
OPERATION AND MAINTENANCE MANUAL

IMPORTANT

1. Read these instructions thoroughly prior to proceeding with installation.
2. Ensure that the installation conforms to all applicable local and national codes.
3. These instructions contain important information for the proper maintenance and repair of this equipment. Retain these instructions for future use.

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electric shock, or other occurrences, which may injure you or damage your property. The qualified installer or agency must use only factory-authorized kits or accessories when modifying this product.

- Follow all safety codes.
- Wear safety glasses and work gloves.

Be sure all power to equipment is shut off before performing maintenance or service. More than one disconnect may be present. The power supply (V, Ph, and Hz) must correspond to that specified in appropriate literature. The electrical supply provided by the utility must be sufficient to handle load imposed by this unit. Refer to appropriate sheets for locations of electrical inlets, inlet and outlet piping connections, drain connections and required clearances before setting unit in place.

CONSTRUCTION

The body of GT Series Filters are constructed of carbon steel and coated with a baked-on finish both inside and out. The body has flanged or threaded inlet and outlet connections for ease of assembly to the supply line; rinse ports are threaded for connection to a drain/flush line termination. All wetted components are constructed of either engineered plastics or non-corrosive metals, allowing for extended service life.

The standard control system consists of a GTFC-400 Controller, Differential Pressure Switch (DPS) and Solenoid Valve. The DPS has dry contacts and comes factory preset to 7 psi. The Solenoid Valve supplied is a 3-way normally open valve activated by 24 VAC from the Controller.

OPERATING PRINCIPLES

Normal Flow Pattern - Clean Screen - The raw water enters the filter inlet from the bottom and passes into the filtration chamber. Water passes through a stainless steel screen suspended in the center of this chamber.

This fine screen is fabricated from stainless steel wire mesh in the form of a cylinder and supported by a perforated PVC shell. As the water passes through the screen, solids accumulate, creating a "cake" of dirt on the surface of the screen. This cake performs finer filtration than the screen itself, resulting in increased particle removal efficiency.

The cake also creates a pressure differential across the screen. The DPS, that is pre-mounted and pre-wired to the enclosure of the Controller, monitors this differential pressure via hydraulic tubing, and a rinse cycle is activated once the preset differential pressure is reached.

Rinse Cycle Flow Pattern - Once the preset differential pressure is reached, a delay is imposed on the signal from the DPS to the Controller. This delay serves to eliminate any false rinse cycles that may be activated due to pressure fluctuations. If the differential pressure persists beyond this delay, the Controller energizes the Solenoid Valve. This activation relieves pressure on the Rinse Valve causing it to open. This pressure relief also relaxes the Piston to allow the Dirt Collector Assembly to move. The Dirt Collector Assembly consists of a closed PVC or stainless steel tube with projecting nozzles on one end and a hydraulic motor on the other end. Opening the Rinse Valve causes the hydraulic motor to rotate the Dirt Collector Assembly, and the Piston allows the Dirt Collector Assembly to move axially exposing the entire screen surface to concentrated spot cleaning action with nozzles that are in close proximity to the screen's surface.

During the rinse cycle, incoming water still passes through the screen. Some filtered water is drawn back through the screen to the dirt collector nozzles, while the remaining filtered water maintains flow to the outlet.

The rinse cycle duration is from 8 to 16 seconds, depending on filter model. See the GTFC O&M Manual Supplement for programming instructions. Upon completion of the rinse cycle, the Solenoid Valve is de-energized. Pressure is restored to the Rinse Valve causing it to close, and the Piston returns the Dirt Collecting Assembly to its normal position.

INSTALLATION PROCEDURES

Assembly - The filter is typically shipped assembled with GTFC 400 Controller, DPS, Solenoid Valve, 3-Position Mini-Valve and Pressure Gauge all mounted on the Pressure Gauge Enclosure and attached to the filter's mounting bracket. The hydraulic tubing lines have been connected. On the 1 1/2" & 2" models, the Piston & Rinse Valve have been assembled and all tubing connections made. For all other sizes, thread the stainless steel into the port at the filter's top, and thread the Rinse Valve onto the threaded nipple extension off the top portion of the filter. Make the hydraulic connections as shown using the tubing supplied.

NOTE: The larger 4", 6" 8" & 10" models use 8 mm tubing & fittings, while the smaller filters use 6 mm tubing and fittings.

NOTE: Some systems are supplied with different GTFC Controllers or with the Controller and DPS detached from the Pressure Gauge Enclosure, to allow for remote mounting separately.

Piping Connections – Typical installation layouts are attached at the back of this manual, and are provided as a guide to a correct installation.

Unit Positioning - GTV Series Water Filters should be installed in the upright position, as shown, with the inlet port facing down. Optional positions are allowed under certain technical circumstances.

Guidelines - For proper operation, the following guidelines should be observed:

1. The filter should be installed as near as possible to the system it is required to protect. However, if low filter inlet pressure is a concern, either before or during rinse, the filter may need to be installed closer to the pressure source.
2. Ensure that the filter inlet pressure will not fall below 20 PSIG during the rinse cycle with the Solenoid Valve open. Suggested minimum pressure is 30 PSIG.
3. Ensure that the upstream pipe size from the pressure source to filter is equal to or greater than filter inlet size.
4. Inlet and outlet isolation valves must be used for all installations.
5. Inlet, outlet and bypass valves must be installed in situations where a constant supply of water is required downstream during filter servicing.
6. A drain line must be connected from the rinse valve to a suitable drain. This line must slope downward and terminate to the atmosphere to minimize backpressure. Occasionally an optional vacuum/air release valve may have to be installed on longer runs to a drain line termination.
7. The Solenoid Valve's vent line should be directed to a suitable drain.

Differential Pressure Switch (DPS) Connections – Refer to one of the tubing drawings at the end of this manual and verify that the control tubing to the pre-mounted DPS have been connected as follows:

1. The high side of the DPS must be connected to the inlet port at the filter housing's bottom.
2. The low side of the DPS must be connected to the outlet port on the filter housing's side.
3. The DPS has been factory preset to a 7 psi differential.

PRESSURE GAUGE & 3-POSITION MINI-VALVE

A 3-Position Mini-Valve is provided with each ORIVAL filter to assist in troubleshooting and commissioning of the filter. The 3-Position Mini-Valve allows for three independent pressure sources to be individually monitored with the use of a single pressure gauge. The 3-Position Mini-Valve serves as a selector for three ports located on alternating sides of the hex body of the 3-Position Mini-Valve, one for inlet pressure, one for hydraulic motor chamber pressure and one for outlet pressure. A common port is connected to the pressure gauge. The three ports are clearly labeled.

The procedure for reading the three pressures is as follows:

1. To read inlet pressure: Rotate knob until the arrow points to **HIGH PRESSURE**.
2. To read hydraulic motor chamber pressure: Rotate knob until the arrow points to **CHAMBER PRESSURE**.
Note: During normal operation, the hydraulic motor chamber pressure should be equal to the inlet pressure. During the rinse cycle, the hydraulic motor chamber pressure should drop to 25-40% of the inlet pressure.
3. To read outlet pressure: Rotate knob until the arrow points to **LOW PRESSURE**.

Note: With a clean screen, the outlet pressure should be the same or slightly less than the inlet pressure. As particulates build up on the screen the outlet pressure will decrease. To determine differential pressure across the filter, subtract the outlet pressure from the inlet pressure.

FIRST COMMISSIONING AND ROUTINE START-UPS

NOTE: The DPS has been factory preset to 7 psi.

NEVER ADJUST!!

First Commissioning - Check the following prior to startup:

1. Check that the line pressure will always be at least 20 psig at the filter inlet during the rinse cycle (the preferred minimum is 30 psig).
2. Check that there are no upstream pipeline restrictions.
3. Check that the filter is mounted in the correct flow orientation as indicated by the arrows on the filter body.
4. Check that the Rinse Valve's drain & Solenoid Valve's vent lines are routed to suitable atmospheric drains.
5. Check that all tubing connections are completed as shown on the attached drawings.
6. Check that the Solenoid Valve has been properly wired as indicated in the schematic provided with the GTFC O&M Manual Supplement.
7. Check that the filter inlet and outlet isolation valves are closed, and the bypass valve is open.
8. Refer to the GTFC O&M Manual Supplement and set the rinse duration between 8-10 seconds for 1 ½" and 2" filters, or 12-16 seconds for 3", 4", 6", 8" and 10" filters, depending on which model GTFC has been supplied.

Start-Up

1. Slowly open the inlet isolation valve to the filter, allowing the filter to pressurize.
2. Check for any external leakages and eliminate.
3. Check to ensure that the filter inlet pressure is higher than 20 psig (a minimum of 30 psig is preferred).
4. Slowly open the outlet isolation valve of the filter. Close the bypass valve.
5. Initiate a manual rinse cycle as described in the following section.
6. Observe the build-up of the pressure differential across the filter. It is recommended that at least one automatic rinse cycle be observed to ensure that the system is operating properly.

MANUAL FLUSHING PROCEDURES

Periodically, it may be necessary to activate a manual rinse cycle of the filter. Some typical reasons are:

- Routine inspection of proper filter operation.
- Emergency cleaning of the filter.
- Troubleshooting/start-up.
- Drainage of the filter prior to maintenance.

Using the GTFC-400 - The manual rinse is activated with the Controller by pressing the **RESET** button on the controller enclosure.

Using the GTFC-100 - The manual rinse is activated with the Controller by pressing the button inside the box, on the PC board.

Using the GTFC-500 - The manual rinse is activated with the Controller by rotating the right knob to **MANUAL**.

Using the GTFC-2000 - The manual rinse is activated with the Controller by depressing the black center keypad button when the **MANUAL START** screen is being displayed.

For complete control system information, refer to the GTFC O&M Manual Supplement, which was supplied with your filter. Contact John Deere if you have any questions.

SHUT DOWN AND DRAINAGE PROCEDURES

The filter may have to be shut down periodically, for several reasons, including servicing, winterizing, etc. When the filter is to be shut down for a long period of time, such as protection for the winter, it is recommended to be sure that the filtration chamber, Solenoid Valve and control tubing are emptied of water. The screen should also be removed, cleaned, dried and reinstalled.

Shut Down - To shut down the filter, use the following procedure:

1. Open the bypass valve.
2. Close the isolating valve on the outlet of the filter.
3. Initiate a manual rinse as described previously.
4. Close the isolating valve on the inlet of the filter.
5. Initiate an additional manual rinse cycle to relieve the pressure in the filter.

Drainage Procedure - To empty the filter:

1. Perform the shut down procedure as described above.
2. Check the pressure in the filter housing to ensure that it is atmospheric. If not, initiate manual rinses until the pressure is atmospheric.
3. Remove the "T" fitting and brass mini-filter at the filter inlet to allow any remaining water in the filter to drain.

SCHEDULE OF PREVENTIVE MAINTENANCE AND INSPECTIONS

Annually:

1. Remove screen and clean any stubborn or deeply embedded particles that may be in the screen's mesh.
2. Inspect the screen for damage and replace if required.
3. Re-assemble and trigger a manual rinse cycle and check for proper filter function.

ELECTRICAL CONTROL SYSTEMS

The **GTFC-400** is a powerful yet simple Controller, which provides control for a single filter. Power is 110 VAC or 220 VAC. Most GT Series filters are supplied with this controller.

The **GTFC-150** is a powerful, yet simple Controller, which provides for control of up to two filters in parallel. Power is from two 9VDC batteries.

The **GTFC-500** is a powerful Controller, which provides for control of up to two or four filters in parallel. Power is 110 VAC or 220 VAC.

The **GTFC-2000** is a powerful Controller, which provides for control of up to ten filters in parallel. Power is 110 VAC or 220 VAC.

GTV-02-LE SHOWN GTV-015-LE IS SIMILAR

Figure 1: Filter shown without manual by-pass valve.
Figure 2: Filter shown with manual bypass valve.

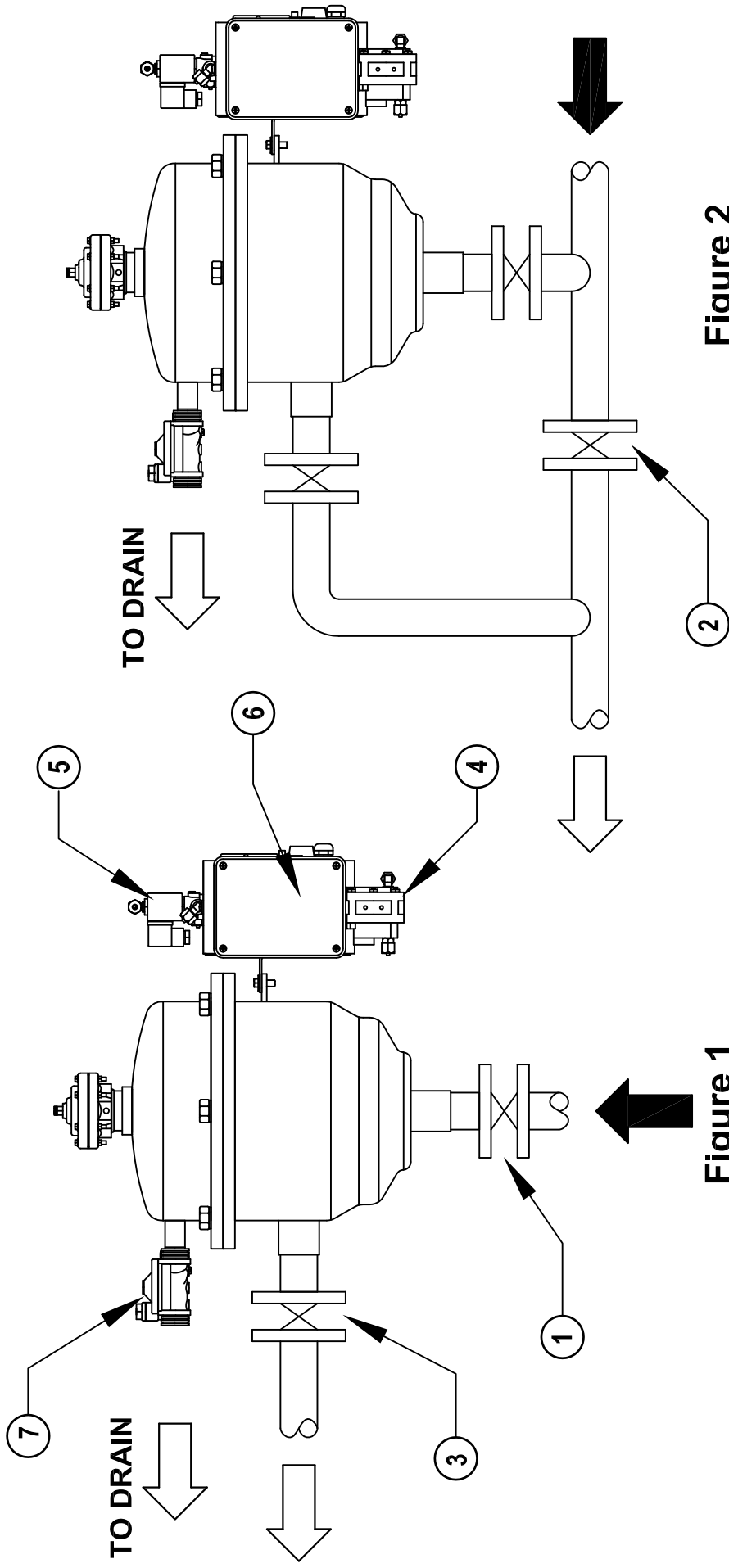
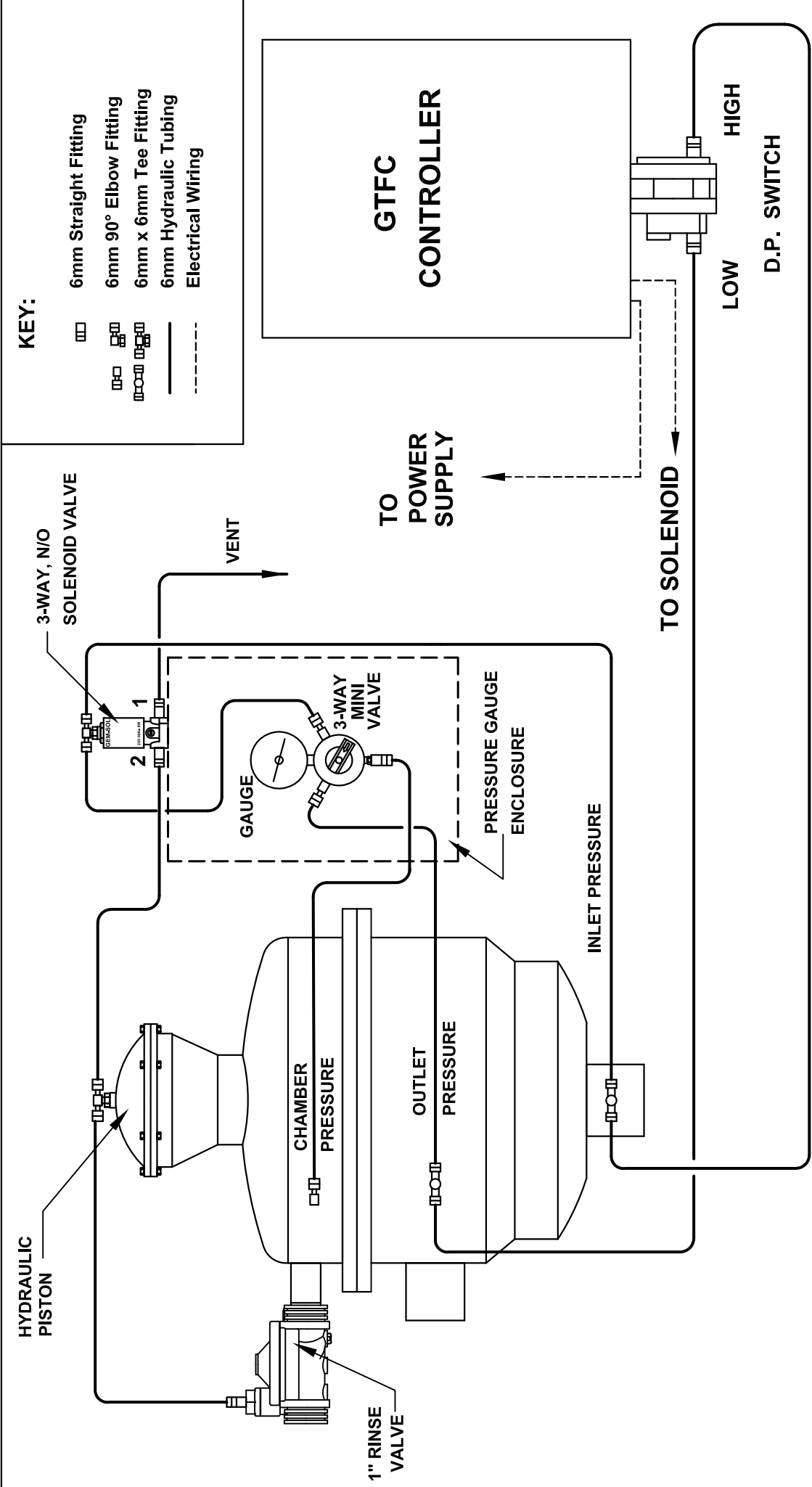


Figure 1

Figure 2

No.	Description	Notes
7	1" Rinse Valve	Pipe to 1" or Larger Drain
6	Controller	Mounted on Filter Housing Can be Remote Mounted
5	Solenoid Valve	24 V, 60 Hz, 3 way N.O.
4	Differential Pressure Switch	Preset to 7 psi
3	Outlet Valve	Customer Supplied
2	System Bypass Valve	Customer Supplied
1	Inlet Valve	Customer Supplied

DWG. NO. 2025	SCALE: NONE	JOHN DEERE GREEN TECH 3 Chrysler - Irvine, CA 92618 TYPICAL INSTALLATION LAYOUT
DRAWN BY:	DATE: 3/8/09	



TYPICAL INSTALLATION SHOWN. THE PRESSURE GAUGE ENCLOSURE IS ATTACHED TO FILTER. DIFFERENT CONTROLLERS MIGHT BE SUPPLIED, BASED ON THE APPLICATION, AND MIGHT BE MOUNTED ON THIS ENCLOSURE OR SUPPLIED SEPARATELY FOR REMOTE MOUNTING.

DRAWING NO.: EL2120 - 1-1/2" & 2"	SCALE: NONE	JOHN DEERE GREEN TECH 3 Chrysler - Irvine, CA 92618
	DRAWN BY:	

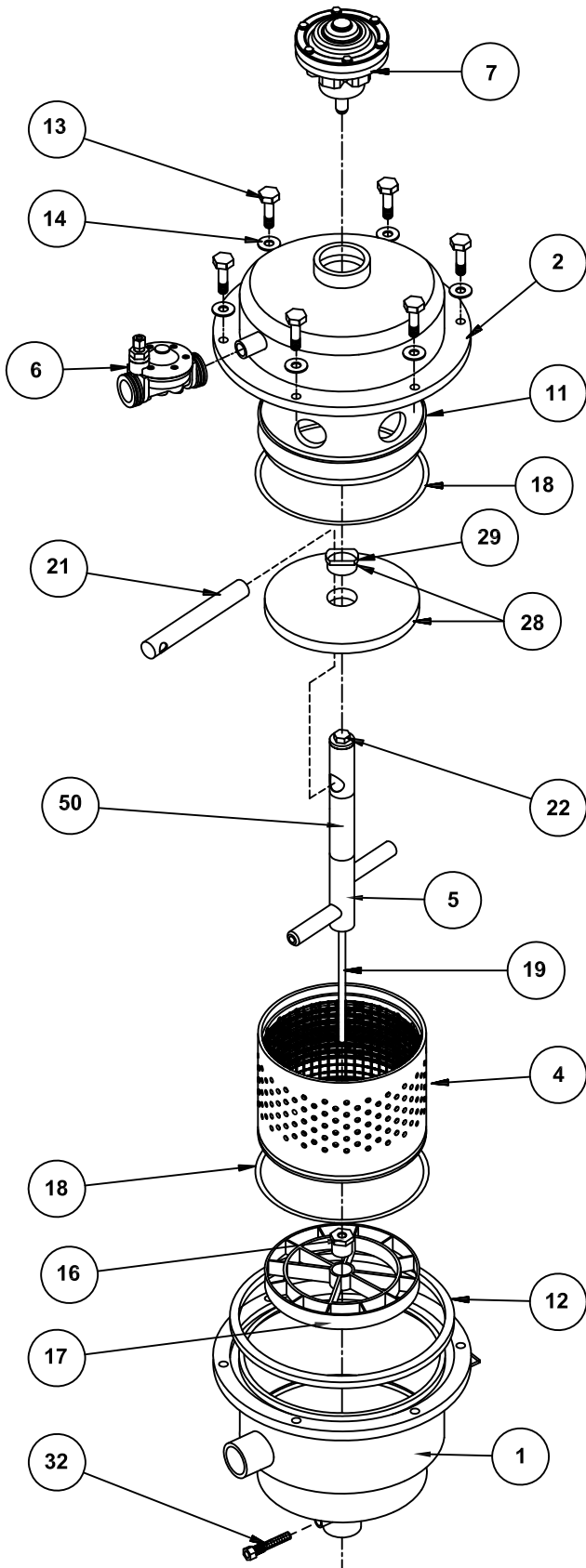
NOTES:

1. COMPONENTS MAY BE ENLARGED OR ROTATED TO SHOW DETAIL
2. ALL TUBING & FITTINGS ARE 6 mm

HYDRAULIC TUBING & ELECTRICAL CONNECTIONS FOR GTV-015-LE & GTV-02-LE FILTERS

TYPICAL GTV SERIES FILTER ASSEMBLY

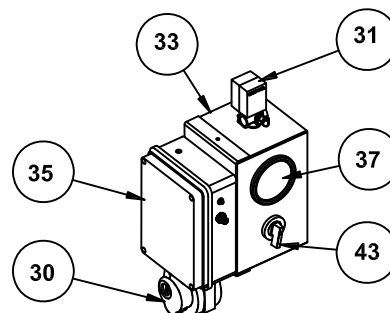
Exploded View For Models GTV-015-LE and GTV-02-LE



No.	Description	Part #
1	Housing, Bottom	G01AE00
2	Housing, Top	G02AE00
4	Fine Screen Assembly (50 - 3000 micron only)** Supplied with P/N 16BE00 and 18BE00	G4*AE00
5	Dirt Collector Assembly with Nozzles and St/St Shaft Supplied with P/N G21AE00, G22AE13 and G50AE13	G05AE00
6	1" Rinse Valve Assembly	G06AE00
7	Hydraulic Piston Assembly	G07AE00
11	Hydraulic Motor Chamber Spacer - PVC	G11AE00
12	Housing/Cover Seal	12BE00
13	1/2" Housing Bolt - St/St	G13AE13
14	1/2" Housing/Cover Washer - St/St	14BE13
16	Shaft Bearing/Upper Bearing - Brass	16BE00
17	Fine Screen Handle	17BE00
18	Fine Screen O-Ring	18BE00
19	Dirt Collector Shaft - St/St	G19AE13
20	Dirt Collector Nozzle - PVC	G20DE00
21	Hydraulic Motor - PVC	G21AE00
22	Dirt Collector Plug - St/St	G22AE13
28	Separator Plate and Bearing Assembly	G28AE00
29	Dirt Collector Bearing - Brass	G29AE00
30	Differential Pressure Switch	30BE00
31	Solenoid Valve, 24 Vac, 3-Way, N.O.	31BE00
32	1/4" Mini Filter with 1/8" Port	G32AE00
33	Pressure Gauge Enclosure	G33AE00
35	OMNITROL 400 Controller	-----
37	Pressure Gauge	G37AE00
43	Three Way Mini Valve	43BE00
50	Dirt Collector Bearing Sleeve - St/St	G50AE13

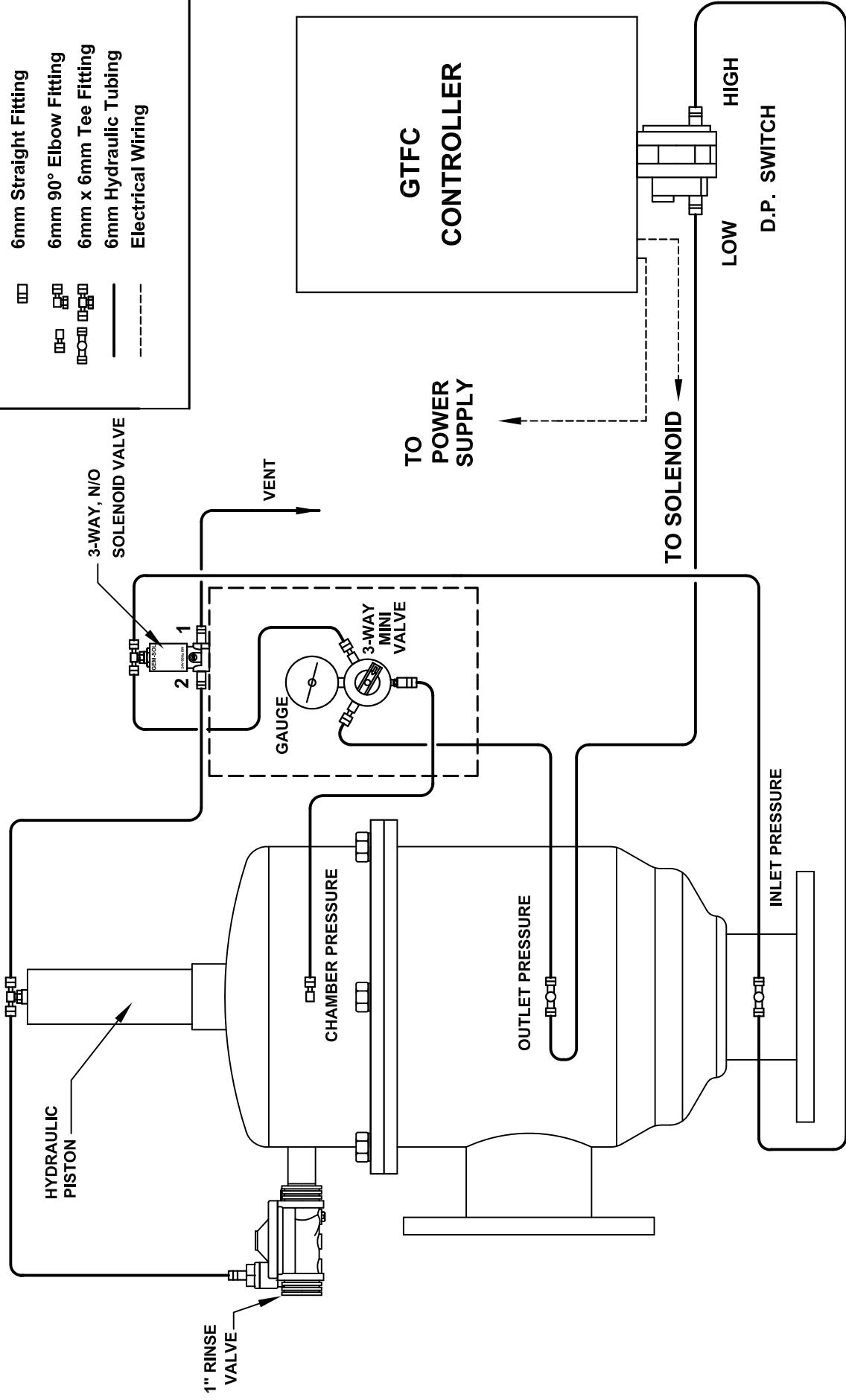
* Z - 5 micron, Y - 10 micron, A - 15 micron, B - 25 micron, C - 30 micron, D - 40 micron, E - 50 micron, F - 80 micron, G - 100 micron, H - 120 micron, J - 150 micron, K - 200 micron, L - 400 micron, P - 800 micron, N - 1000 micron, P - 15000 micron, Q - 3000 micron

** 15 & 25 micron screens are priced at \$803.00 each; 30 & 40 micron screens are priced at \$610.00 each. Wedge Wire & High Performance Multi-Layered, Sintered Stainless Steel Screens are also available. Please contact JOHN DEERE GREEN TECH for additional details and pricing.



KEY:

- 6mm Straight Fitting
- 6mm 90° Elbow Fitting
- 6mm x 6mm Tee Fitting
- 6mm Hydraulic Tubing
- - - Electrical Wiring



TYPICAL INSTALLATION SHOWN. THE PRESSURE GAUGE ENCLOSURE IS ATTACHED TO FILTER. DIFFERENT CONTROLLERS MIGHT BE SUPPLIED, BASED ON THE APPLICATION, AND MIGHT BE MOUNTED ON THIS ENCLOSURE OR SUPPLIED SEPARATELY FOR REMOTE MOUNTING.

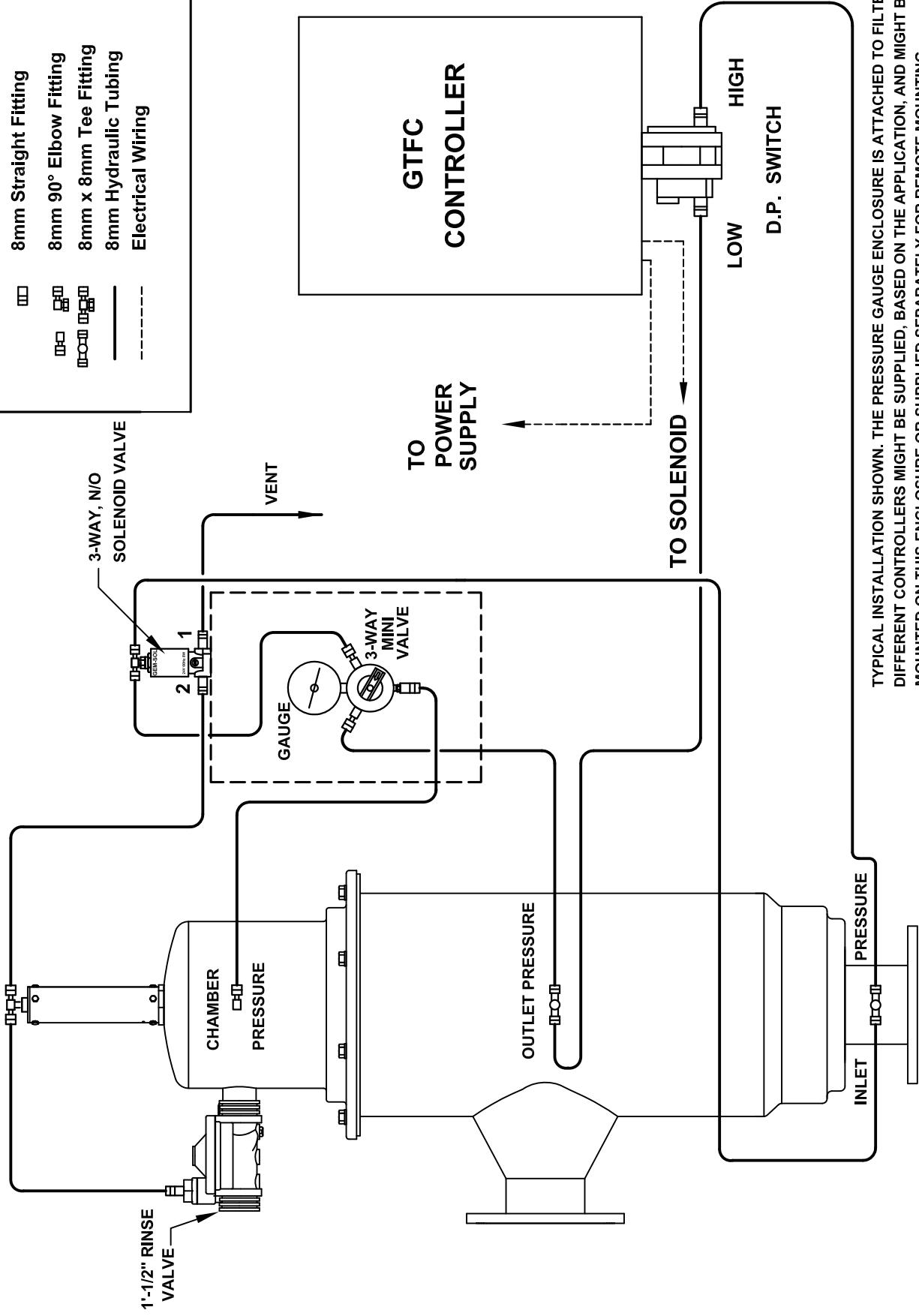
DRAWING NO.:	SCALE: NONE
EL2120 - 3" & 4"	
DRAWN BY:	DATE:
	3/8/09

JOHN DEERE GREEN TECH	
3 Chrysler - Irvine, CA 92618	
HYDRAULIC TUBING & ELECTRICAL CONNECTIONS	
GTV-03-LE & GTV-04-LS FILTERS	

- NOTES:**
1. COMPONENTS MAY BE ENLARGED OR ROTATED TO SHOW DETAIL
 2. ALL TUBING AND FITTINGS ARE 6 mm

KEY:

- 8mm Straight Fitting
- 8mm 90° Elbow Fitting
- 8mm x 8mm Tee Fitting
- 8mm Hydraulic Tubing
- Electrical Wiring
- - -



**GTFC
CONTROLLER**

**LOW HIGH
D.P. SWITCH**

**TO
POWER
SUPPLY**

TO SOLENOID

VENT

**CHAMBER
PRESSURE**

GAUGE

**3-WAY
MINI
VALVE**

**3-WAY, N/O
SOLENOID VALVE**

**1'-1/2\"
VALVE**

OUTLET PRESSURE

INLET PRESSURE

TYPICAL INSTALLATION SHOWN. THE PRESSURE GAUGE ENCLOSURE IS ATTACHED TO FILTER.
DIFFERENT CONTROLLERS MIGHT BE SUPPLIED, BASED ON THE APPLICATION, AND MIGHT BE
MOUNTED ON THIS ENCLOSURE OR SUPPLIED SEPARATELY FOR REMOTE MOUNTING.

NOTES:

1. COMPONENTS MAY BE ENLARGED OR ROTATED TO SHOW DETAIL
2. ALL TUBING & FITTINGS ARE 8 mm

DRAWING NO.:

EL2120 - 6", 8" & 10"

DRAWN BY:

3/8/08/09

SCALE: NONE

DATE:

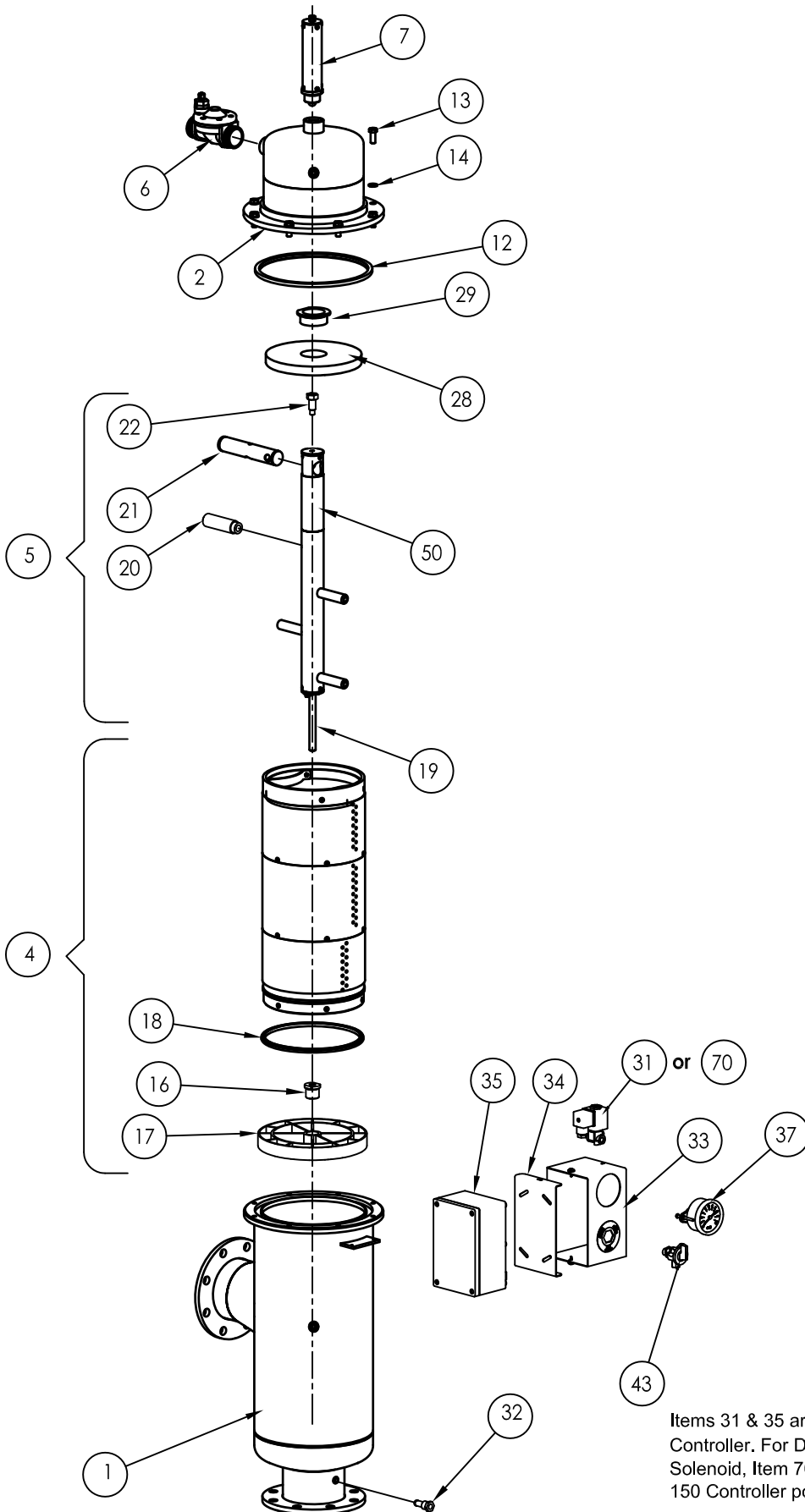
3/8/08/09

JOHN DEERE GREEN TECH
3 Chrysler - Irvine, CA 92618

HYDRAULIC TUBING & ELECTRICAL CONNECTIONS
GTV-04-LE, GTV-06-LS, GTV-06-LE GTV-08-LS & ORG-10-LS FILTERS

TYPICAL GTV SERIES FILTER ASSEMBLY

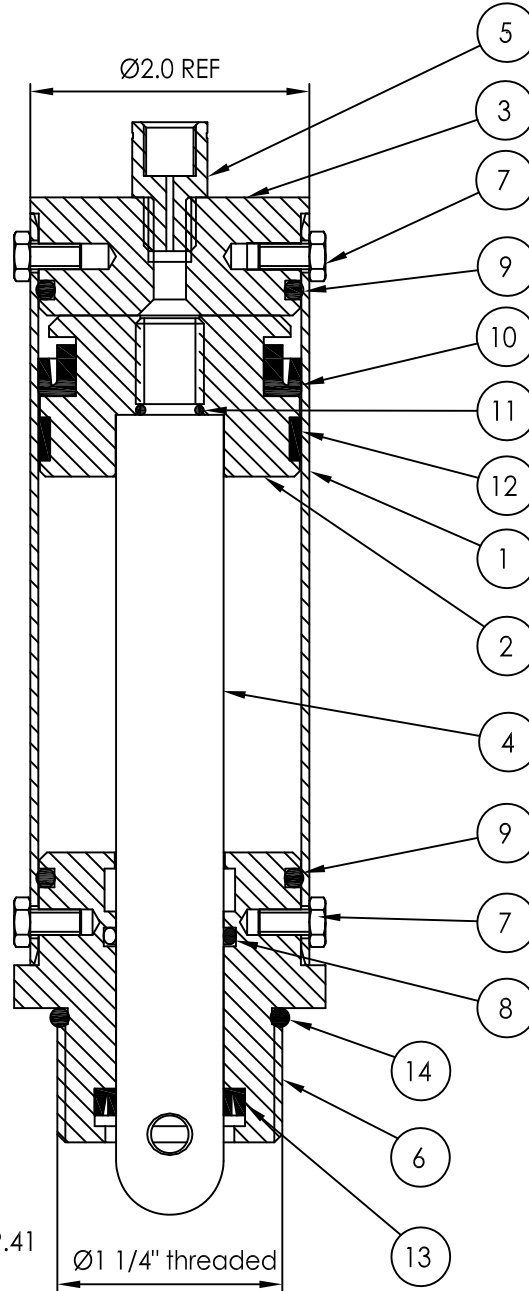
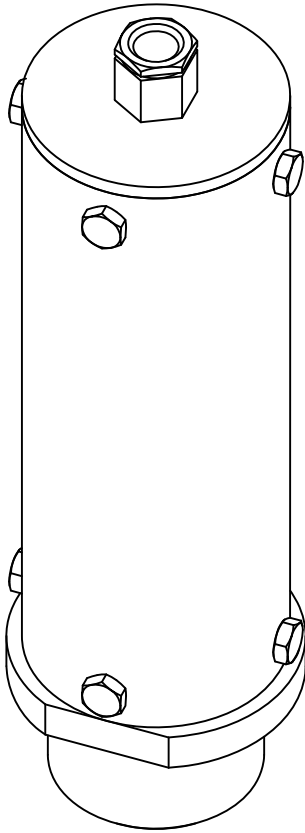
Exploded View For Models GTV-04-LE thru GTV-10-LS



Item	Description
1	Housing, Bottom
2	Housing, Cover
4	Fine Screen Assembly - PVC Supplied with Items 16, 17 & two 18
5	Dirt Collector Assembly Supplied with Items 19, 20, 21, 22 & 50
6	1-1/2" Rinse Valve Assembly
7	Hydraulic Piston Assembly
12	Housing/Cover Seal
13	1/2" Housing Bolt - St/St
14	1/2" Housing/Cover Washer - St/St
16	Shaft Bearing/Upper Bearing - St/St
17	Fine Screen Handle
18	Fine Screen Seal
19	Dirt Collector Shaft - Brass
20	Dirt Collector Nozzle - PVC
21	Hydraulic Motor - PVC
22	Dirt Collector Locking Plug - St/St
28	Separator Plate And Bearing Assembly
29	Dirt Collector Bearing - Brass
31	Solenoid Valve, 24 Vac, 3-Way, N.O.
32	1/4" Mini Filter with 1/8" Port
33	Pressure Gauge Enclosure
34	Pressure Gauge Enclosure Cover
35	OMNITROL Controller
37	Pressure Gauge
43	Three Way Mini Valve
50	Dirt Collector Bearing Sleeve - St/St
70	2-Wire Latch Solenoid Valve

Items 31 & 35 are shown for AC powered OMNITROL 400 Controller. For DC Controller operation, a Two-Wire Latch Solenoid, Item 70, replaces Item 31, & an OMNITROL 150 Controller powered by batteries replaces Item 35.

Hydraulic Piston Assembly Parts List



ALL PRICES INCLUDE STANDARD FREIGHT

*Hydraulic Piston Repair Kit Part #G7ACE13: \$109.41
(Applicable to all GTV models)

REV 3/9/2010

Item	Description	Quantity	GTV/015-LE GTV/-020-LE	Price \$	GTV/-030-LE GTV/-040-LS	Price \$	GTV-040-LE, GTV-060-LS, GTV-060-LE & GTV-080-LS	Price \$
	Hydraulic Piston Assembly	1	GA07AE13	532.94	G07CE13	532.94	G07DE13	855.29
1	Cylinder	1	G57AE13	131.76	G57CE13	151.76	G57DE13	167.06
2	Piston Head	1	G58CE00	111.76	G58CE00	111.76	G58CE00	111.76
3	Upper Cylinder End Cap	1	G55CE00	127.05	G55CE00	127.06	G55CE00	127.06
4	Piston Rod	1	G65AE13	141.17	G65CE13	154.12	G65DE13	169.41
5	Orifice	1	G69AE00	22.35	G69AE00	22.35	G69AE00	22.35
6	Lower Cylinder End Cap	1	G64CE00	140.00	G64CE00	140.00	G64CE00	140.00
7	Bolt 3/16" x 3/8" Long	8	G73CE13	1.18	G73CE13	1.18	G73CE13	1.18
8	Piston Rod O-Ring	1	G7CE0C	*	G7CE0C	*	G7CE0C	*
9	Cylinder Plug O-Ring	2	7AGS0B	*	7AGS0B	*	7AGS0B	*
10	Piston Head U-Ring	1	G7CE0A	*	G7CE0A	*	G7CE0A	*
11	Piston Head/Rod O-Ring	1	7ACE0E	2.35	7ACE0E	2.35	7ACE0E	2.35
12	Piston Head Strip Guide	1	G7CE0B	*	G7CE0B	*	G7CE0B	*
13	Rod Seal Holder U-Ring	1	7ACE0J	*	7ACE0J	*	7ACE0J	*
14	Piston/Filter or Cylinder Plug O-Ring	1	7ACE0B	*	7ACE0B	*	7ACE0B	*