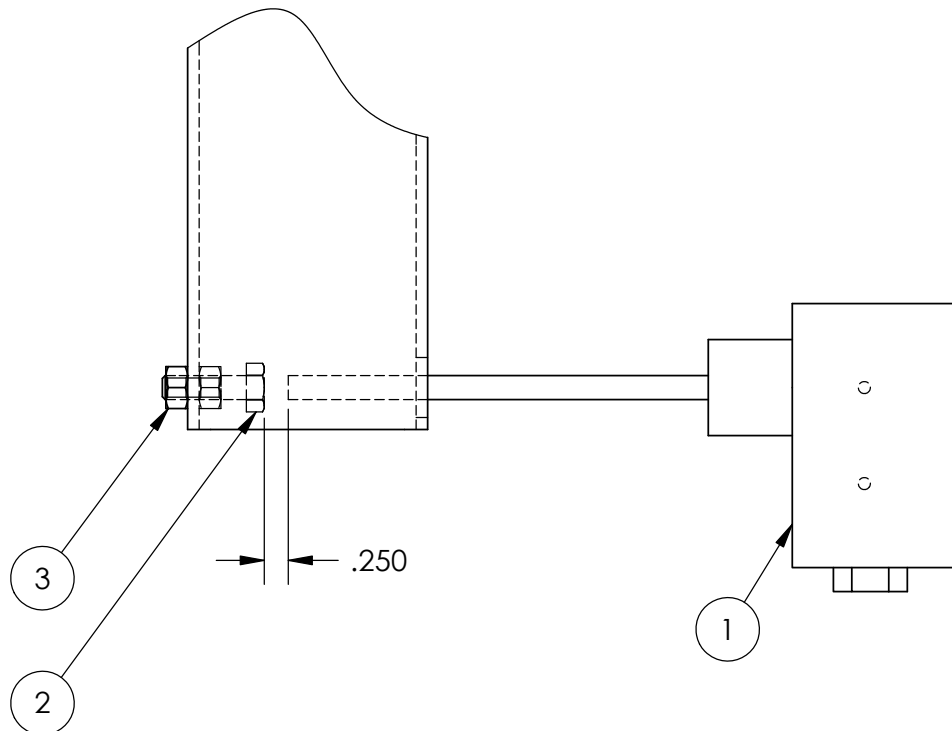
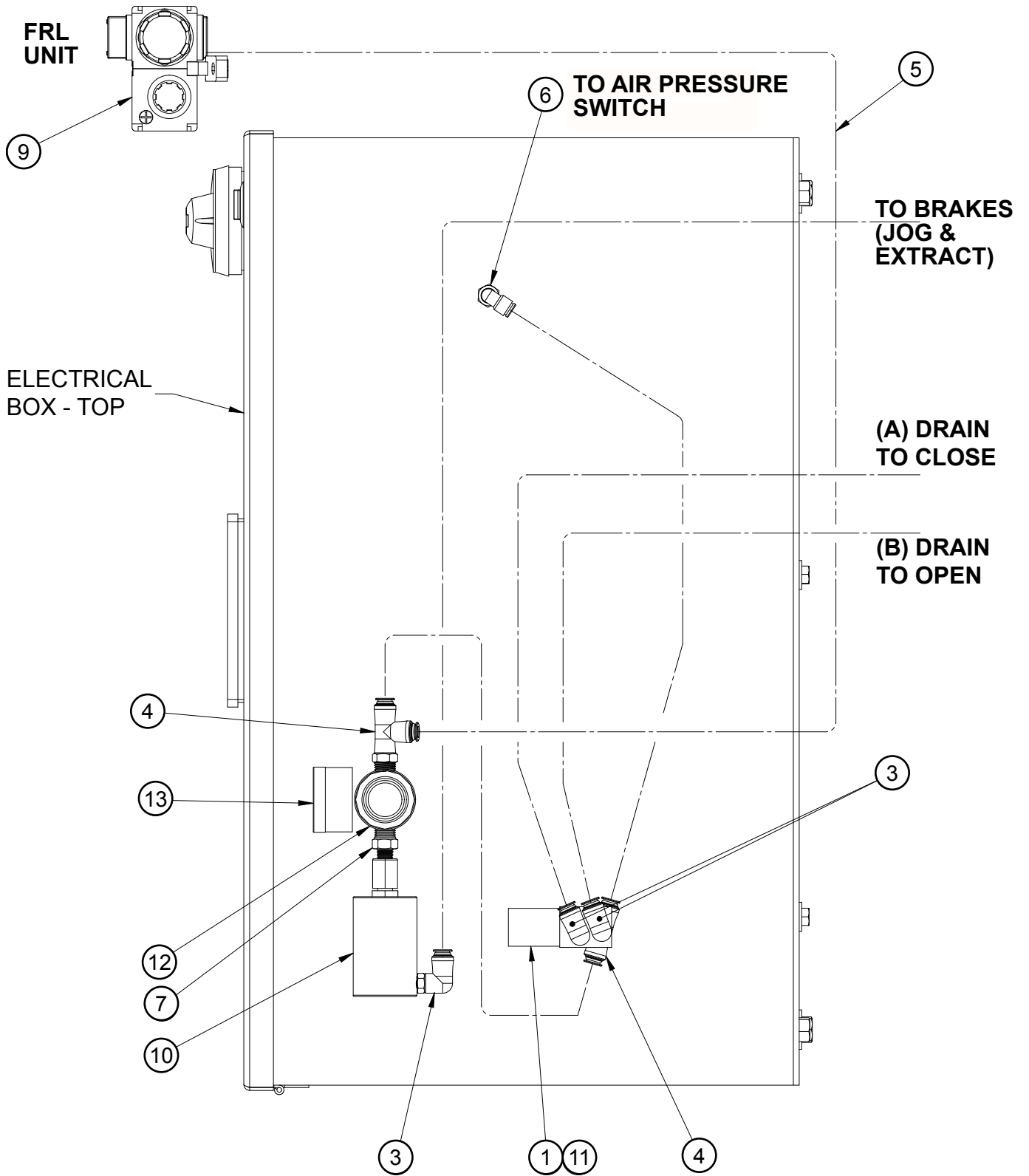


Figure	Part No.	Description	Qty
1	6652	Vibration Switch, Rod Type	1
2	9508	Bolt Hex HD 1/4-20 X 7/8 Full THD 18-8SS	1
3	9539	Nut Hex 1/4-20 SS	2

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

PNEUMATIC ASSEMBLY

DW & DW_SM Models with Inverter and Single motor drive (Standard)



EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

Figure	Part No.	Description	Qty
1	3060	Nipple Close 1/2 NPT Bronze (Not Shown)	1
2	6700	Pressure Bowl Assembly Unit (Not Shown)	1
3	7002	Elbow, Male Brass Swivel /8 NPT X 1/4 OD Tube	3
4	7006	Tee Male Run 1/4 X 1/4	1
5	7012	Tubing Polyt Air 1/4 OD X.180	35 FT
6	7028	Elbow Female 1/4 X 1/8 Brass	1
7	7029	Nipple Reducer Hex	1
8	7036	Tee Male Branch 1/4 X 1/4 X 1/8 NPT	1
9	7121	Filter, Air Regulator (FRL)	1
10	7150	Valve, Solenoid 3-Way 24V	1
11	7150-2	Valve, Solenoid (Drain) 4-Way	1
12	7172	Regulator Air - Range 125PSI	1
13	7173	Gauge Air 0-160 PSI	1

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

Figure	Part No.	Description	Qty
1	3060	Nipple Close 1/2 NPT Bronze (Not Shown)	2
2	6700	Pressure Bowl Assembly Unit (Not Shown)	1
3	7002	Elbow, Male Brass Swivel 1/8 NPT X 1/4 OD Tube	5
4	7006	Tee Male Run 1/4 X 1/4	1
5	7012	Tubing Polyt Air 1/4 OD X.180	45 FT
6	7028	Elbow Female 1/4 X 1/8 Brass	1
7	7029	Nipple Reducer Hex	1
8	7036	Tee Male Branch 1/4 X 1/4 X 1/8 NPT	2
9	7121	Filter, Air Regulator (FRL)	1
10	7150	Valve, Solenoid 3-Way 24V	1
11	7150-2	Valve, Solenoid (Drain) 4-Way	2
12	7172	Regulator Air - Range 125PSI	1
13	7173	Gauge Air 0-160 PSI	1

AUTOMATIC POSITIONING

Automatic Positioning assists in aligning the inner cylinder doors with the main door when jogging the machine during loading and unloading. The assembly shown below is located on the machine's back plate and senses the crossing of the positioning tabs located on the flywheel.

To engage the Automatic Positioning system, push the JOG button and the Automatic Positioning button located on the control panel at the same time. This will cause the cylinder to rotate to the next compartment position and stop automatically. The two buttons must be released and the sequence repeated to advance to the next compartment and so on.

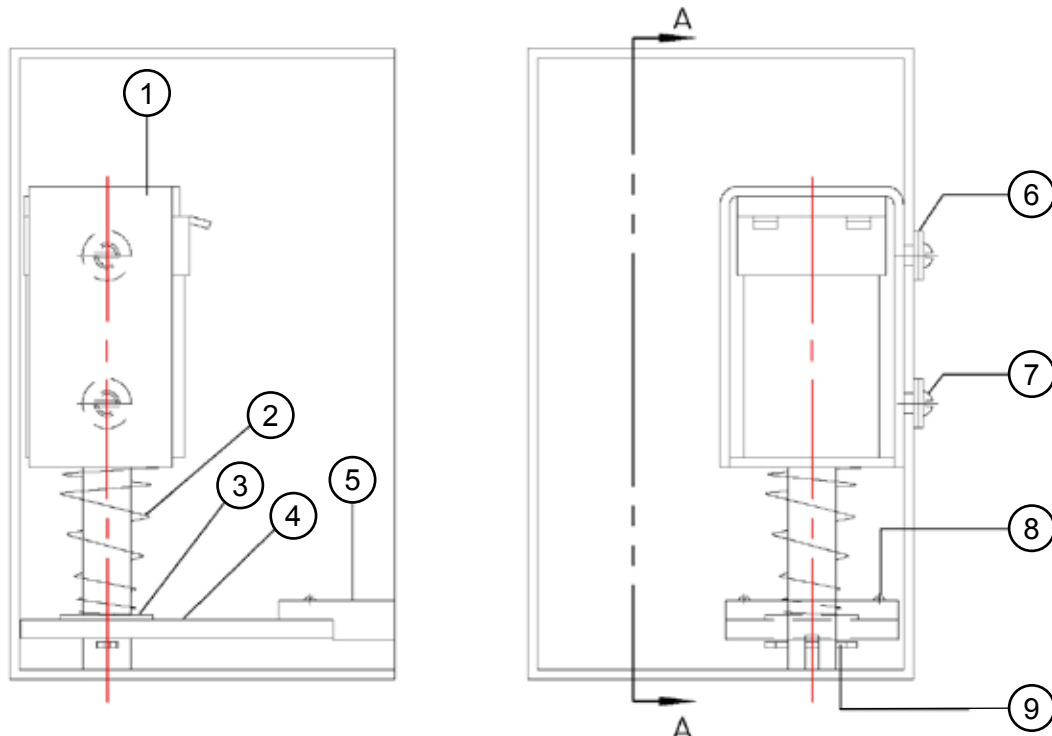
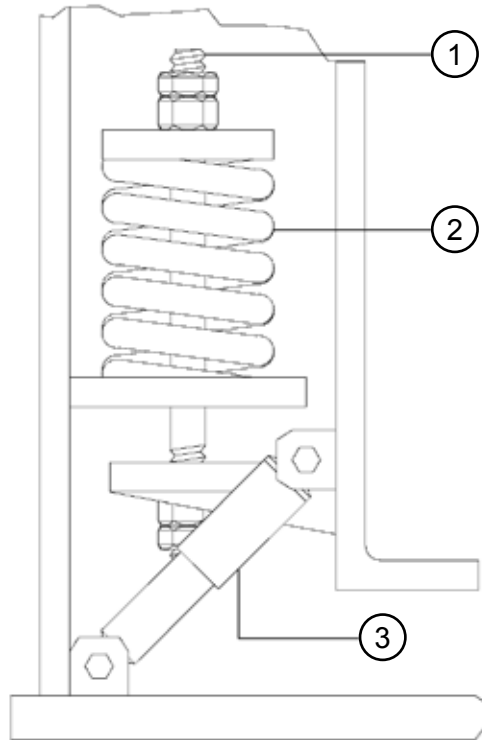


Figure	Part No.	Description	Qty
1	6268-1	Solenoid Door Lock - 24VAC	1
2	6268-4	Spring Door Lock Shaft - B/P	1
3	6268-3	Clip Spring Retainer - B/P	1
4	7212-1234	Switch Mounting Plate	1
5	6269	Switch Proximity (Hermetic)	1
6	9569	Washer #10	2
7	9580	Screw Round Head SS 6-32 X 1/4	2
8	9626	Screw Round Head 4-40 X 3/8 SS	2
9	9595	Pin Cotter 3/32 X 1/2 SS	1
*Not shown - mounted on flywheel			
10	6269-1	Actuator Proximity Switch	3

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

DYNA♦MOUNT SUSPENSION SYSTEM - DW_SM and DW_PTSM Models Only

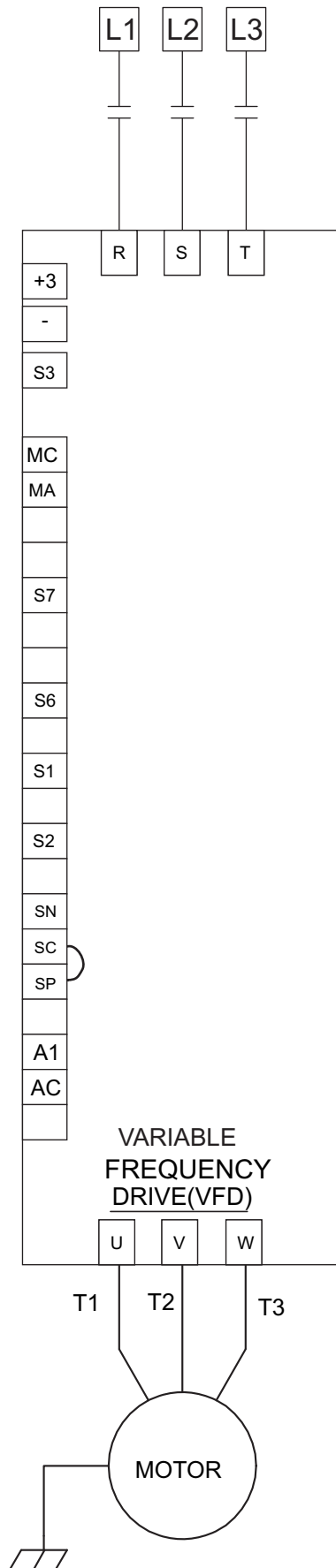


ALL MODELS

	Figure	Part No.	Description	Qty
	1	8167	Shaft Main Spring	4
	2	8170-2	Shock Absorber, Gas	as reqd
	3	9636	Bolt Hex HD 5/8-11 X 3 Partial Thread GR8 Zinc	as reqd
(Not Shown)				
	*	9576-1	Washer Flat, 21/32 ID x 1-5/16 OD	as reqd
	*	9545	Nut Hex 5/8-11 Plated	as reqd
	*	9552	Nut Jam 5/8-11 NC	as reqd
	*	9668	Nut Flex 1-8 NC Plated	4
	*	9555-1	Nut Jam 1-8 NC STD	4
	*	9555-2	Nut Hex 1-8 NC Plated	4
DW100SM				
	2	8165-610	Spring Mounting (750#)	4
DW150SM, DW200SM				
	2	8165-1520	Spring, 6" O.D. X 10.5" LG. X 1235#	4
DW300SM, DW400SM				
	2	8165-2-3040	Spring, 3500 # X 5.656 OD X 11.5 FH	4

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

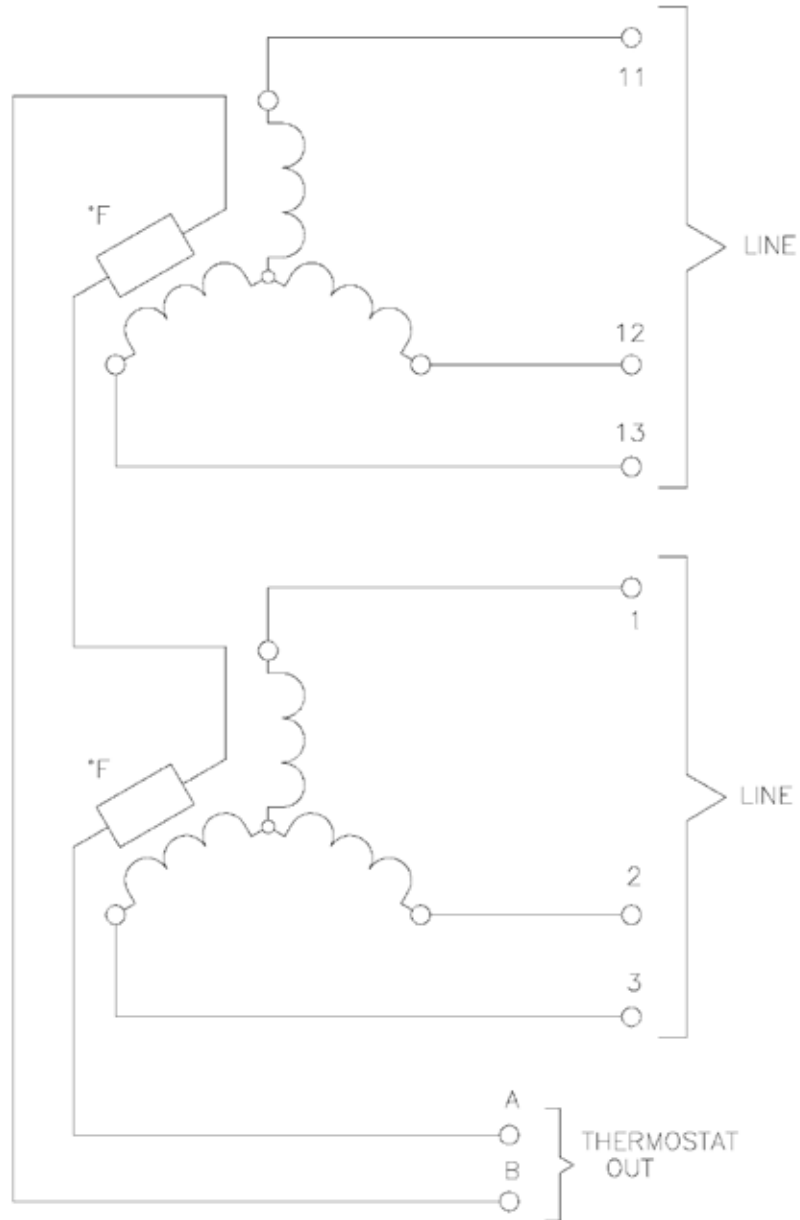
VARIABLE SPEED MOTOR WIRING



EXTRACT MOTOR CONNECTION

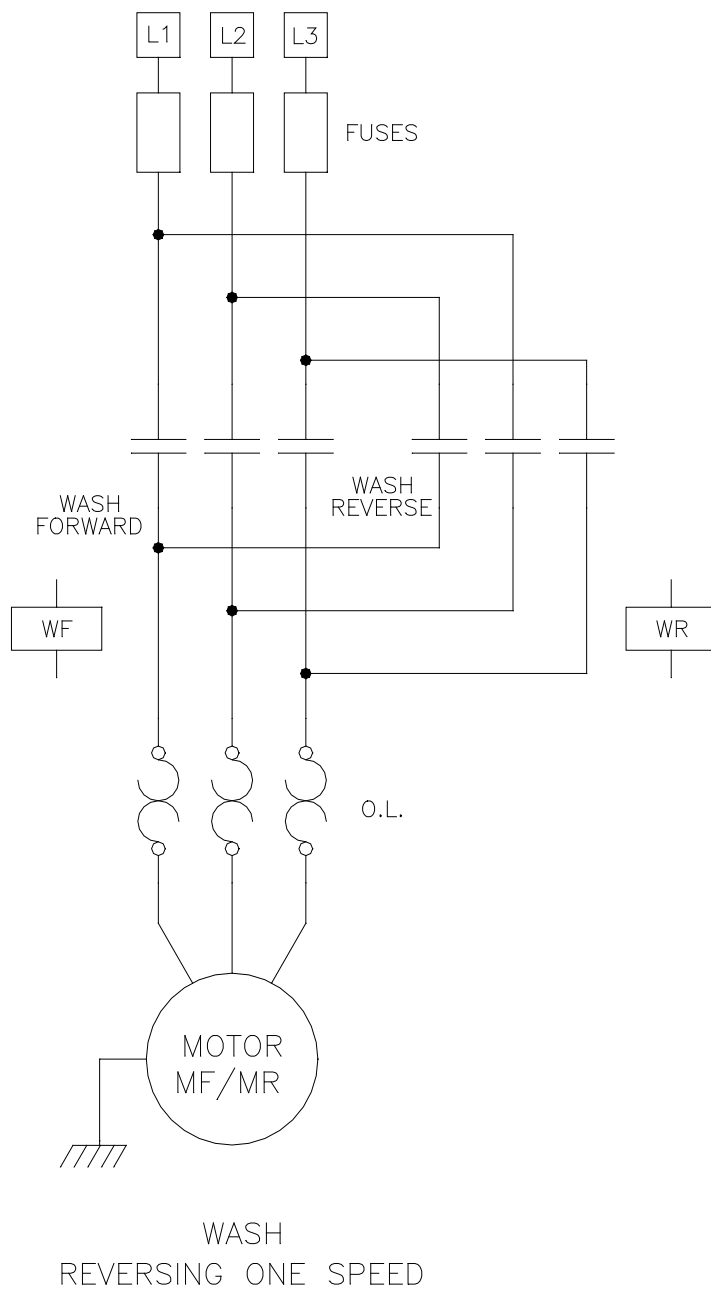
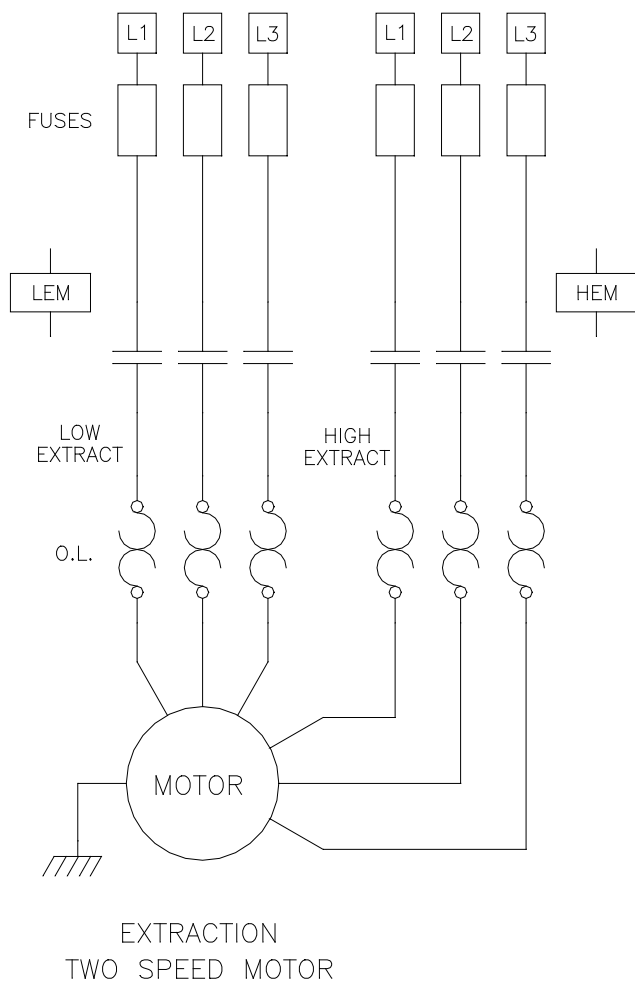
Two (2) Speed Internal Motor Connections

After the motor shuts down due to overheating, it cools very slowly and sometimes the thermostat is required to cool sufficiently in order to reset. The resetting is automatic after the motor has been cooled about 77°F (@ 25°C) but it is impossible to reset the motor until the thermostat has reset.

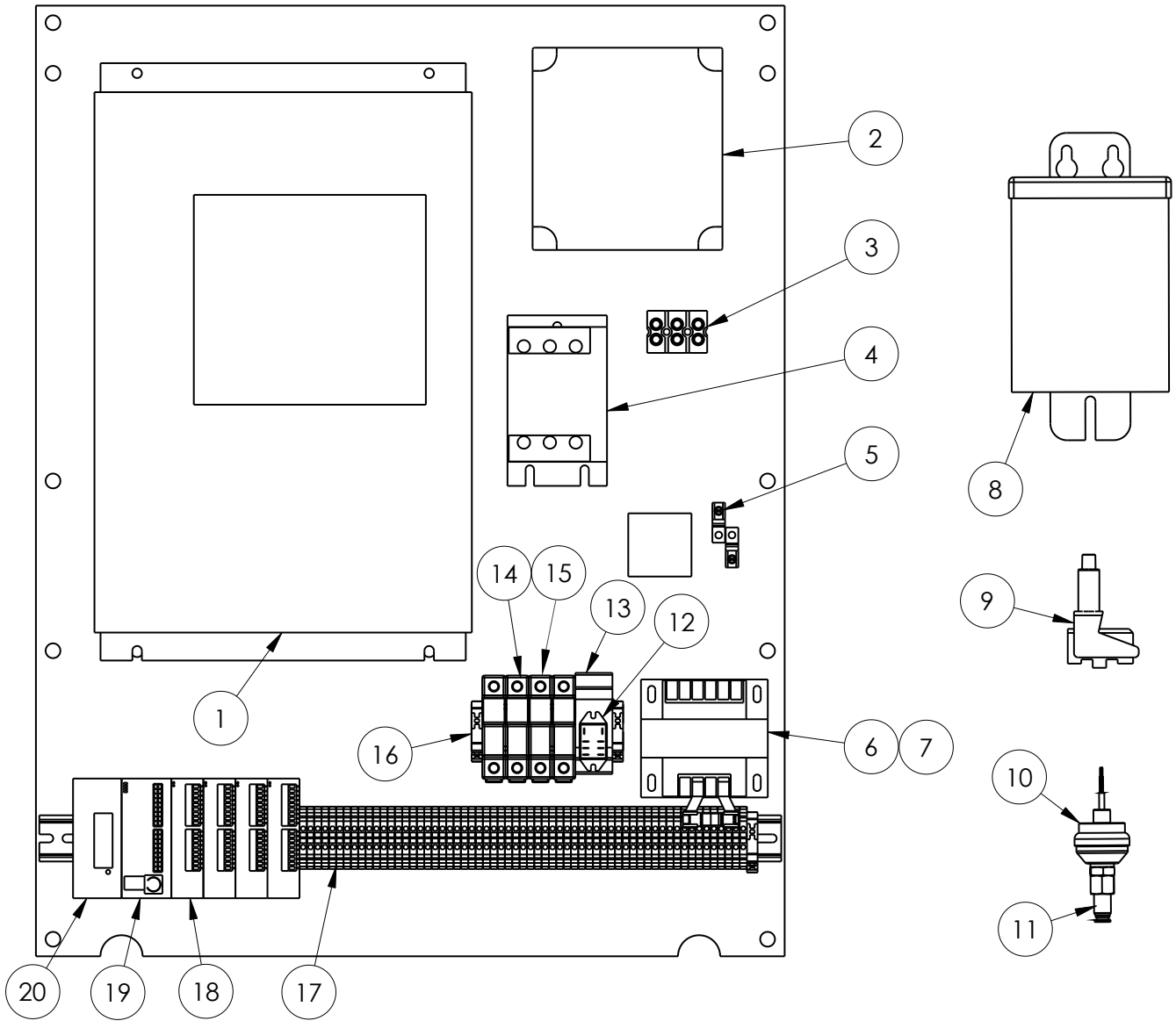


EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

2-MOTOR, 3-SPEED MOTOR WIRING



ELECTRICAL PANEL ASSEMBLY



EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

ELECTRICAL PANEL ASSEMBLY

Figure	Part No.	Description
1	---	See Inverter Table
2	---	See Transistor Braking Module Table
3	6431	Block, Power Terminal (3 Pole)
4	---	See Heater/Motor Contactor Table
5	6581-G	Lug Connector - Ground
6	6660	Transformer 100VA, PRI 208, 240, 277, 380, 480 SEC 24
7	---	See Circuit Fuse Table
8	6685	Transformer 500VA, PRI 240/480 SEC 120/240
9	6270	Switch - Air Pressure
10	6537-8	Pressure Sensor, Water Level
11	7001-1	Adaptor, Female Pipe, Brass Barbed
12	6266	Relay Miniature DPDT 24VAC
13	6266-1	Socket, Relay 2 Pole
14	6385	Block, Safety Fuse (2 Pole - 600 Volt)
15	6385-2	Block, Safety Fuse (1 Pole - 600 Volt)
16	6364	Terminal Block End Clamps (Black)
17	6361-3	Terminal Blocks, Single Level Feed-Through
18	6537-3	I/O Module, DynaTrol (ELC-EX)
19	6537-2	PLC, DynaTrol (ELC-PA)
20	6537-1	Power Supply, 24VDC, DynaTrol 1A
21	---	See Brake Resistor Table

Inverter Table			
Part No.	Description	Machine Series	Voltage/Motor HP
6759	Inverter, VFD, 7.5HP, 230VAC	DW100	208 - 240VAC, 7.5HP
6759-1	Inverter, VFD, 7.5HP, 480VAC	DW100	380 - 480VAC, 7.5HP
6760-3	Inverter, VFD, 15HP, 230V	DW150, DW200	208/240/230V, 15HP
6760-4	Inverter, VFD, 15HP, 480VAC	DW150, DW200	480V, 15HP
6760-7	Inverter, VFD, 30HP, 230VAC	DW300	208/240V/230V, 30HP
6760-8	Inverter, VFD, 30HP, 460VAC	DW300	480V, 30HP
6760-9	Inverter, VFD, 40HP, 230V	DW400	208/240V, 40HP
6760-10	Inverter, VFD, 40HP, 460VAC	DW400	480V, 40HP

Transistor Braking Module Table			
Part No.	Description	Machine Series	Input Voltage
6679-9	Braking Module, Transistor, Low Voltage	DW300, DW400	208 - 240 VAC
6679-10	Braking Module, Transistor, High Voltage	DW300, DW400	380 - 480 VAC

ELECTRICAL PANEL ASSEMBLY

Heater / Motor Contactor Table			
Part No.	Description	Machine Series	Input Voltage
6825	Contactor, (75 AMP/24VAC)	DW100	380 - 480 VAC
6825-12X	Contactor, (40 AMP/24VAC)	DW150, DW200	380 - 480 VAC
6825-1	Contactor, (50 AMP/24VAC)	DW300, DW400	380 - 480 VAC
6825-2	Contactor, (120 AMP/24V)	DW400	208 - 240 VAC

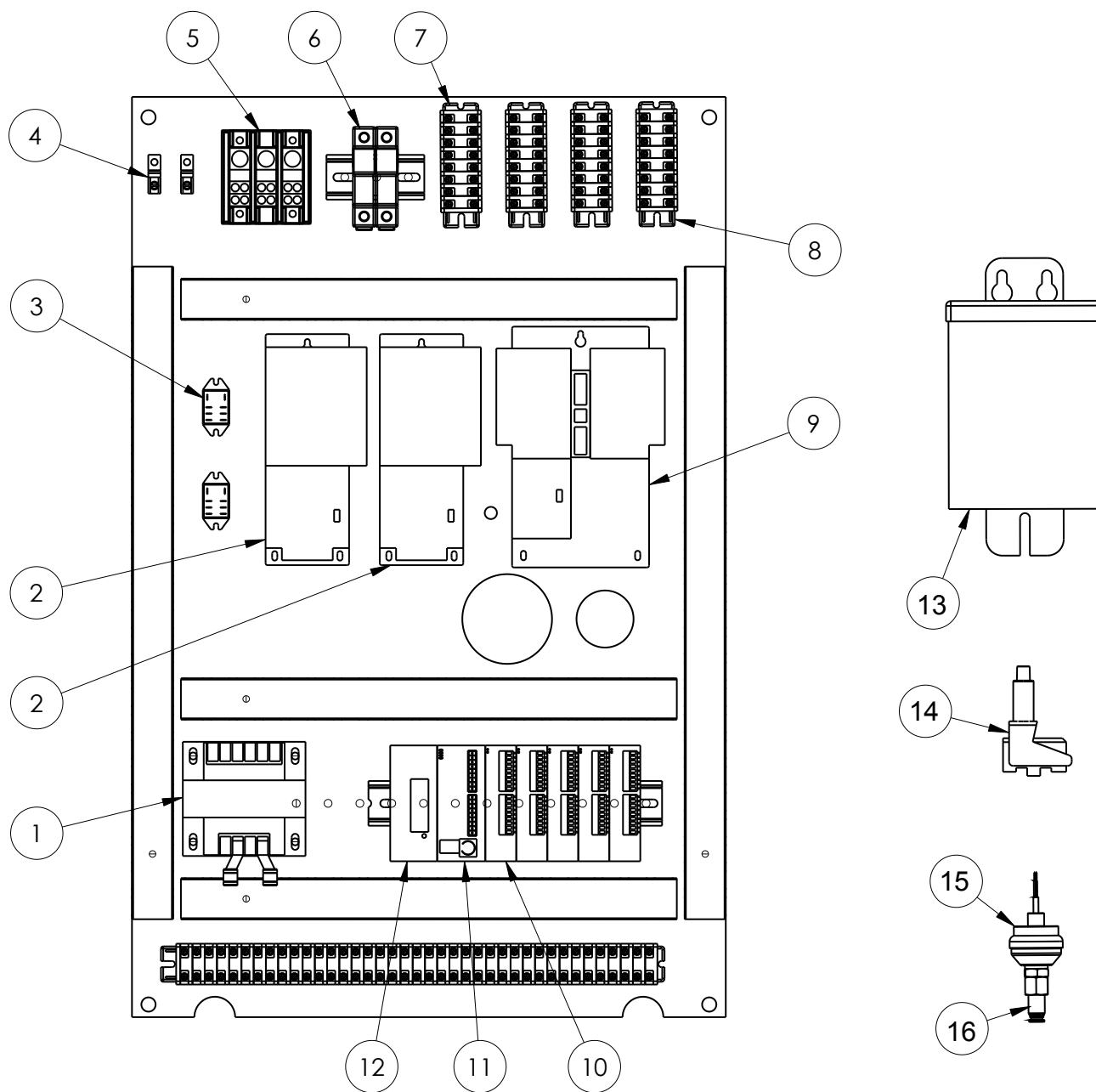
Circuit Fuse Table			
Configuration	Part No.	Description	Locations
High Voltage 380-480	6380-2	Fuse (5 AMP - 250V)	F3, F5
	6380-7	Fuse (3 AMP - 250V)	F4
	6380-11	Fuse 3A - 600V)	F1, F2
Low Voltage 208-240	6380-2	Fuse (5 AMP - 250V)	F1, F2, F4, F5
	6380-7	Fuse (3 AMP - 250V)	F3

<p>NOTE</p> <p>See Schematic for actual fuse locations.</p>
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Brake Resistor Table			
Part No.	Description	Machine Series	Input Voltage
6679-6	Resistor, Brake, Finned (240VAC, 1500W)	DW100, DW150, DW200	208 - 480 VAC
6679	Resistor Brake (200V, 375W)	DW300, DW400	208 - 240 VAC
6679-1	Resistor Brake (400V, 375W)	DW300, DW400	380 - 480 VAC

EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

ELECTRICAL PANEL ASSEMBLY - PassThru Models Only



EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

ELECTRICAL PANEL ASSEMBLY - PassThru Machines Only - Cont.

Figure	Part No.	Description
1	6660	Transformer 100VA, PRI 208,240,277,380,480 SEC 24
2	---	See Extract Starter Table
3	6266	Relay Miniature DPDT 24VAC
4	6581-G	Lug Connector - Ground
5	6431-2	Block, Power Terminal (3-Pole)
6	6385	Block Safety Fuse (2 Pole - 600 Volt)
7	6405	Terminal Block - Sectional
8	6415	Terminal Block - End
9	6461-4	Starter Reversing - Size 0, 24 VAC
10	6537-3	I-O Module, DynaTrol (ELC-EX)
11	6537-2	PLC, DynaTrol (ELC-PA)
12	6537-1	Power Supply, 24VDC, DynaTrol 1A
13	6685	Transformer 240/480 500VA (High Voltage Machines Only)
14	6270	Switch - Air Pressure
15	6537-8	Pressure Sensor, Water Level
16	7001-1	Adaptor, Female Pipe, Brass Barbed

Extract Starter Table		
Part No.	Description	Machine Series
6462	Starter, Extract - Size 1, 208 VAC	DW100, DW150, DW200
6463	Starter, Extract - Size 2, 208 VAC	DW300, DW400

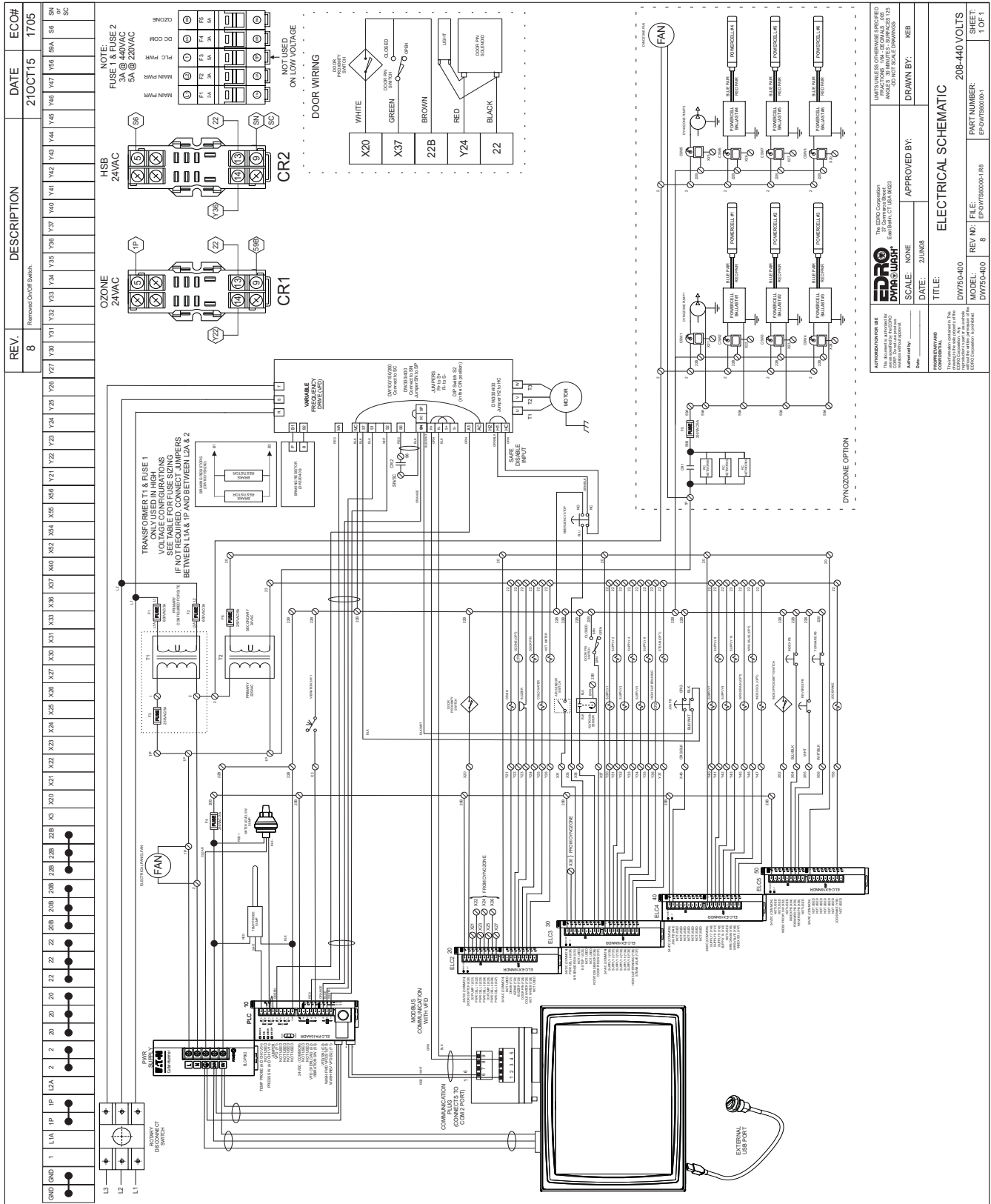
Brake Resistor Table			
Part No.	Description	Machine Series	Input Voltage
6825	Contacteur Heater (75 AMP / 24 VAC)	DW100	380 - 480 VAC
6825-12X	Contacteur (50 AMP / 24VAC)	DW150, DW200	380 - 480 VAC
6825-1	Contacteur (120 AMP / 24VAC)	DW300, DW400	380 - 480 VAC
6825-2	Contacteur (40 AMP / 24V)	DW400	208 - 240 VAC

NOTE

On *PassThru* models the contactor is externally mounted.
Part number and description are listed in the table below.

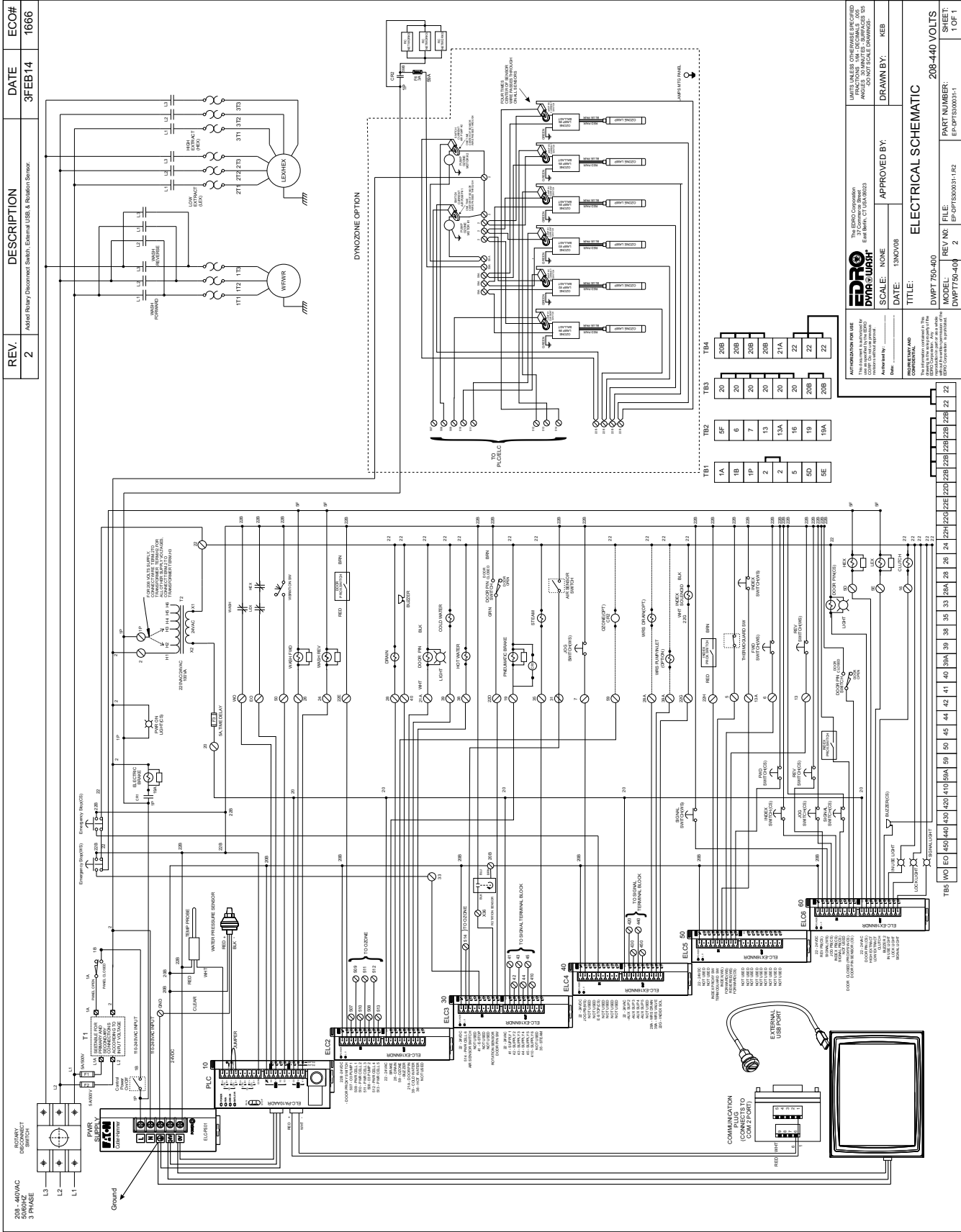
EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

ELECTRICAL SCHEMATIC - DW Hard Mount & Soft Mount with VFD



EDRO DYNAWASH® THREE POCKET WASHER - EXTRACTORS

ELECTRICAL SCHEMATIC - PassThru Models Only



Installation, On-Site Testing & Operational Checkout Form

DATE OF INSTALLATION:	MODEL No.:																																																																																				
	SERIAL No.:																																																																																				
DISTRIBUTOR:	INSTALLATION INSPECTED BY:																																																																																				
PURCHASER'S NAME & MAILING ADDRESS:	INSTALLED BY (COMPANY NAME):																																																																																				
INSTALLATION ADDRESS:	CHAIN AFFILIATION, IF ANY:																																																																																				
<p>INSTALLATION INSPECTION:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="width: 15%; text-align: center;">YES</th> <th style="width: 15%; text-align: center;">NO</th> </tr> </thead> <tbody> <tr> <td>MACHINE LEVEL</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>MACHINE GROUTED</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>BOLTS TIGHT</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>3 PHASE CIRCUIT BREAKER</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="padding-left: 20px;">AMP SIZE</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">VOLTAGE</td> <td></td> <td></td> </tr> <tr> <td>MACHINE GROUNDED</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td colspan="3">HOT WATER LINE SIZE: _____</td> </tr> <tr> <td colspan="3">COLD WATER LINE SIZE: _____</td> </tr> <tr> <td colspan="3">DRAIN: <input type="checkbox"/> OPEN PIT <input type="checkbox"/> DRAIN PIPE</td> </tr> <tr> <td colspan="3">SIZE: _____</td> </tr> </tbody> </table>		YES	NO	MACHINE LEVEL	<input type="checkbox"/>	<input type="checkbox"/>	MACHINE GROUTED	<input type="checkbox"/>	<input type="checkbox"/>	BOLTS TIGHT	<input type="checkbox"/>	<input type="checkbox"/>	3 PHASE CIRCUIT BREAKER	<input type="checkbox"/>	<input type="checkbox"/>	AMP SIZE			VOLTAGE			MACHINE GROUNDED	<input type="checkbox"/>	<input type="checkbox"/>	HOT WATER LINE SIZE: _____			COLD WATER LINE SIZE: _____			DRAIN: <input type="checkbox"/> OPEN PIT <input type="checkbox"/> DRAIN PIPE			SIZE: _____			<p>MACHINE OPERATION: (CHECK IF O.K.)</p> <table style="width: 100%; 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