GARBAGE BINS WASHING SYSTEM
JPL-2000/1500-180-K-SL



OPERATION INSTRUCTIONS

DYNASET

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MAY CHANGE WITHOUT NOTICE

GENERAL

DYNASET high pressure waste garbage bin washing system incorporated to collection truck gives significant advantages to operator. Garbage bin cleaning combine to emptying process improve public hygienic and decrease diseases in favorable environment. Cleaning process is reasonable since saving time by keeping bins longer clean and is easy to empty.

DYNASET washing system includes waste water recycling which make it environmentally friendly. Instead of using separate vehicle for washing and collection, one single truck can collect the waste and clean the bins. Allowing great saving in collection time, expenses in salaries, fuel and vehicle. This enables better and more flexible service for customers.

DYNASET washing system enables one car to do all emptying and washing bins. Garbage bins are washed automatically simultaneously with emptying. The capacity of the system exceeds the number of bins one truck can empty in one round.

Hydraulic washing equipment DYNASET JPL-2000/1500-180-K-SL-KEM fit for washing with high pressure water standard garbage bins and their lids.
Washing carry out according to automated handling program outside vehicle or by control panel in cabin.
Washing by high pressure hand spray gun is option. Washing unit has designed to assemble to the refuse packer. Spray gun locates left back of vehicles waste container. Washing unit consist of separate bin and lid washing units. Hydraulic high pressure pump DYNASET HPW 180/90-115-PA produces water max. 90 l/min max.180 bar to both washing units.
Washing unit can handle one small or 2 small bins simultaneously or one large bin.

DYNASET Hydraulic washing system gets its driving power from vehicles hydraulic circuit.

GENERAL ASSEMBLY

WATER TANKS



Insulated water tank (container) has fitted between cabin and waste collector. Common volume 3500 l, including:
- Clean water container 2000 l
- Effluent 1,5 m3 (consist three precipitate sections 100 l each).

Clean water container has 3 float level switches and accordingly container volume are: EMPTY ,<300L, <1000L ja <1500L.

Technical room has integrated into the water container heater unit. Clean water and effluent container are fitted up inspection and cleaning lids.

WASHING ARMS



Bin washing arms and nozzles



Lid washing nozzles

WASHING UNIT INCLUDES:

Bin washing arms, nozzles and telescope cylinders

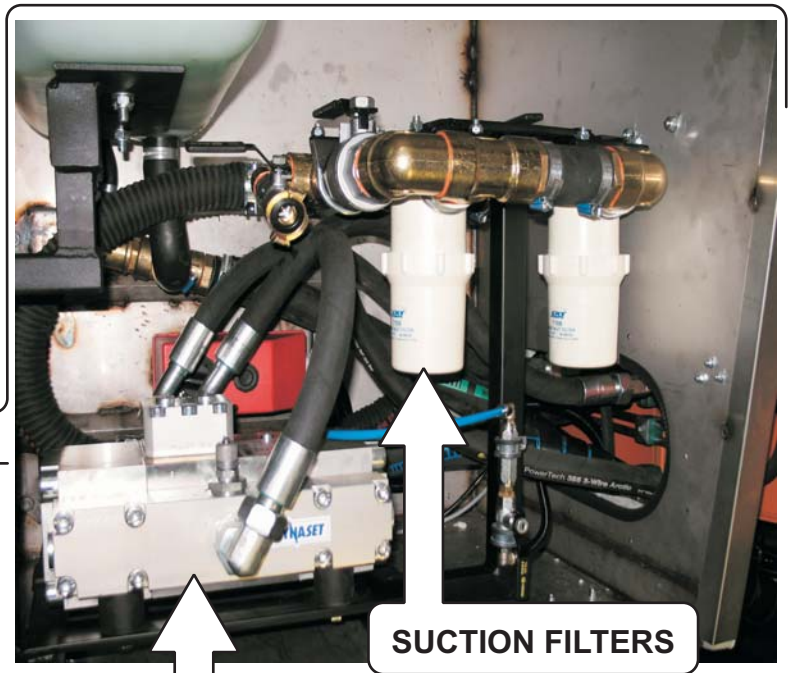
Lid washing nozzles

GENERAL ASSEMBLY

TECHNICAL DEVICE CABINET

Hydraulic high pressure pump HPW 180/90-115-PA, 2 pieces suction filters 1/2” 80 mesh and diesel use accessory heater’s expansion container mounted onto the easily detached framework.





HPW-PUMP HYDRAULIC CONTROL

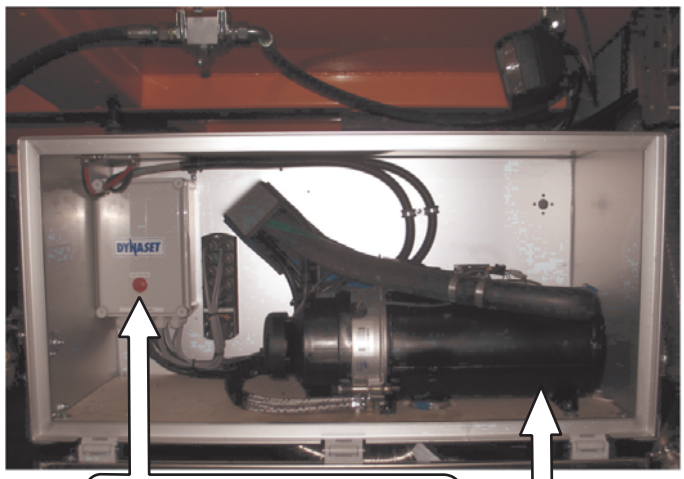


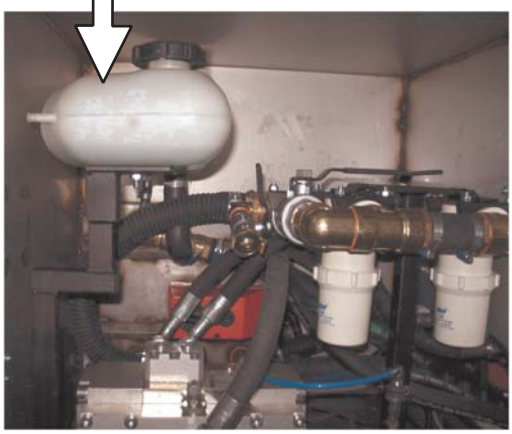


HPW-pump control LS-valve and pressure reducing valve able to drive on variable speeds depending on water consumption.

GENERAL ASSEMBLY
HEATING SYSTEM

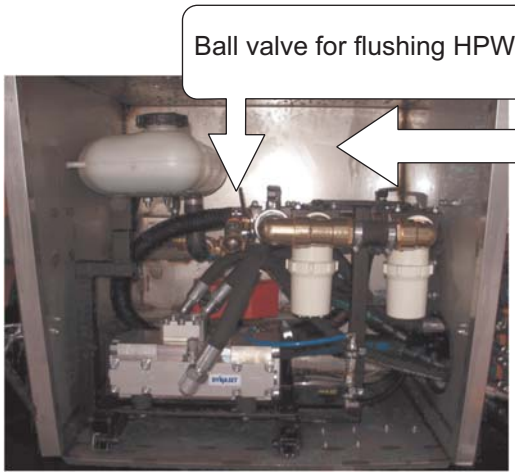
35 kW diesel use heater warms water tank



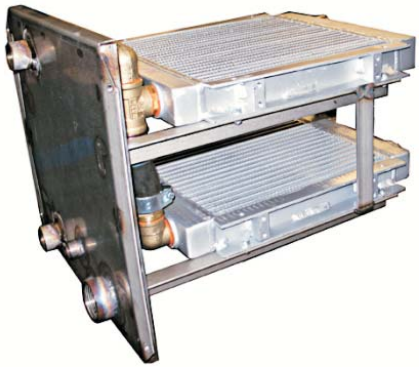


Preset heating unit by date timer. Timer triggers water temperature control unit.
Heating operation can be preset e.g. 1 hour before start.
It is not recommended to preset fuel use heating mode and electric heating mode together due to both heater types has their own temperature settings.

DO NOT SWITCH WATER HEATING UNIT ON WHEN DRIVING VEHICLE.



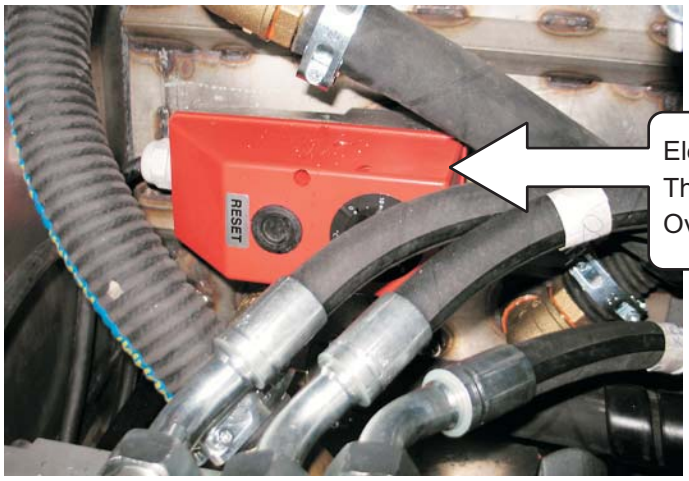
Water tank has equipped with heat condenser which locate back side of pump cabinet. At the heat condenser end found connections and inlets.



GENERAL ASSEMBLY

WATER TANK HEATING WITH ELECTRICITY GRID(OPTION)

Thermostat controlled and overheat protected 6 kW 3-phase heating element warms up water tank. Connect heating unit to 3-phase electricity grid by separate cable. Water heats to the readjusted value according to thermostat. Heating temperature presets manually by thermostat. Diesel use heater has different thermostat because system couldn't stay on run operation during electric heating. Heating element requires supply 16A 3-phase socket and extension cable to connect to the vehicle. Using heating element has to take care off enough high water level in tank and clean water tank is full.



Electric heating element
Thermostat
Overheat protector



16A 3-PHASE SUPPLY SOCKET LOCATION

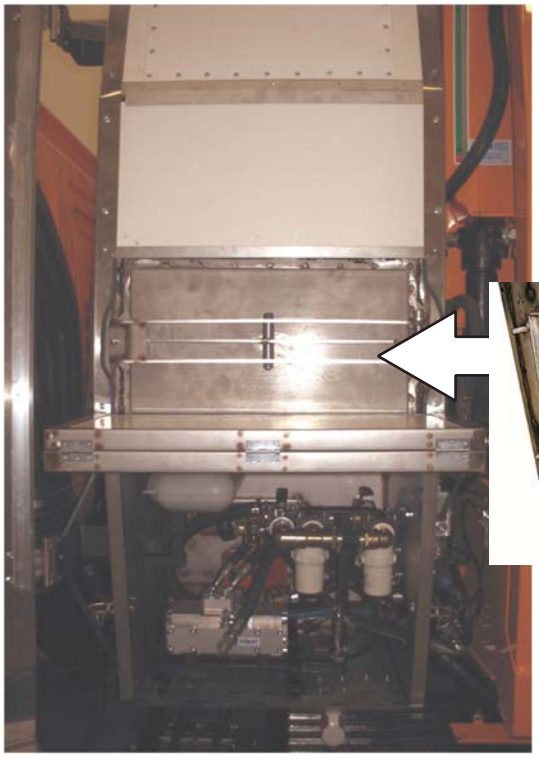


ATTENTION !

DO NOT SWITCH FUEL USE HEATING MODE AND ELECTRIC HEATING MODE ON AT THE SAME TIME DUE TO BOTH HEATER TYPES HAVE THEIR OWN TEMPERATURE SETTINGS.

GENERAL ASSEMBLY

CIRCULATION WATER FILTER



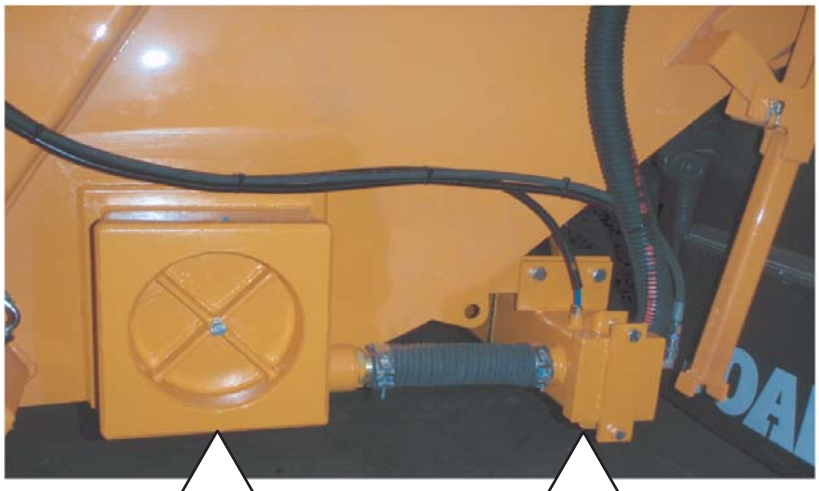


Circulation water filter locates above technical room sealed with water proof hatch and fitted with one bolt.





WASTE WATER CIRCULATION



Waste water tank
Lid
Filter mesh

Waste water transfer tank
Shut-off and drain valves

HYDRAULIC HIGH PRESSURE WASHER OPERATION

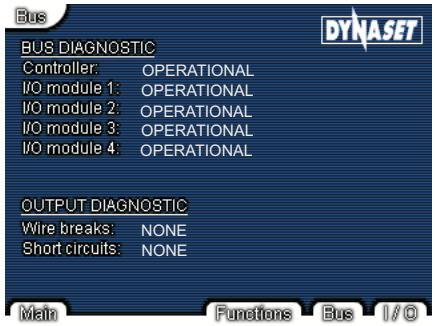
CONTROL WASHING SYSTEMS



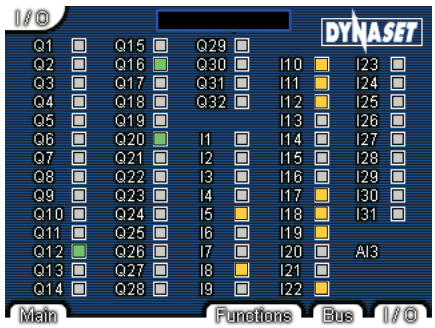
View1



View 2



View 3



View 4

At the start up open picture as above view 1.

Push function button to select between different views F1- F6. In any view move cursor by turning rotary knob to high light selected function. Push function button to accept as “OK”. After accepted function operator have to confirm his choice again pushing rotary knob. View 3 and 4 are useful in troubleshooting.

On view 2 colored rectangles indicates operator controlled function states: Waste tank Empty/Full, Pipeline Air flush On/Off, Transferring Tank Reset/Empty. Drive position Home/Out is not activated (Grey rectangle).

View 3 can read bus control diagnostic states and out failure condition. All functions are Ok if seen OPERATIONAL text on Bus Diagnostic and NONE on Output Diagnostic modules. Indicated failure views screen, example Wire breaks or Short circuits: Output Q8.

On view 4 current Off/On states from Inputs (yellow) and Outputs (green) are indicated by colored rectangles.

EMERGENCY STOP CONDITIONS see page 9.

User interface shows important parameters and settings include all operations, view 1. Heating mode ON/OFF button for warming cleaning water, temperature value lower left on view 1. Clean water tank level indicated by blue rising bar on 3 heights. Switch color informs heating function states. Waste water tank level indicated by two level.

Cleaning water temperature current and setting values are read on touch screen (upper left on view 1). Cleaning water temperature can be adjusting 0-65 °C, in 5 °C intervals. Over 65 °C temperatures cause damages. On cleaning sequence setting can read short and long times used containers buttons. Adjust washing time on time settings, 0-15 sec in 1 sec intervals on Wash Settings, view 1.

On trend page displays system usage times. Driver side nozzle is a left side nozzle and washing time amount means washing times by requested nozzle.

HYDRAULIC HIGH PRESSURE WASHER OPERATION

CONTROL WASHING SYSTEMS

Clean water tank has 3 float level switches and can read their states by height of blue color bar on screen (view 1. left down corner). Accordingly tank volume are EMPTY, <300L, <1000L and <1500L.

Other blue colored bar on screen indicates either waste water tank empty or full states.

Faulty indications, status information of all sensors, fluid levels can see as list form on text box in view 1.



View 1

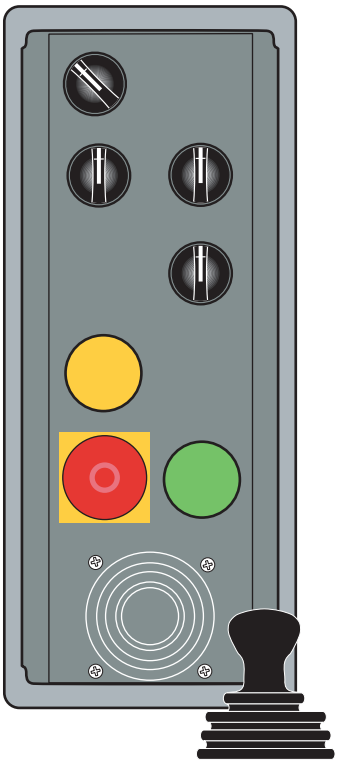
EMERGENCY STOP CONDITIONS

While emergency stop button pushed all function in Dynaset washing system and garbage packer stops. Operator have to **reset E-STOP** from vehicles control panel either push **STOP button 0,5 sec.** on Dynaset control box or push **SYSTEM RESET button** on cabin interface screen (View 1.) **Note:** Telescope washing arm(s) drive automatically on their home positions if garbage packer is home position sensor activated. In any cases it's recommended to drive garbage packer plate first to home position then drive telescope washing arm(s) to home position by bushing **STOP** button in Dynaset control box. 2 sec. or as long as needed movement.

Bin telescope washing arm(s) are out and lift has positioned bin(s) to the upper limit (washing position). Drive telescope washing arm(s) to home position, if garbage packer is home position, by bushing **STOP** button in Dynaset control box. 2 sec. or as long as needed movement. Then drive lift smoothly to home position by joystick in vehicles control panel.

OPERATOR HAVE TO PAY ATTENTION WASHING ARMS, LIFT BOOMS AND COMPACTOR PLATE NOT IMPACT TO EACH OTHER.

OPERATOR HAVE TO PAY ATTENTION BEFORE WASH OPERATION THAT ANY HIGH WASTE OR OBJECTS EXIST UNDER THE WASHING ARMS.



HYDRAULIC HIGH PRESSURE WASHER OPERATION

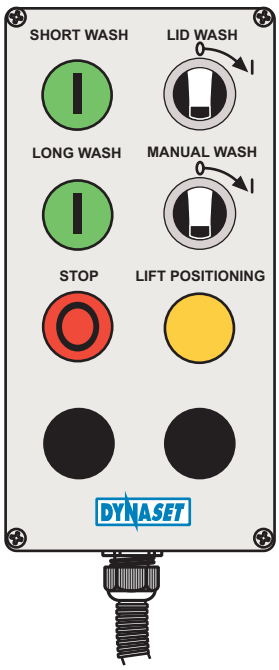
LIFT POSITIONING

Automatic stop mode has installed to lifting operation preventing simultaneous motion of refuse packer and arms.

On lift positioning mode first empty the bin and scoop up refuse on trough. When refuse packer plate and transfer plate are in home position (Highest position) wash mode can be performing. **OPERATOR HAVE TO PAY ATTENTION BEFORE WASH OPERATION THAT ANY HIGH WASTE OR OBJECTS EXIST UNDER THE WASHING ARMS.** THEREFORE PACKING OPERATION RECOMMENDS DOING REGULARLY.

Refuse packer plate and transfer plate drive in highest position and inside by the AUTOMATIC WORK FLOW SWITCH (GREEN PUSH BUTTON) on refuse packer control panels (situated on both side vehicle). Driving plates are also possible by corresponding switches on refuse packer panel (see refuse packer manual). This prevents water consumption.

Wash mode can be perform if lift is in correct position (limit switch activated). During lift positioning refuse packer mode don't work. Lift positioning stops by losing the switch. Arms have to be their home position during lift movement. Now refuse packer works in normal mode.



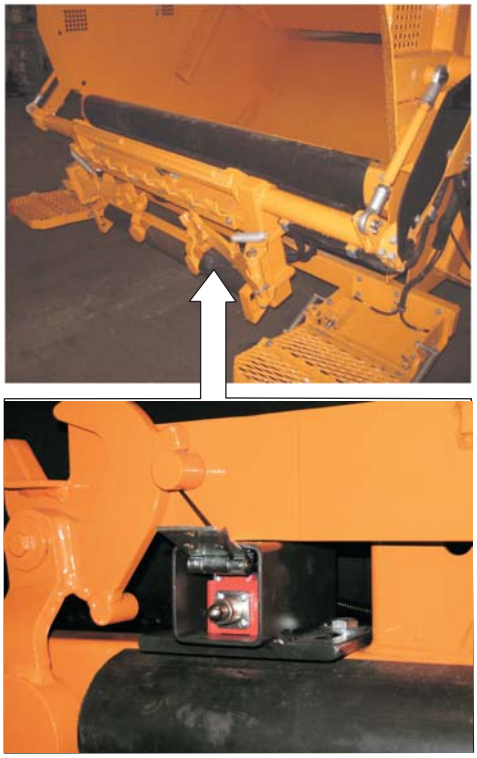




DRIVING WASHING ARMS

Dynaset washing system has four cleaning options: (Single arm wash, Double arm wash, Single arm wash with lid wash, Double arm wash with lid wash). Two different washing time programs and theirs washing time can readjust form cabins panels. Select on wash start-up short or long time. Washing time means wash arms working time in the bin bottom.

HYDRAULIC HIGH PRESSURE WASHER OPERATION



After vehicle reverse beside garbage bin(s) Dynaset washing system and refuse packer are ready to use. Lift can handle either big or two small size refuse bins (seen back of the vehicle and from left to right direction). One big garbage bin puts in the middle of the lift and refuse bin(s) contents can empty to the refuse container.

Lift detection switches recognized bins amount and size.

WASHING PROGRAMS

SINGLE ARM WASH:

Lift positioning complete. Lift recognized automatically 1 one small bin. Press SHORT or LONG WASH button. Now arms move to lower postion and start washing small bin inside 1 arm the selected time. Next arms return their home positions.

DOULBLE ARM WASH:

Lift positioning complete. Lift recognized automatically 2 two small or 1 one large bins. Press SHORT or LONG WASH button. Now arms move to lower position and start washing bin(s) inside with 2 arms the selected time. Next arms return their home positions.

LID AND SINGLE ARM WASH:

Lift positioning complete. Lift recognized automatically 1 one small bin. Turn LID WASH mode on. Press SHORT or LONG WASH button. Now arms move to lower position and start washing bin inside with 1 arm the selected time. Lid wash performs simultaneously with inside wash. Next arms return their home positions.

DOUBLE ARM AND LID WASH:

Lift positioning complete. Lift recognized automatically 2 small or 1 one large bins. Press SHORT or LONG WASH button. Now arms move to lower position and start washing bin(s) inside with 2 arms the selected time. Lid wash performs simultaneously with inside wash. Next arms return their home positions.

HYDRAULIC HIGH PRESSURE WASHER OPERATION



USING THE HAND SPRAY GUN:

Vehicle has fitted hand spray gun washing external bin and quick container. Hand spray gun has flat fan nozzle which produce rectangle spray form. On/Off switch situates in the operation panels on both side of the vehicles rear. During vehicles running hand spray gun On/Off switch starts High Pressure Pump and increase enough high working RPMs. Now hand spray gun is ready to use.

NOTE. Before performing pipeline flushing, pull all hand spray gun hose out of the reel.



ATTENTION !

IN FAILURE CIRCUMSTANCE WASHING SEQUENCE HAVE TO INTERRUPT BY PRESSING EMERGENCY STOP BUTTON.

VEHICLES OWN EMERGENCY STOP CIRCUIT INTERRUPT ALSO DYNASET WASHING SYSTEM.

HYDRAULIC HIGH PRESSURE WASHER OPERATION

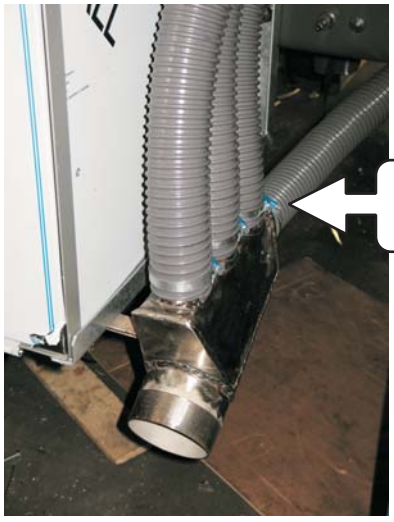
DRAIN THE WASTE WATER TANK

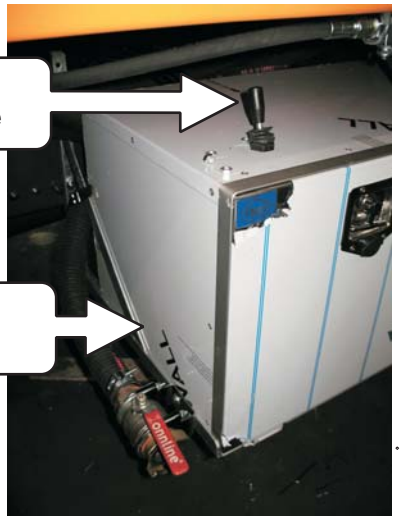
Used washing water collects and pumps to the waste water tank by pneumatic transfer pump.

Waste water tank has four separate sections. Three of them collect coarse precipitin material through internal filtering process. Drain pipes are in bottom of waste water tank and empty dregs to the ground on right tool box.

Pump out starts neither pressing control touch screen button in cabin or turning pneumatic ball valve on tool box upper side. Drain valves are at the ON mode 2 minutes (presetted) or until any other work motion has activated. Drain valves shuts on themselves. Drain valves are able to be open by hand valve.

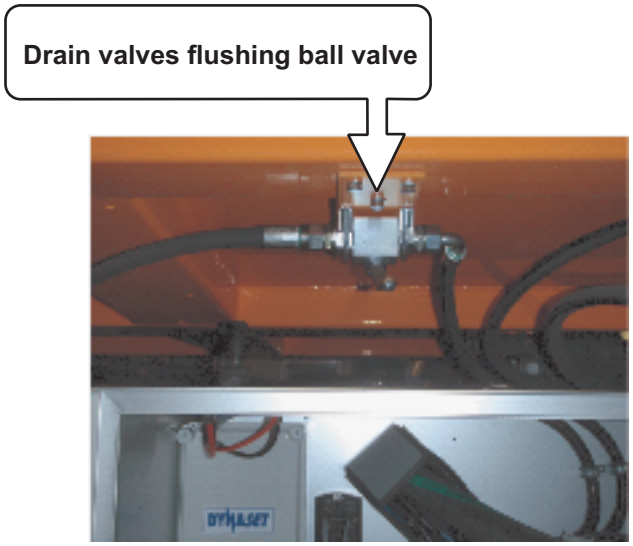






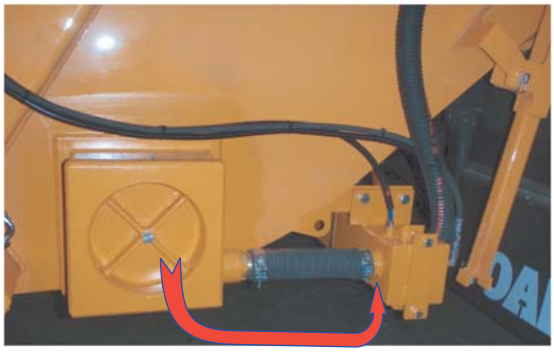
WASTE TANK CLEANING AND SERVICE:

Waste tank large inspection hatch is upon the water tank, by which waste tank is easy to wash using hand spray gun. Inspection hatches situates also on left and right side of the vehicle, open them to clean waste water and precipitin sections completely. If drain valves clog, turn on ball valve below waste tank and upon the tool box. **Note. Dynaset High Pressure Pump has to be on running mode.** Flushing pressure water removes dregs from drain valves. Precipitin sections situates on the right side of the tank. Wash precipitin sections by hand spray gun through hatches upon the tank.



HYDRAULIC HIGH PRESSURE PUMP OPERATION

WASTE WATER COLLECTION AND TRANSFER TANKS



Bar under the waste trough collects all biochemical water bottom refuse packer.
At wash program end and until fill up the waste water tank, level sensor activates pressure air exhaustion. Shut on valve closes collection tanks filling tube and pneumatic pump turn on transferring biochemical water to the waste water tank behind the vehicle cabin.
Both ends of the collection tank can be open.



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FILL / DRAIN CLEAN WATER TANKS

Clean water inlet connection located on right side vehicle, left side of the tool cabinet. Drain is also possible through it.

HYDRAULIC HIGH PRESSURE WASHER OPERATION

DRAIN WATER CIRCUIT

Preventing freezing nozzles and water circuit, draining and air flushing have to perform before -0°C temperatures.

1. Empty the clean water tank by opening the Fill/Drain ball valve. Located on the side of accessory cabinet box, page 13.
2. Empty the waste water tanks by turning the pneumatic toggle switch, located on top of accessory cabinet box or pressing control touch screen button in cabin. --> pneumatic cylinder opens 4 valves inside the water container.
3. Open the hatch of circulation filter to drain all water out the filter section. See manual page 7.
4. Open the suction filters and pour all water from filter's cups, page 16.
5. Close suction ball valves located next to filters, page 16.
6. Open the pipeline flushing air valve that is the small ball valve under the filters, page 16.
7. Pull all hand spray gun hose out of the reel.
8. Perform the pipeline flushing by pressing interface panel Air flush mode “ON” in cabinet. Air flushing should start now. Continue until the bin washing nozzles and lid-washing nozzles starts to spray air.
9. During the air flushing, please ensure that the hand spraying gun's hose is empty of water, by pressing the pistol open. Wait until pistol sprays only air.
10. Open the covers of transfer tanks and make sure that all water drains out of transfer tanks, page 14.
11. After air flushing open suction inlet and outlet ball valves, page 16.

MAINTENANCE

NOZZLE MAINTENANCE

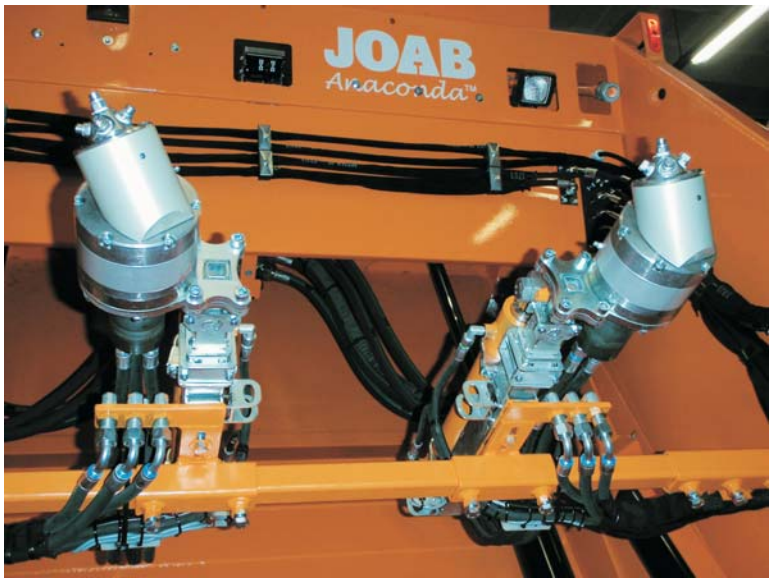
Clean nozzle arms and nozzles daily and needed by hand spray gun of impurity. After work shift add daily grease to bin wash nozzles nipples. This operation lengthens significantly nozzles lifespan.

Nozzles maintenance has to do at least once in a year. Open whole nozzle to ensuring mechanical function. Rotary motion seals have to be change at the same time.

Replace sliding pieces in cylinder telescopes needed, located in bin washing and lid washing arms.

If nozzle clogs, remove and clean it with reverse direction pressure air. Wearied or damaged nozzle has to replace.





HPW PUM MAINTENANCE
See sepate instruction.

FUEL USE HEATER MAINTENANCE
See sepate instruction

SAFETY PRECATIONS

Operating with DYNASET high pressure equipment user has to conform to all safety regulations concerning garbage truck.
Hydraulic circuit has a high pressure 210 bar. User must conform to local hydraulic safety regulations.

EQUIPMENT TECHNICAL CONDITION HAS TO PAY SPECIAL ATTENTION.

Hydraulic system has to maintain regularly. Especially couplings, valves and hoses have to be tight. Check and maintain possible leakages of pressure and hot blowouts avoiding user and bystander injuries.

Before maintenance or disassembly, HPW unit have to stop and relieve pressure from the hydraulic and water circuits.

Driving HPW unit have to wear appropriate safety clothing, shoes, goggles, ear protectors and gloves.
DYNASET hydraulic equipment must only install and maintain by qualified and experienced personnel.

MAINTENANCE

FINE FILTER

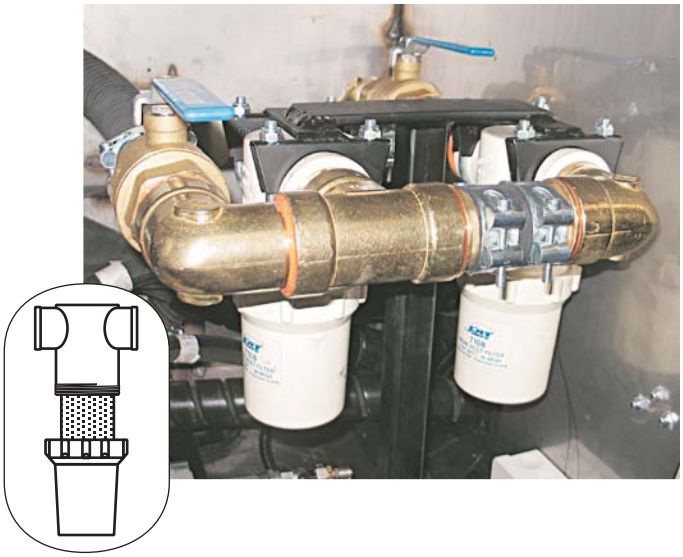


Fabric filter between clean water tank and waste water tank filtering used water into pure water. Using clean filters can maximize cleanable bins amount per used water tank. Careful maintenance and enough filters cleaning can reach even 450 bins per one tank filling. Fine filter should clean at least once a week or more if needed.

HPW SUCTION FILTERS

Suction filters prevent water pump wearing and nozzle clogging caused by tank impurities. Shut off ball valves on both side suction filters, open filters cartridge by turning counter-clockwise. Clean filter net water flowing out inlet section. Filters and their cases have to clean once per day or more if needed.

Suction filter nets have to renew if exist mechanical defects. Before opening filter case shut off inlet and outlet valves.





PIPELINE FLUSHIG VALVE

PIPELINE AIR FLUSHING

Water lines flushes by air. It's very important when outdoors temperature sink below 0 °C. Air flushing prevents pump freezing in pump, in pressure lines valves and in rotated nozzles. **Note. Dynaset High Pressure Pump has to be on STOP mode.**

Shut of HPW-pump suction filterhs inlet and outlet ball valves. Open this small ball valve leading near intake manifold. Pipeline flushing starts by turning ball valve in pump cabinet. Flush enough long time ensuring water has exit from pipeline. Pipeline flushing ball valve has to close before starting HPW pump. Push Air Flushing to ON mode at interface panel in View 2.

Dry hand spray gun pipes at same time pressing dry mode push button and pressing gun handle. **Before performing pipeline flushing, pull all hand spray gun hose out of the reel**. This ensure dry pipeline since hand spray gun is the lowest part in the system and water empty last from it. **After Air flushing open suction inlet and outlet ball valves.** Push Air Flushing back to Off mode at interface

MAINTENANCE

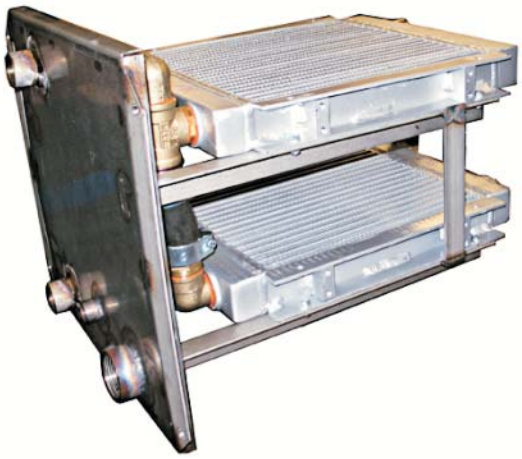
WATER TANKS

WASTE WATER TANK CLEANING AND MAINTENANCE

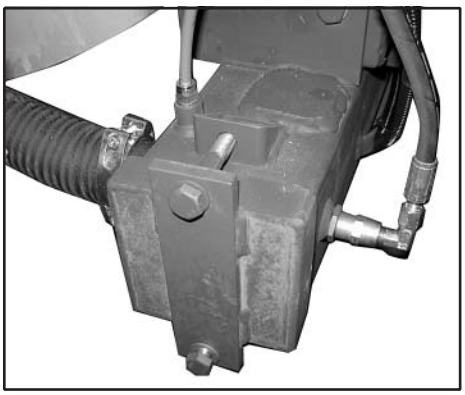
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CLEAN WATER TANK CLEANING AND MAINTENANCE

Between the cabin and water tank, on clean water side are the maintenance hatches also between refuse packer and water tank. Complete cleaning have to do once in a year or needed via these hatches, preventing heat condenser clogging and improving heat transfer to washing water. Filter cartridge (volume 100 l) in the clean water tank have to clean once in a year or more when needed. Heat condenser cleaning performs via technical room hatch, in which is heat condenser lid. Opening fastening bolts on the lid and pull out condenser unit. Hoses and cables migth have to remove during cleaning operation.

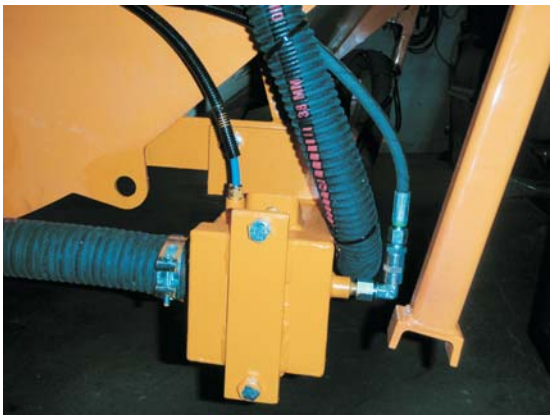


Heat condenser cleaning using pressure water can also perform tilting cabin forward to access opening hatch top of clean water tank.



WASTE WATER COLLECTION AND TRANSFER TANK

Transfer/collection tank both ends have to open. Tank has to wash once in week avoiding sand and other heavy waste material to clog filtering system. Open both ends of the bar and spray high pressure water through it.



FILTER MESH

Mesh is in the tank, on waste trough side. Behind lid is coarse mesh filter which can clean by hand spray gun.

ENCLOSURES

HYDRAULIC DIAGRAM
PART LIST

ACTUATOR SWITCH BOARD ELECTRIC DIAGRAM
ACCESSORY SWITCH BOARD ELECTRIC DIAGRAM
CONTROL BOTTONS ELECTRIC DIAGRAM

IO LIST

MANUFACTURER'S LIMITED WARRANTY

1. Warranty coverage
All hydraulic accessories manufactured by DYNASET OY are subject to the terms and conditions of this limited warranty. Products are warranted to the original purchaser to be free from defects in materials or workmanship. Exclusions from warranty are explained in item 8.

2. Beginning of warranty period
Warranty period begins from the delivery date of the product. Delivery is considered to be done on the date when installation has been accomplished or purchaser has taken the product in use. Product is considered as taken in use at the date when DYNASET OY has delivered the product to purchaser, unless separately agreed otherwise by written agreement.

3. Warranty period
Warranty period is twelve (12) months based on maximum of 2000 hours usage during this time period. In cases where the system is provided complete with certain special components (e.g. drive unit), those components are considered as a subject to their manufacturer's warranty.

4. Warranty procedures
Immediately upon identifying a problem which purchaser believes to be a failure subject to the product's limited warranty, purchaser must contact primary to the seller of the product. Contact must be made as soon as possible, latest thirty (30) days after the problem was identified. Seller and/or manufacturer technical staff determines the nature of the problem primarily by phone or e-mail. Purchaser commits to give necessary information and to perform routine diagnostic procedures in order to determine the nature of the problem and necessary procedures.

5. Warranty repairs
If the product is found to be defective during the warranty period, DYNASET OY will, at its option, either repair the product, author it to be repaired at its authorized workshop or exchange the defective product. If the product must be repaired elsewhere than premises of DYNASET OY or authorized workshop, all costs excluded from this warranty (traveling and waiting hours, daily allowance, traveling expenses and uninstallation/reinstallation costs) will be charged from the purchaser. If the problem is not covered by this limited warranty, DYNASET OY has the right to charge purchaser of troubleshooting and repairing.

6. Delivery terms of warranty repair
If the product is found possible to be defective under this limited warranty and it needs to be repaired, DYNASET OY gives Warranty Return Number (WRN). Items being returned must be shipped, at the purchaser's cost, adequately packed for shipment, to the DYNASET OY or to other location authored by DYNASET OY.

Shipment documents must contain:
- Purchaser's name and contact information
- Receipt of original purchase
- WRN code
- Problem description

7. Warranty of repaired product

Warranty period of the product repaired under this limited warranty continues to the end of original warranty period.

8. Exclusions from warranty

This warranty shall not apply to:

a. Failures due to normal wear and tear, improper installation, misuse, abuse, negligence, purchaser selection of improper product to intended use, accident, improper filtration of hydraulic oil or intake water or lack of maintenance
b. Cost of maintenance, adjustments, installation or startup
c. Coating, hydraulic oil, quick couplings and interconnection hoses (internal or external to system assemblies)
d. Products altered or modified in a manner not authorized by DYNASET OY in writing
e. Products which have been repaired during warranty period by others than DYNASET OY or its authorized workshop
f. Costs of any other damage or loss, whether direct, indirect, incidental, special or consequential, arising out of the use of, or the inability to use, the product
g. Telephone or other communications expense
h. Product that is used in exceptional conditions, considered to cause excessive wear and tear
i. Faults caused by nature phenomenon's like flood, thunder, etc.