

InterClean XR 120

OVERSIZE/OVERWEIGHT
HEAVY DUTY VEHICLE TIRE WASH

Technical Specifications



PART 1. GENERAL

- A. The general provisions of the Contract, including General and Supplementary Conditions, apply to the work detailed in this specification.

PART 2. REALTED WORK

- A. Site Work
B. Concrete
C. Mechanical
D. Electrical

PART 3. QUALITY ASSURANCE

- A. Experience: The system shall be produced by a manufacturer of established reputation with a minimum of five (5) years experience supplying the specified equipment in similar applications.
B. Installation: Provide a qualified manufacturer's representative to supervise the work related to equipment installation, check out and start up.
C. Training: Provide a technical representative to train Owner's maintenance personnel in the operation and maintenance of specified equipment.

PART 4. SUBMITTALS

A. Product Data

1. Submit Product Data in strict accordance with the requirements of these specifications.
2. Restrict submitted material to pertinent data. For instance, do not include a manufacturer's complete catalog when pertinent information is contained on a single page.

B. Engineering Drawings

1. Submittal engineering drawings must include the following:
 - a) Equipment general layout
 - b) Electrical layout
 1. Provide UL listing card or equivalent document of a Nationally Recognized Testing Laboratory from the company building the electrical panel(s) and attach with the electrical drawings indicating that the electrical panels will be built to the required standards (see section 11.10 Electric Control Panel).
 - c) Mechanical layout
 - d) Floor plan view
 - e) Isometric view with bill of materials
 - f) Any related in-ground electrical or mechanical installation

C. Operation and Maintenance Manual

1. Assemble and provide copies of manual in 8.5 x 11 inch format. Fold out diagrams and illustrations are acceptable. Manuals shall be reproducible by dry copy method.

D. Supplier Qualifications

1. The supplier shall have been regularly engaged in the design and supply of the type of equipment specified herein, for a period of not less than five (5) years.
2. The wash system, high pressure cleaning systems, pumping stations and all electrical controls shall be designed and supplied by one supplier.

3. All similar items shall be the products of one manufacturer.

E. Approved Equal Status

1. No deviations from these specifications will be allowed unless approved by the Owner in writing prior to bid closing.
2. All bidders with an “Approved Equal Status” shall submit the following with their bid package:
 - a) A complete list of spinner and touchless heavy duty vehicle wash systems manufactured and installed by the bidder. The list shall include all such installations made by the bidder in the last five (5) years, including the duration of service and application. Should the reference list have more than twenty-five (25) names, a list of the last twenty-five (25) installations shall suffice.
 - b) Provide the name of a contact person at each location that is familiar with the operation and maintenance of the wash system.
 - c) Based on the information supplied and discussions with the contact persons named, the engineer will determine the acceptability of the proposed supplier and the equipment.

PART 5. WARRANTY

- A. Warranty work specified herein is for one (1) year from the date of substantial completion against defects in materials. All rotating spinners have a three (3) year full parts warranty.
- B. Defects shall include, but not be limited to:
 1. Operation: Noisy, rough or substandard operation
 2. Parts: Loose, damaged and missing parts
 3. Finish: Abnormal deterioration

PART 6. SCOPE OF WORK

- A. To furnish a completely automatic, heavy-duty mud removal drive through wash system that is capable to de-muck all owner’s vehicles for front, sides, rear and under chassis.
- B. The supplier is to be responsible for the supply of necessary equipment, materials and service for the complete assembly and erection of the equipment so that it is ready for operation as per these specifications.

PART 7. WASH SYSTEM PERFORMANCE

- A. Regardless of the Owner’s approval for any deviations and/or changes, the supplier is solely responsible for the performance of the supplied equipment per these specifications. All equipment and equipment functions must be built and designed to these specifications.
- B. Should the equipment not perform as per these specifications, the supplier shall modify, add and/or alter the equipment supplied at his own expense until the performance is satisfactory.
- C. The equipment offered shall be the latest standard product, modified as necessary to meet the requirements of this specification, of a type that has been commercially available and in satisfactory use for at least five years.
- D. The vehicle washer shall be actuated in cycle sequence by vehicles driven in a fixed path between tire guides at a slow speed (20-40 feet / minute) through the washing system. All washing operations shall be automatically activated by the vehicle (driving through).

- E. The supplier is responsible to design the equipment to satisfactorily wash up to 20 vehicles per hour. The vehicle wash shall be able to remove all visible heavy dirt accumulation and most of the road film from the Owner's vehicles when driven through the washer at 30 feet / minute, using only alkaline detergents. The amount of detergent used per vehicle to remove road film shall not exceed 0.35 gallons. The evaluation of the system capability to remove road film shall be determined only after washing has been completed and the vehicles have dried.
- F. The vehicle wash system must be capable of washing specified vehicles up to 9 foot 4 inches in width.

PART 8. MECHANICAL INTERCONNECTING PIPING

- A. All field plumbing and mechanical work will be done by the Mechanical Contractor or General Contractor, including:
 - 1. Water and gas utilities up to and connecting to the equipment.
 - 2. Interconnecting piping between various equipment components located in the equipment room.
 - 3. Interconnecting piping between the equipment located in the equipment room and the equipment located in the wash bay.
 - 4. Furnish and installation of:
 - a) Exhaust duct for water heater
 - b) Backflow preventer
 - c) Underground pipe for chassis wash
 - d) Grating for trench

PART 9. ELECTRICAL INTERCONNECTING WIRING

- A. All field electrical work will be done by the Electrical Contractor or General Contractor, including:
 - 1. Electrical service up to and connecting to the equipment panel.
 - 2. Interconnecting wiring between various equipment components located in the equipment room.
 - 3. Interconnecting wiring between the equipment located in the equipment room and the equipment located in the wash bay.
 - 4. Furnish and installation of:
 - a) Underground conduits (if required) to be laid when concrete pad is being poured.

PART 10. WASH SYSTEM TECHNICAL SPECIFICATIONS

A. Wash System Platforms

- 1. Tire wash platforms should be a minimum of 30 feet long and should be made of minimum of 3/8" thick hot dip galvanized steel. In the material of construction no substitution will be allowed.
- 2. The tire wash main structure must be designed so that the truck tires shall drive over the spray manifold assemblies. The nozzles shall be located so that all spray angles spray at approximate 60-degree angle towards the under chassis. The truck tires must roll on and contact the spray nozzle manifolds with all nozzles being protected. The

integrity of the structure must be guaranteed to not deform at single point load weights of 20,000 pounds minimum. Stress Analysis data must be provided to confirm the ability of the platforms to support over weight vehicles.

3. The under chassis system must have a minimum of four pressure pumps (20 HP each) each being able to deliver individually minimum of 300 GPM.
4. Side spray tower assemblies must have a minimum of two pressure pumps (20 HP each) both being able to deliver individually minimum of 250 GPM for the total minimum flow of 500 GPM and shall be a minimum of 4" piping each tower equipped with 20 stainless steel spray nozzles. There shall be total of 4 towers with each tower being able to spray minimum of 125 GPM at 60 PSI. The towers shall be located in such a manner that they will also effectively spray both fronts and backs of the vehicles.

B. Pumping Module

1. The pumps shall be ITT/Goulds Trash Hog pumps, InterClean PL or engineer approved equal.
2. The system shall have minimum six pumps.

C. Pumping Module

1. Pump: The high pressure pump shall be of the centrifugal diffuser type as manufactured by ITT/Goulds Pump and shall be capable of producing pressures up to 320 PSI. The pump shall deliver a maximum flow of 300 GPM as determined by the nozzle sizes incorporated in zero degree spinners.
2. Casing: The suction casing shall be 3.0 inch 250 lb. ANSI flat faced flanged. It shall be oriented to right angles of the vertical center line when viewed from the drive end. The discharge is 2.5 inch 600 lb. ANSI raised face flange oriented on the vertical center line. The suction casing, discharge casing, stage casings and diffusers are made of ductile iron, free from blow holes, sand pockets, or other detrimental defects. Flow passages are smooth to permit maximum efficiency. Pump shall be equipped with external tie bolts to hold the radially split casing sealed by 'O' rings. The casing shall be capable of withstanding the hydrostatic test pressure of 150% of the maximum pumping pressure under which the pump could operate at the designed speed.
3. Impellers: The impellers are of the enclosed single suction type, hydraulically balanced to minimize axial thrust loads. Each impeller is individually keyed to the shaft. Impeller is bronze.
4. Stuffing Box: Packed type stuffing boxes shall be equipped with a mechanical seal.
5. Shaft Sleeves: The shaft sleeve through the stuffing box is 11-13% chrome stainless steel hardened to a minimum of 225 Brinnel and is keyed to shaft.
6. Shaft: The shaft is standard carbon steel adequately sized for loads transmitted.
7. Bearing: The bearings are designed for an average life of 50,000 hours. The outboard bearing is a deep groove type; the inboard bearings are of the radial roller type with grease fittings.
8. Base: A steel base plate contains the mounting of the pump and motor, which are carefully aligned and bolted in place prior to shipment. Final alignment will be checked and certified after installation and prior to operation by the user.
9. Coupling: The pumping module shall have a "Jaw" type coupling as manufactured by Lovejoy or equal and includes a coupling guard.

D. Electric Motor

1. The electric motor shall be of the squirrel cage induction type suitable for across the line starting.
2. The motor shall operate on 380 Volt, 3 Phase 50 Hz.
3. The motor shall be sized to not exceed the name plate horse power during operation. The motor should be a minimum of 20 HP.

E. Electric Control Panel and Components

1. The panel and controls must be built according to these specifications. No substitutions shall be allowed. The control system shall be PLC based with separate HMI.
2. The PLC shall be the process application controller and provide near real time control of the entire wash system. It shall be connected to distributed I/O via an Ethernet network. The operator interface shall be through a separate HMI not integral to the PLC, connected to the PLC via Ethernet
3. The PLC shall be panel mounted in a 48"x36"x12" electrical enclosure, which also houses the electrical controls for the wash system. The PLC may be mounted in its own enclosure in an office environment. The PLC provides the centralized infrastructure to enable simple and complete integration with other systems.
4. The PLC and HMI programs shall be developed and provided by the bidder. These programs shall include the specified wash components and provide capacity for future expansion. The PLC program shall be provided in RS Logix 5000 v20 and the HMI program shall be provided in RS View ME v6.1
5. PLC and HMI programs shall provide the following:
 - A. GUI shall be intuitive to use by people without computer experience. Little or no training should be required.
 - B. At program start up, all devices shall be initialized to a known state.
 - C. All system settings, such as baud rates, parity, comm. port configurations, etc shall be reconfigurable without necessitating recompiling the application software.
 - D. All user configurable settings shall be stored in the PLC and/or HMI and saved to their respective SD cards. These include all timing set points, alarm settings, and communication settings.
 - E. Periodic polling of I/O shall be every 20 ms or less.
 - F. Alarms should have user configurable delays to prevent nuisance tripping.
 - G. Latency: scanning interval for all closed loop processes should be executed <20 ms.
 - H. Provide terminal windows for spying on any devices communicating to PC via Ethernet, RS232, etc. These will be used for troubleshooting communications problems.
 - I. Failure of any single component shall result in disabling the entire wash. For example, the system will not be allowed to wash vehicles in a crippled state if a chemical pump motor overload trips.
6. The Industrial Control Panel shall be manufactured and evaluated in accordance with the Underwriters Laboratories, Inc. (UL) standard 508A (Industrial Control Panels). In addition, the panel shall be evaluated for high-capacity short circuit withstand and shall bear the appropriate UL marks including the short circuit withstand value mark as part of the official UL label.

7. The industrial Control Panel shall be designed for operation on a 460 Volt, 3 phase, 60 Hertz system, with a short circuit capacity of 65,000 amperes RMS Symmetrical available at the incoming line terminals of the control panel.
8. The Industrial Control Panel shall be designed to meet the requirements of the National Electric Code (NEC) Articles 430 and 670, also the National Fire Protections Association (NFPA) Standard 79 (Industrial Machinery).
9. E-Stop related operator controls, all push buttons, selector switches, pilot devices, system control and access functions must be by Touch Screen Operator Interface Terminal.
10. Electric Panels that are not UL approved are not acceptable.
11. The activation switches shall be designed to be activated by all fleet vehicles used by the owner. Each activator shall be pre-mounted and wired to a water tight junction box equipped with built-in drainage holes.

F. Tire Guides

1. Tire guides shall be made of 4" schedule 40 hot dip galvanized pipes and must be designed in such a manner that there will be two 4" galvanized tire guides runs in the de-mucking section of the wash bay: one running at maximum height of 7" and second one parallel the lower but spaced outside at a minimum 5" away from the lower one and installed to the minimum height of 12" from the ground level, 15 foot minimum section. The intent of the two parallel tire guides is to prevent vehicles from climbing the second 12" high tire guide thus reducing the risk of accidents in the wash bay. The tire guides shall run the full length of the wash system.
2. The system has angled entry at the entrance (consisting also of two parallel tire guides). Ends of rails are capped and all headings are smoothly finished to prevent tire damage. Brackets supporting pipe shall be made of minimum of 3/8" steel plate that are welded to concrete imbedded cleats or anchor bolted to the concrete.
3. The bidder shall provide calculations and stress analysis of the tire guides with the bid package proving that they will be able to carry the heaviest possible single axel load of the Owner's fleet. Such stress analysis must be prepared for both lower and upper tire guide separately.

G. Water Holding Tank

1. The system shall be equipped with 925 gallon polyethylene water holding tank equipped with high and low level float switches. The system holding tank shall be filled with water from the Owner's waste water treatment plant. Water for the detergent arch shall be either fresh city water or treated water from the waste treatment plant by the equipment supplier's choice. Should the treated plant water be used, it will be equipment suppliers responsibility to supply adequate filtering for the water purification as is required for the proper cleaning and film removing requirements.
2. The holding tank shall be filled via 2", slow closing solenoid valve activated by a high level float switch in the holding tank.

PART 11. WATER RECLAMATION SYSTEM

A. Aeration System

1. The aeration system shall supply air to the trench pit to prevent algae and odor build-up. The system shall be designed to have no odors from algae.
2. Aerated water shall be evenly distributed throughout the pit, even when the wash is not in operation.
3. No odor masking deodorants or other chemicals used to kill odors shall be allowed.

B. Stainless Steel Pump Intake Filter

1. A stainless steel intake filter screen shall provide first stage filtrations for sump pump intake. The pump intake filter shall be InterScreen or engineer approved equal.
2. The stainless steel intake filter screen shall be sized 0.015" or smaller.
3. The intake filter shall be made of stainless steel and shall have slotted orifices. Wire mesh filters are not acceptable. Intake filters shall prevent any dirt from clogging the recycled water spray nozzles under all circumstances.
4. The intake filter screen shall be equipped with a high pressure backwash system that is automatically activated to remove potential contaminants from the filter surface.

PART 12. INSTALLATION

- A. Equipment shall be installed in accordance with manufacturer's supplied installation drawings.
- B. Equipment supplier shall undertake the commissioning of the system and make all required adjustments to ensure proper operation.
- C. The equipment manufacturer shall start up the system. The Owner shall have all operating personnel present during the start up and equipment training.
- D. The supplier shall arrange for an adequate amount of detergent to be available for the performance testing.
- E. The Owner's personnel shall be trained for a minimum of five (4) hours in the system's operation and maintenance.
- F. The supplier shall provide the Owner with the names and addresses of all local service and maintenance personnel to assist in future service.