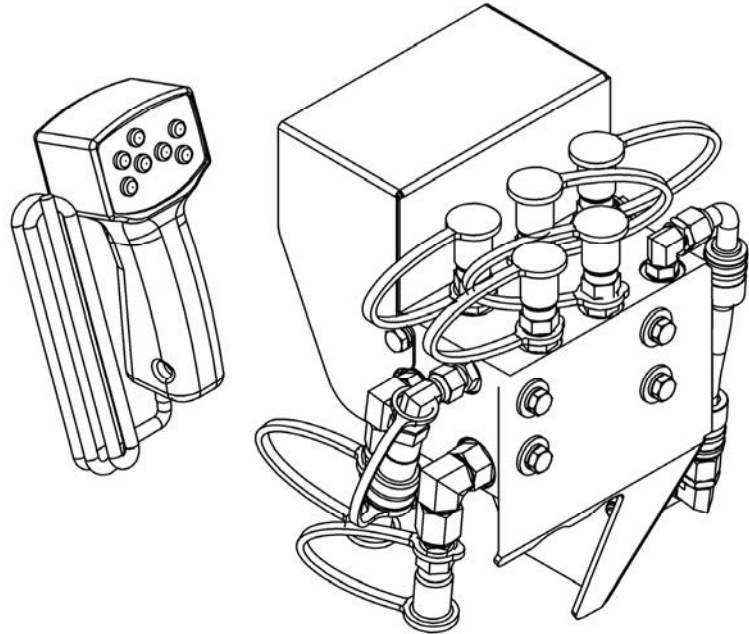


Kubota®



OPERATOR'S AND PARTS MANUAL

HYDRAULIC CONTROL KITS

2 FUNCTIONS – V4203

3 FUNCTIONS – V4204

FOR RTV900 & RTV1100 SERIES

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INTRODUCTION

TO THE PURCHASER

All products are designed to give safe, dependable service if they are operated and maintained according to instructions. **Read and understand this manual before operation.**

This manual has been prepared to assist the owner and operators in the safe operation and suitable maintenance of the hydraulic block. The information is applicable to products at the time of manufacture and does not include modifications made afterwards.

Read and understand this operator's manual before attempting to put equipment into service. Familiarize yourself with the operating instructions and all the safety recommendations contained in this manual and those labeled on the equipment and on the vehicle. Follow the safety recommendations and make sure that those with whom you work follow them.

Illustrations

The illustrations may not necessarily reproduce the full detail and the exact shape of the parts or depict the actual models, but are intended for reference only.

Direction Reference

All references to right and left, forward or rearward, are from the operator's seat, facing the steering wheel.

To assist your dealer in handling your needs, please record hereafter the model number and serial number of your vehicle. It is also advisable to supply it to your insurance company. It will be helpful in the event that the vehicle is lost or stolen.

VEHICLE

HYDRAULIC CONTROL

MODEL:

SERIAL NUMBER:

DATE OF PURCHASE:

DEALER NAME:


DEALER TELEPHONE NUMBER:


SAFETY PRECAUTIONS




SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this hydraulic control.

 **DANGER :** Indicates an immediate hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING :** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION :** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

IMPORTANT : Indicates that hydraulic control or property damage could result if instructions are not followed.

NOTE : Gives helpful information.

All products are designed to give safe, dependable service if they are operated and maintained according to instructions. **Read and understand this manual before operation.** It is the owner's responsibility to be certain anyone operating this product reads this manual, and all other applicable manuals, to become familiar with this hydraulic control and all safety precautions. Failure to do so could result in serious personal injury or hydraulic control damage. If you have any questions, consult your dealer.

BEFORE OPERATION

Children

Tragic accidents can occur if the operator is not alert to the presence of children. Children are generally attracted to machines and the work being done. Never assume children will remain where you last saw them.

1. Keep children out of the operating area and under the watchful eye of another responsible adult.
2. Be alert and turn machine off if children enter the work area.
3. Before and when backing, look behind for small children.
4. Never carry children while operating the machine. They may fall off and be seriously injured or interfere with the safe operation of the machine.
5. Never allow children to play on the machine even when it's turned off.
6. Never allow children to operate the machine even under adult supervision.
7. Use extra care when approaching blind corners, shrubs, trees, or other obstructions that might hide children from sight.

SAFETY PRECAUTIONS - continued

NOTICE

A safe operator is the best assurance against accidents. All operators, no matter how experienced they may be, should read this operator's manual and all other related manuals before attempting to operate the hydraulic control. Please read the following section and pay particular attention to all safety recommendations contained in this manual and those labeled on the hydraulic control and on the vehicle.

HYDRAULIC CONTROL

Before Operation

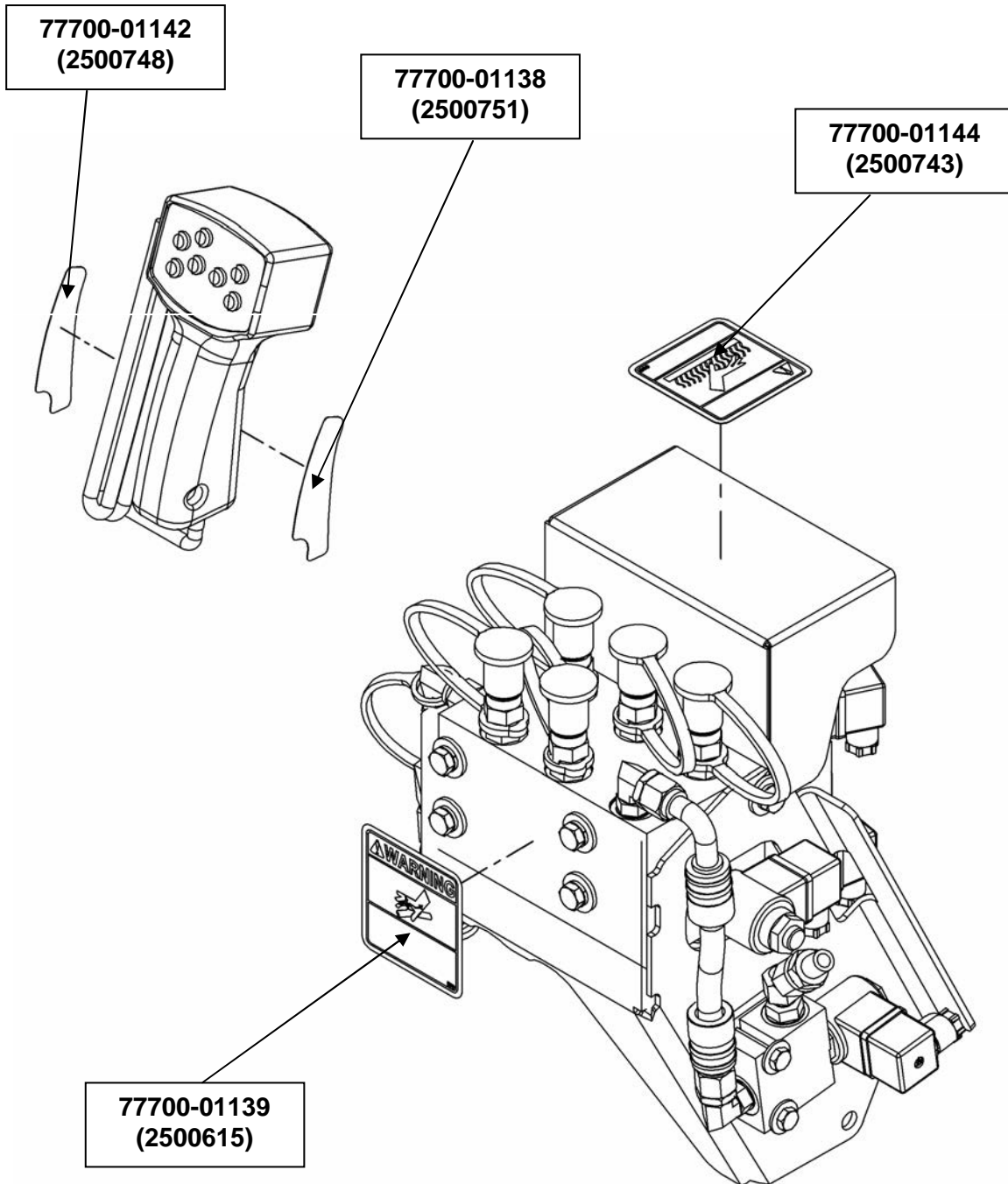
1. Read and understand this operator's manual and vehicle operator's manual. Know how to operate all controls and how to stop the unit and disengage the controls quickly.
2. Never wear loose, torn, or bulky clothing around the vehicle or the hydraulic control. It may catch on moving parts or controls, causing injury.
3. Set transmission to neutral and disengage clutch, if equipped, before starting the engine.
4. Never attempt to make any adjustments while engine is running. Read this manual carefully to acquaint yourself with the hydraulic control as well as the vehicle operator's manual. Working with unfamiliar hydraulic control can lead to accidents. Be thoroughly familiar with the controls and proper use of the hydraulic control.
5. Keep all safety guards in place and verify hardware for proper tightening.
6. Replace all missing, illegible, or damaged safety and warning decals. See list of decals in operator's manual.
7. Do not modify or alter this hydraulic control or any of its components, or any hydraulic control function without first consulting your dealer.
8. Keep safety decals clean of dirt and grime.

During Operation

1. BEFORE making any repairs, adjustments or inspections or leaving the vehicle unattended, take all possible precautions. Park the vehicle on level ground, place the transmission in neutral, set the parking brake, lower the hydraulic control to the ground, place all levers including auxiliary control levers in neutral, shut off the engine and remove the ignition key.
2. Exercise extreme caution when operating on or crossing a gravel drive, walks, or roads. Stay alert for hidden hazards or traffic.
3. Do not run the engine indoors except when starting engine and transporting attachment in or out of building. Carbon monoxide gas is colorless, odorless and deadly.
4. Do not attempt to operate on steep slopes. If operating on slopes is necessary, exercise extreme caution when changing direction.
5. Use extra caution when backing up.
6. Never operate any equipment without good visibility and lighting.
7. Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable noises.
8. Never allow anyone near the work area.
9. Securely connect the hydraulic control hoses. Check that all hoses are in good working order.
10. Never allow anyone to operate hydraulic control until they have read the manual completely and are thoroughly familiar with basic vehicle and hydraulic control operation.
11. Always make sure all hydraulic control components are properly installed and securely fastened BEFORE operation.

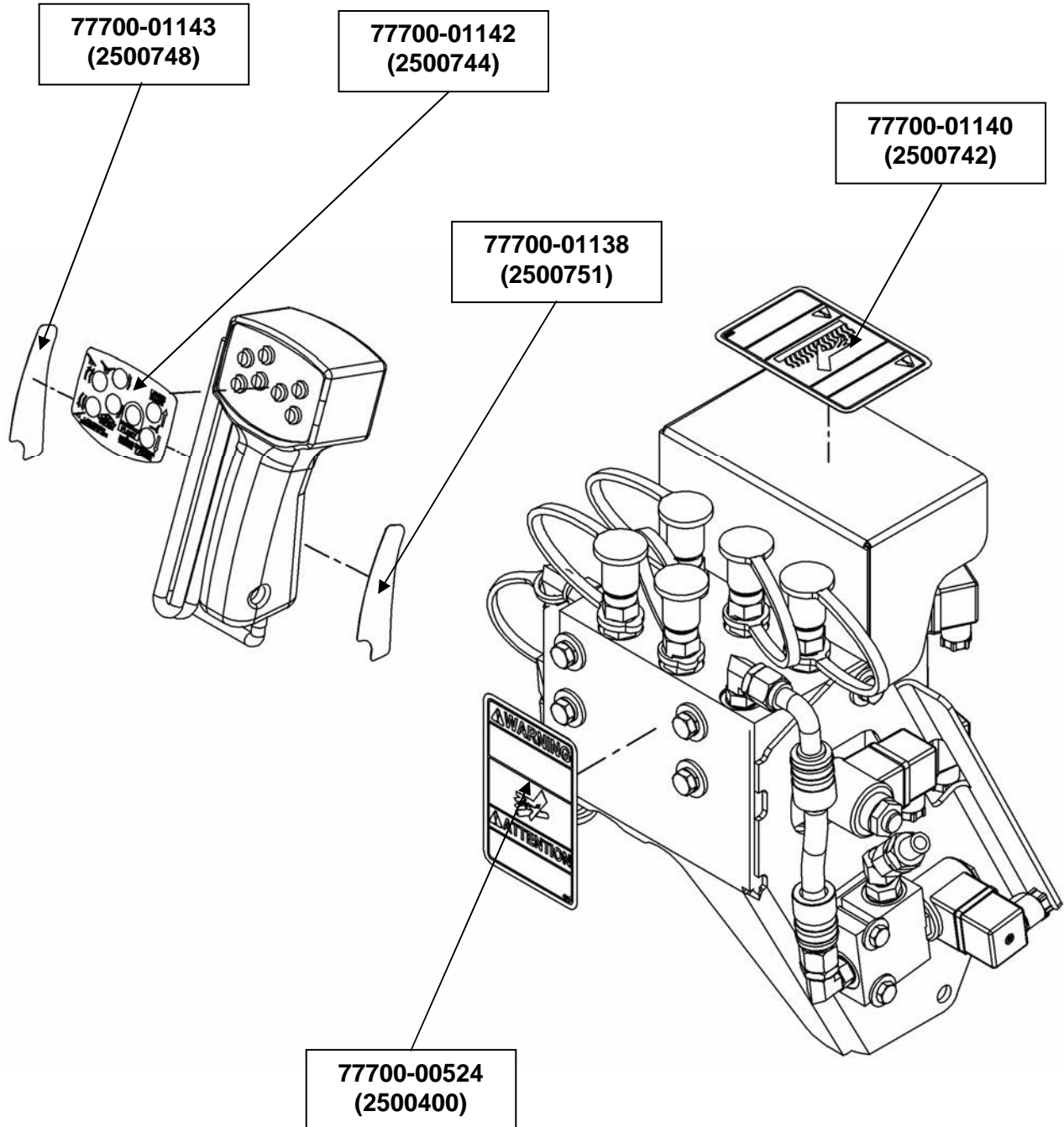
DECALS

FOR KUBOTA USA
Replace immediately if damaged



DECALS

FOR KUBOTA CANADA
Replace immediately if damaged



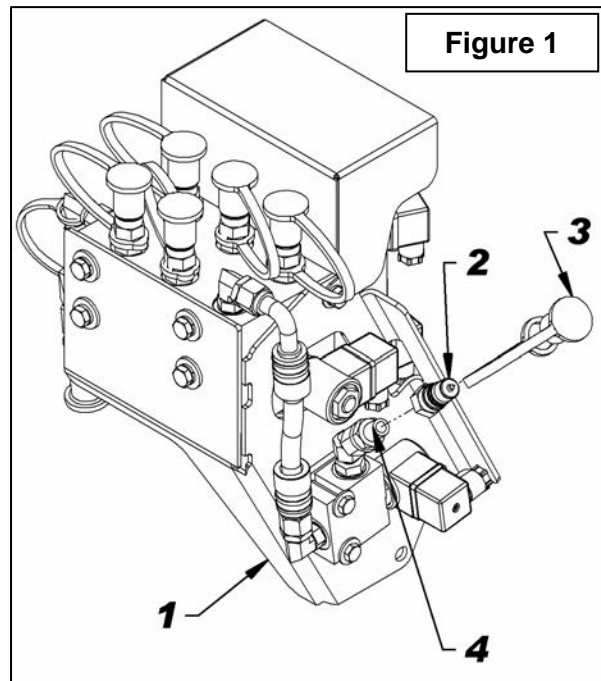
ASSEMBLY

ASSEMBLING THE HYDRAULIC CONTROL - RTV900 & RTV1100

The hydraulic control is pre assembled at the factory, however some components contained in the hardware bag require assembly. Use the present manual and lay out all parts for assembly. Separate bolts and nuts into various sizes. After assembly, torque all the bolts according to the "*Torque Specification Table*" enclosed at the end of the manual. **Note:** Before throwing the cardboard box, make sure there are no components left inside.

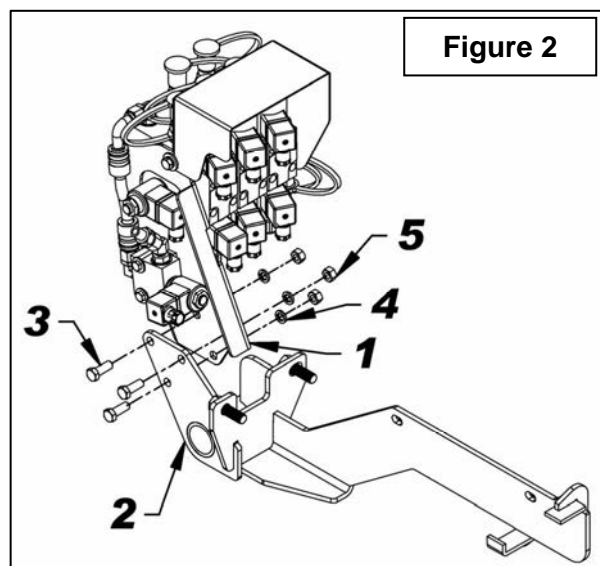
Installation of the Quick Coupler on the Solenoid Valve (Figure 1)

1. Apply thread sealant (Teflon tape) on the 1/4"NPT adapter (item 4).
2. Install the 1/4"NPT male quick coupler (item 2) and the dust cap (item 3) on the assembled block's (item 1) 1/4"NPT adapter (item 4).



Installation of the Block on the V4289 Quick Hitch Support (Figure 2)

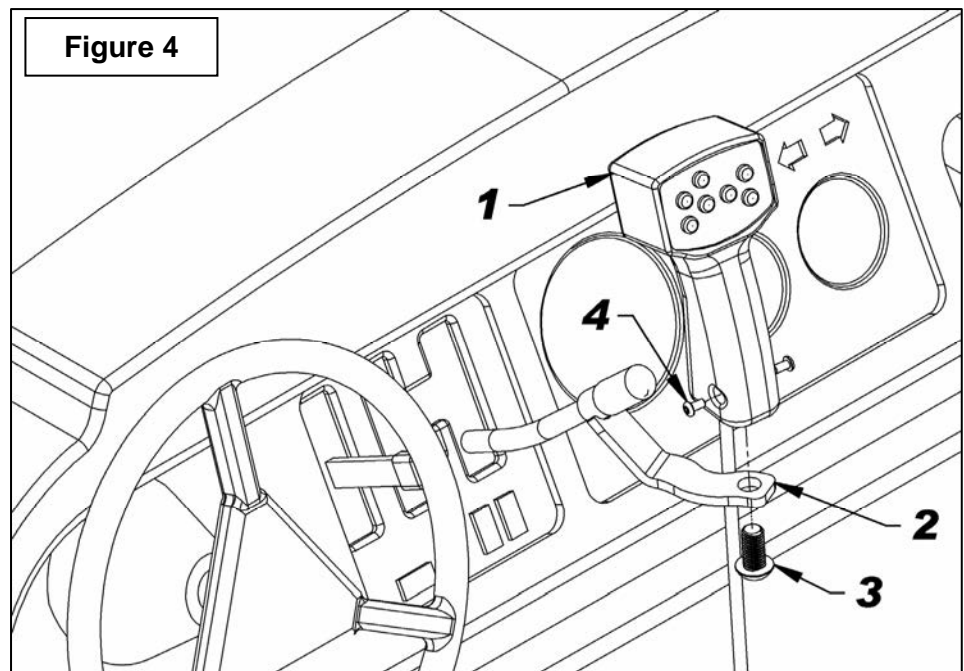
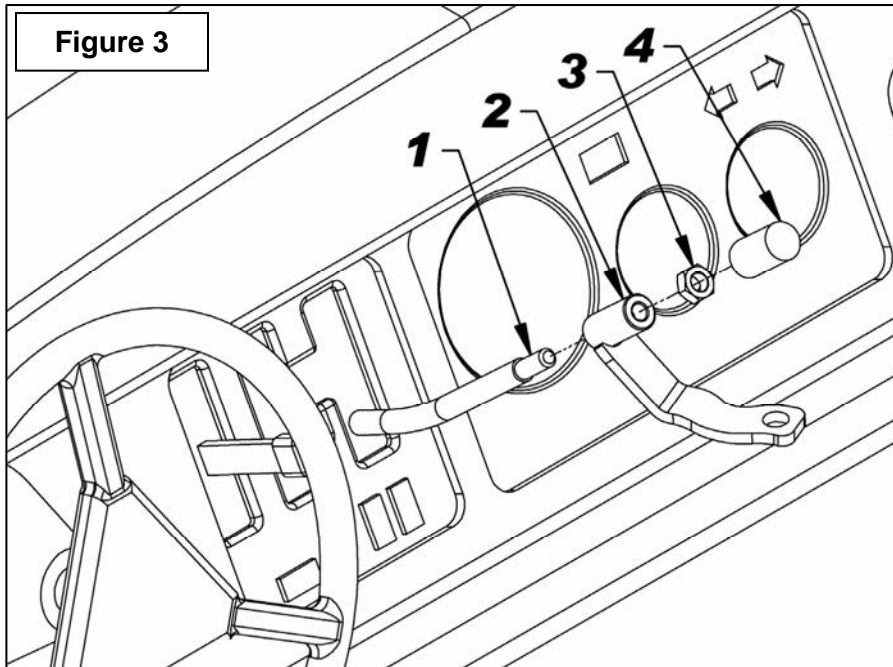
Attach the hydraulic block support (item 1) to the right front support (item 2) with three 3/8" NC x 1" lg hex. bolts, three 3/8" lockwashers and three 3/8" NC hex. nuts (items 3-4-5).



ASSEMBLY

Installation of the Valve Control Handle (Figures 3-4)

1. **Figure 3:** Unscrew the knob of the range gear shift lever (not illustrated). Screw on the handle support (item 2) on the gear shift rod (item 1). Install the M10 x 1.25 nut (item 3) on the shifter rod to prevent the handle support from turning and install the plastic cap (item 4).
2. **Figure 4:** Remove the setscrews (item 4) from the handle (item 1) and attach to the handle support (item 2) with the 1/2" NC x 1" button head Allen socket cap screw (item 3) then tighten the handle setscrews (item 4).



ASSEMBLY

Preparing the Vehicle - RTV1100 (Figures 5-6-7-8-9)

⚠ WARNING: To avoid serious injury: Park the tractor on level ground, set to neutral, apply parking brake, disengage drive pulley, place all control levers to neutral, shut off the engine, remove the ignition key and make sure all parts in rotation have stopped **BEFORE** doing any work on the vehicle.

1. Install the V4289 quick hitch according to the instructions in the operator's manual.
2. Drain the oil tank (not illustrated). Place a container able to hold at least 50 liters of oil under the vehicle and remove the drain plug located under the reservoir.

Note: Before removing the drain plug clean it as well as its contour with a slightly humid rag.

3. Once the oil is completely drained, remove the container and cover it to prevent contaminants from getting in. Reinstall the drain plug.
4. **Figure 5:** Remove the grill that protects the valve compartment and the radiator (item 1).

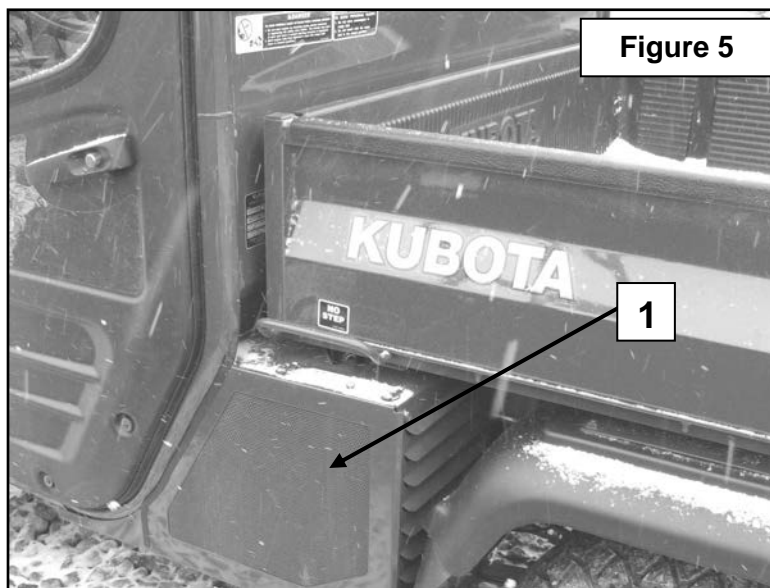
⚠ WARNING: To avoid serious personal injury. Escaping hydraulic/ diesel fluid under pressure can penetrate the skin causing serious injury.

- Do not use your hands to check for leaks. Use a piece of cardboard or paper to search for leaks.



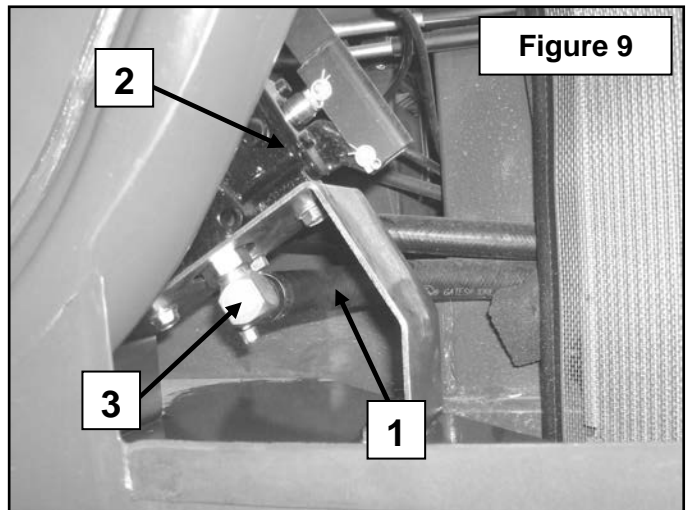
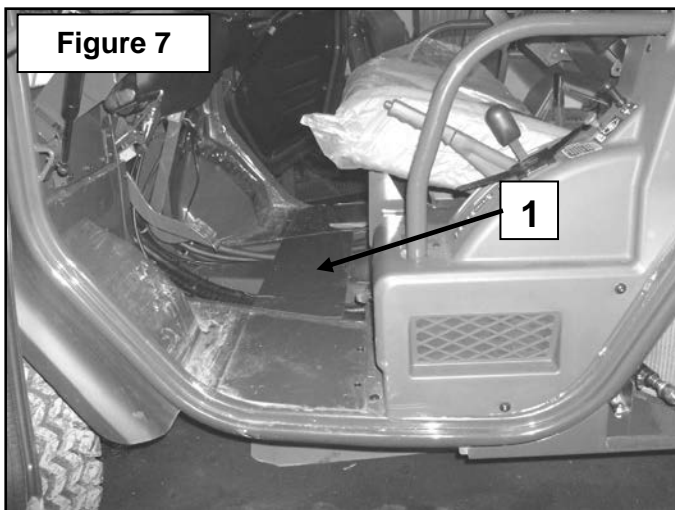
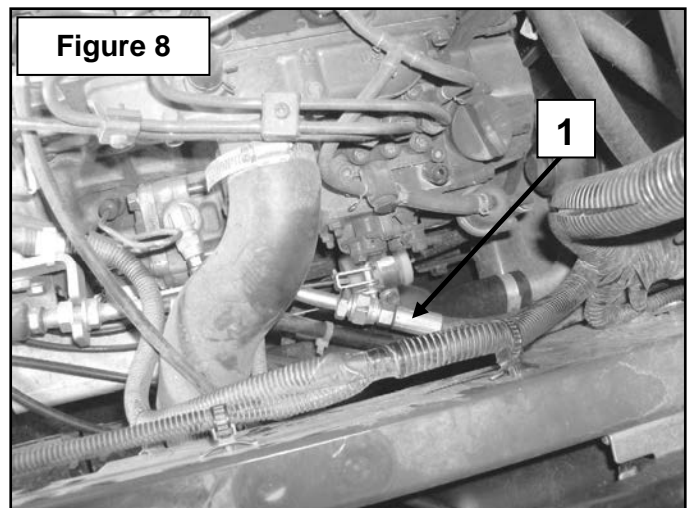
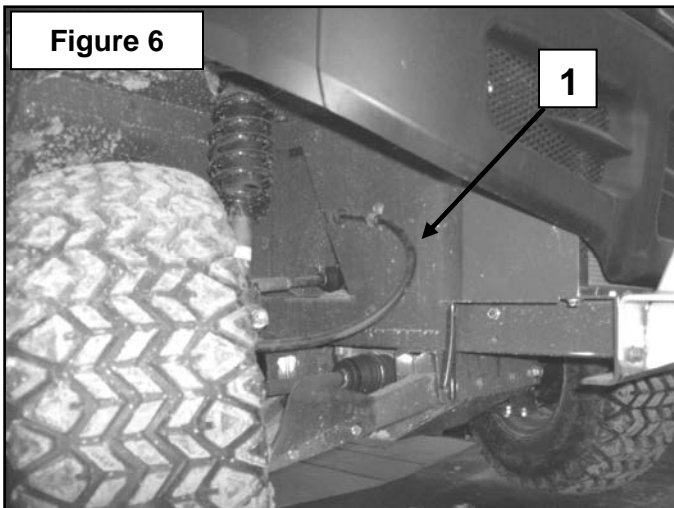
- Stop engine and relieve pressure before connecting or disconnecting lines.
- Tighten all connections before starting engine or pressurizing lines.

If any fluid is injected into the skin, obtain medical attention immediately or gangrene may result.



ASSEMBLY

5. **Figure 6:** Remove the protective plate (item 1) located in the right side wheel well.
6. Remove the carpet inside the driver's cab (not illustrated).
7. **Figure 7:** Remove the protective plate under the carpet (item 1).
8. **Figure 8:** Disconnect the hydraulic hose between the pump (item 1) and the valve of the vehicle.
9. **Figure 9:** Disconnect the return hose (item 1) from the valve of the vehicle (item 2). Remove the adapter (item 3) already installed on the valve (item 2).

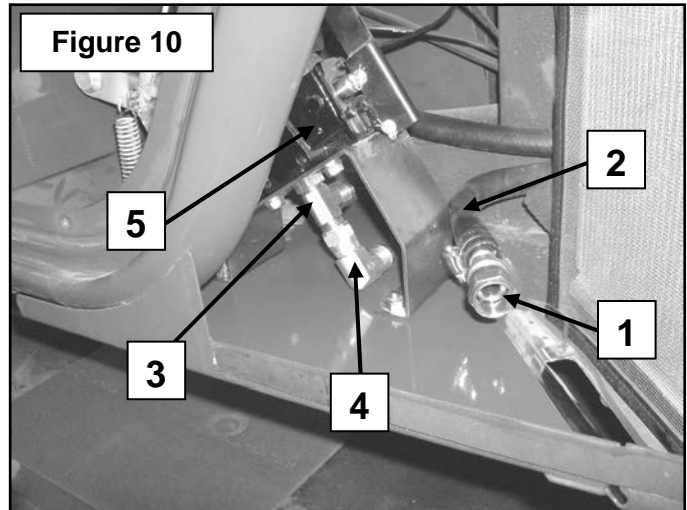


ASSEMBLY

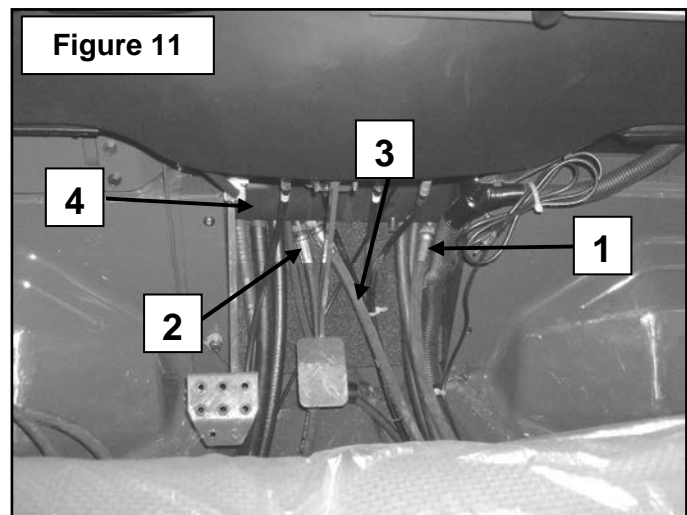
Installation of the Hydraulic System - RTV1100

(Figures 10 to 21)

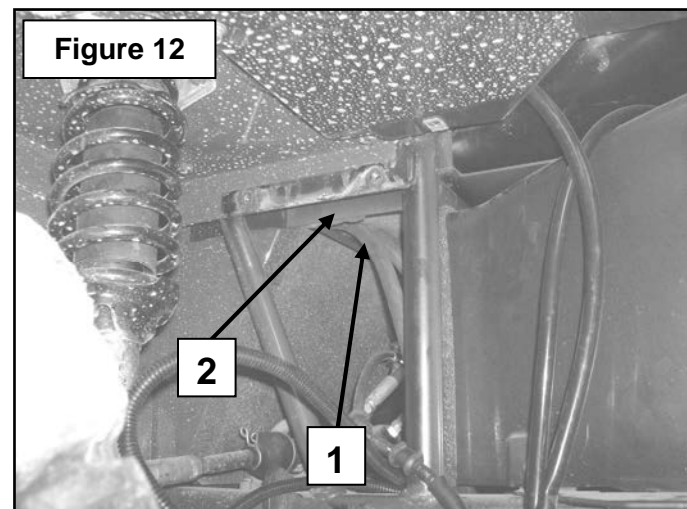
1. **Figure 10:** Insert a 7/8" JIC fem x 5/8" hose "push-on" union (item 1) in the return hose of the vehicle (item 2).
2. **Figure 10:** Attach the 3/4" JIC rigid male x 3/4" JIC rigid male x 3/4" ORB "T" fitting (item 3) on the valve's reservoir port (item 5) of the vehicle.
3. **Figure 10:** Attach the 90° 3/4" JIC female x 7/8" JIC male elbow (item 4) to the "T" fitting (item 3) as illustrated.



4. **Figure 11:** Run the 1/4" NPT male ends of the 140" hoses with the green identification ring (item 1) and the blue identification ring (item 2) as well as the 143" hose (item 3) through the panel (item 4) inside the cab, above the pedals



5. **Figure 12:** The three hoses (item 1) must exit the cab by the opening (item 2) located above the vehicle's steering cylinder.



ASSEMBLY

6. **Figure 13:** Install a 1/4" NPT elbow (item 1), a 1/4" NPT male quick coupler (item 2) and a 1/4" dust cap on the hose with the green identification ring

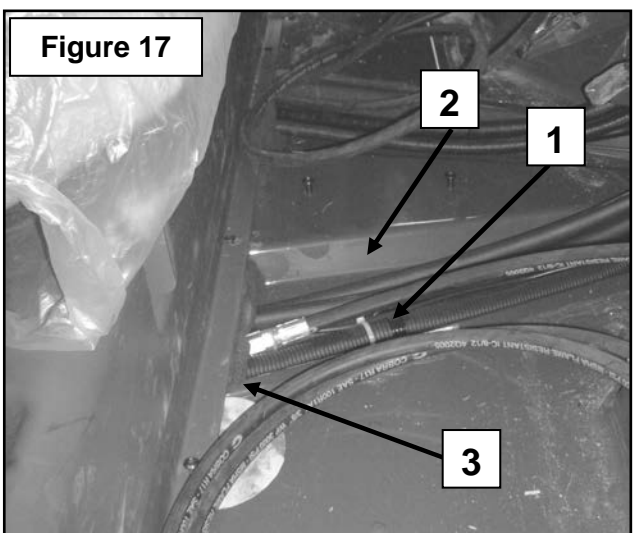
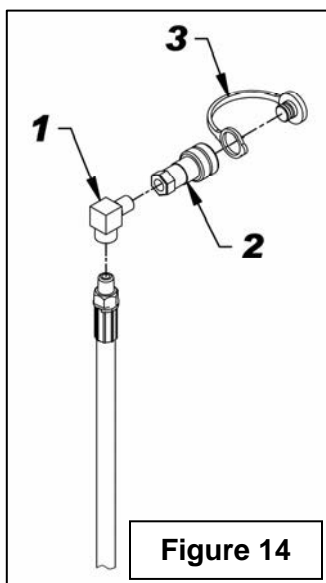
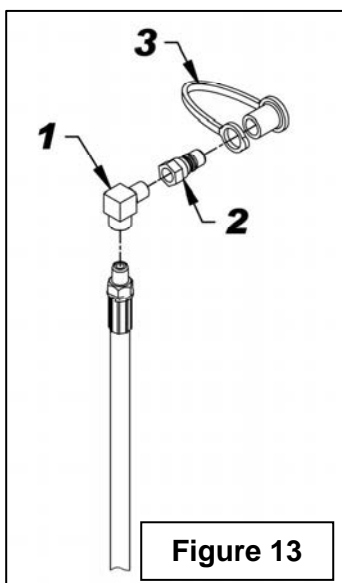
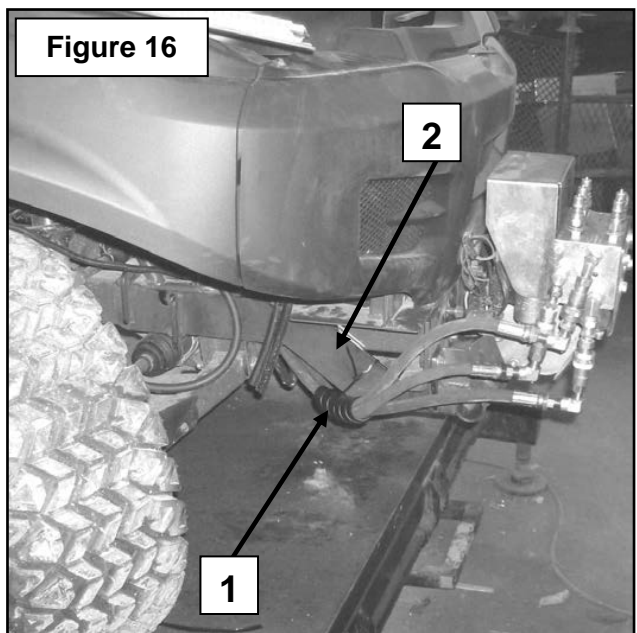
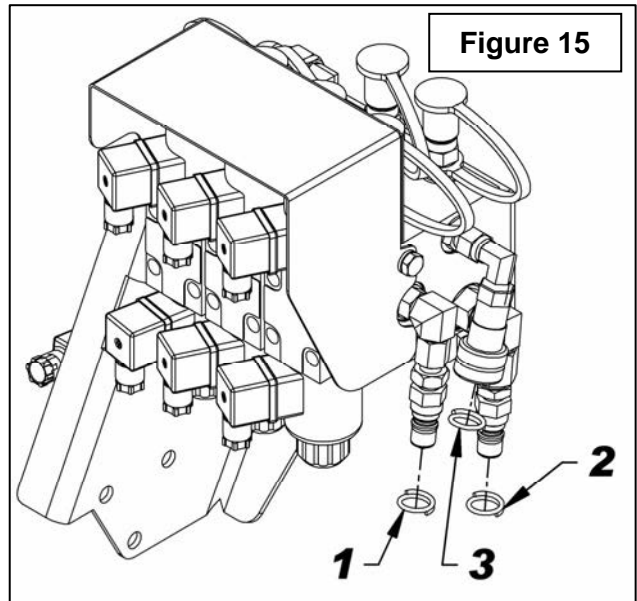
7. **Figure 14:** Install a 1/4" NPT elbow (item 1), a 1/4" NPT female quick coupler (item 2) and a 1/4" dust plug on the hoses with the blue identification ring and the red one.

IMPORTANT: Be careful not to contaminate the hose fittings and other hydraulic components with dust or other contaminants.

8. **Figure 15:** Install the red (item 1), blue (item 2) and green (item 3) identification rings on the hydraulic block.

9. **Figure 16:** Connect the hoses to the hydraulic block making sure to match the identification rings. Install a black plastic guard (item 1) as shown. Make the hoses exit in the center of the front of the vehicle running them lengthwise between the frame tubes and behind the left support (item 2).

10. **Figure 17:** Run the 3/4" JIC female end of the hose with the green identification ring (item 1) through the panel under the driver's seat (item 3). Run the hose in the cavity on the right hand side of the cab floor (item 2) toward the engine compartment following the path of the vehicle's hoses and electrical harnesses.



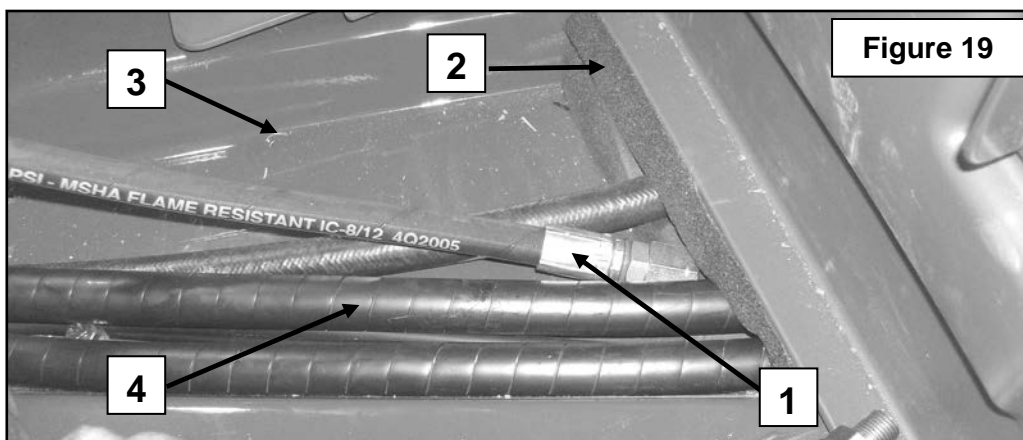
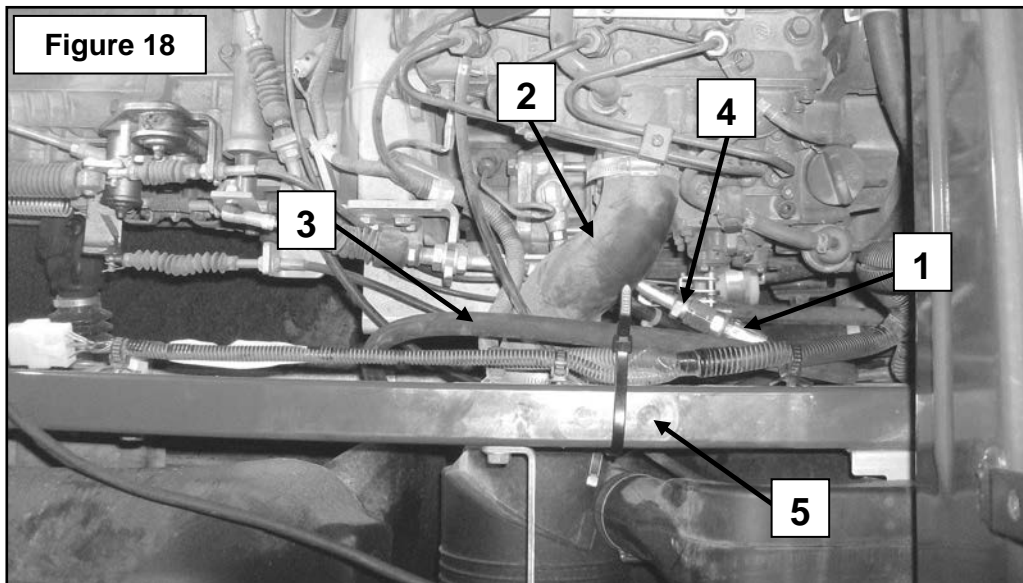
ASSEMBLY

11. Figure 18: Run the 3/4" JIC female end of the hose with the green identification ring (item 1) towards the rear of the vehicle under the engine's air intake hose (item 2). Make a loop (item 3) with the hose by bringing the end to the front to evenly distribute the surplus hose. Attach the hose fitting to the outlet of the vehicle pump (item 4). Attach the hose to the frame of the vehicle with a 5.0mm x 15" long tie wrap (item 5).

Important: Make sure the hose is not on top of the frame so it doesn't get caught between the cargo bed and the frame.

12. Figure 19: Run the 3/4" JIC female end of the 140" hose with the blue identification ring (item 1) through the panel under the seat (item 2) and in the cavity on the left hand side of the cab floor (item 3) toward the valve compartment by following the path of the vehicle's hoses (item 4).

13. Figure 19: Repeat the previous step with the 3/4" JIC female end of the 143" hose (not illustrated).



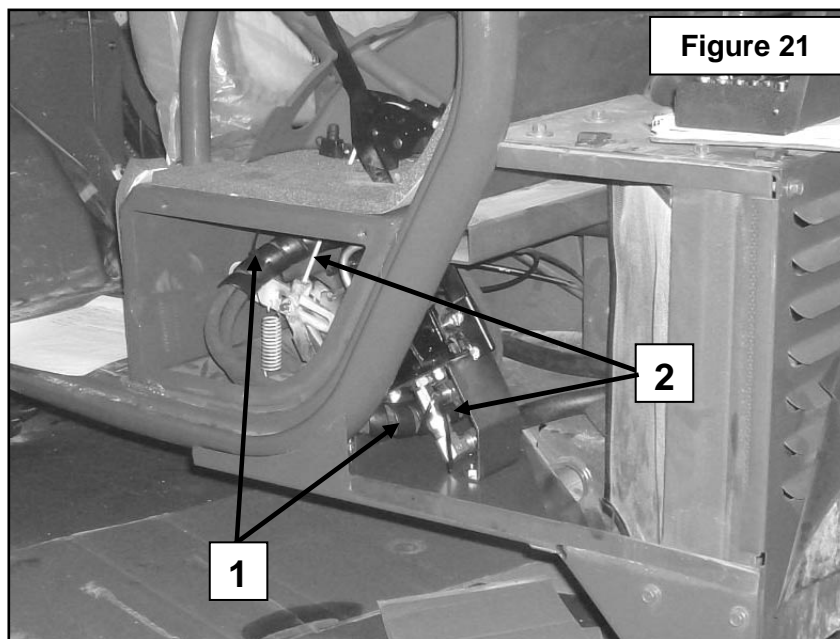
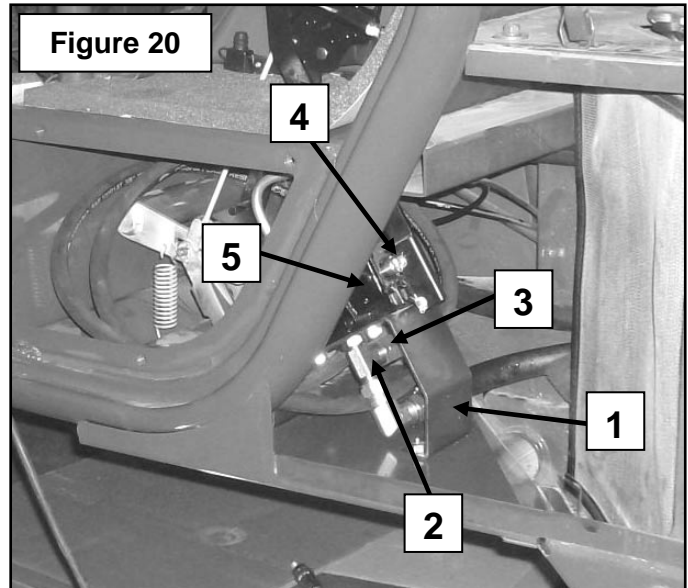
ASSEMBLY

14. **Figure 20:** Run the two hoses under the valve support (item 1) in the middle of the vehicle and towards the outside. Bring the hose back towards the valve by making a loop to evenly distribute the surplus hose and attach the 3/4" JIC female straight end of the hose with the blue identification ring (item 3) to the "T" fitting (item 2) previously installed on the valve of the vehicle. Attach the 3/4" JIC female end of the hose with the red identification ring (item 4) to the pressure outlet of the valve of the vehicle (item 5).

15. **Figure 21:** Install plastic guards (item 1) and tie wraps (item 2) where shown.

16. Tighten all fittings according to the "***Torque Specification Table for Hydraulic Fittings***" at the end of the manual.

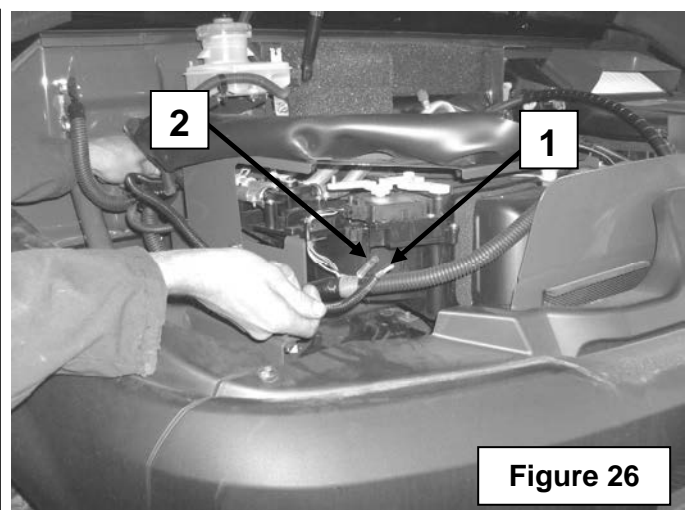
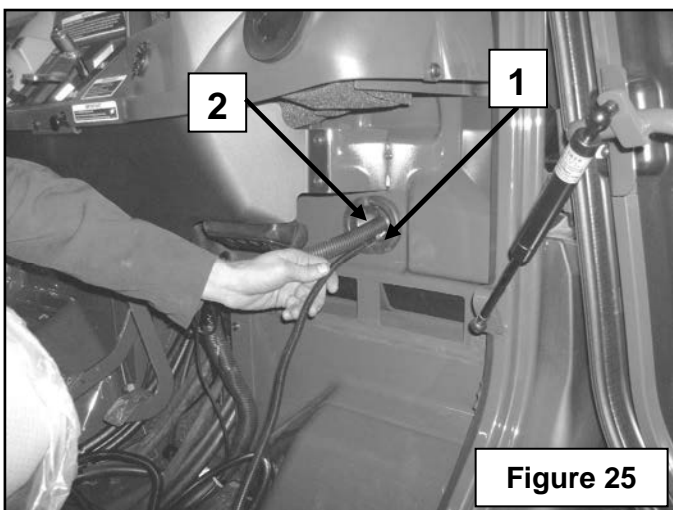
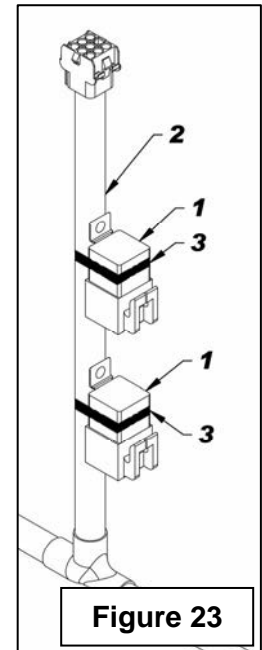
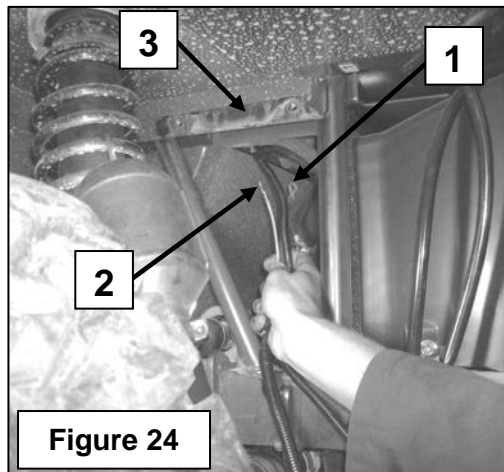
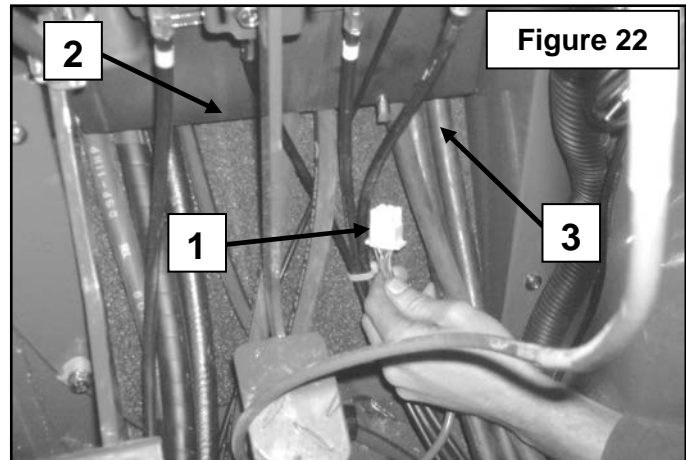
17. Refill the oil tank.



ASSEMBLY

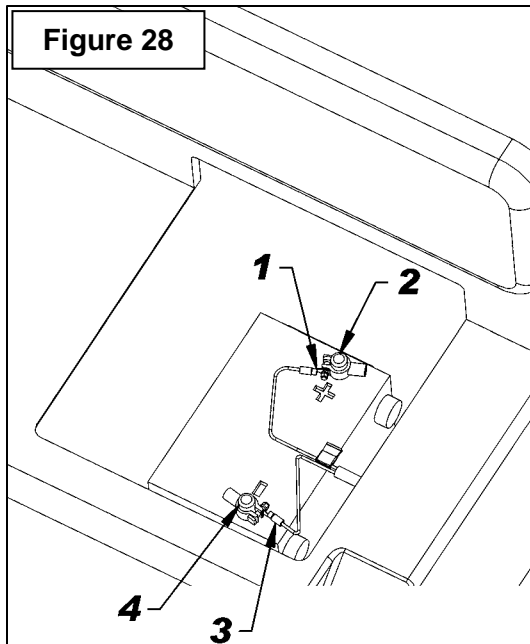
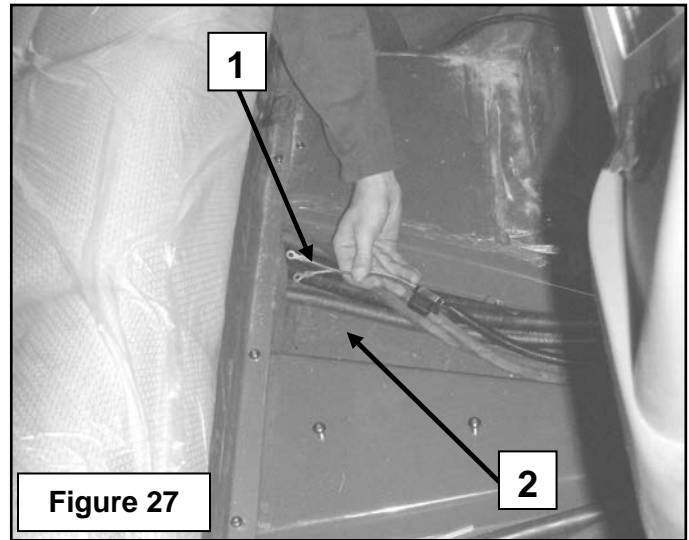
Installation of the Electrical System - RTV1100 (Figures 22 to 31)

1. **Figure 22:** Run the handle's electrical connector (item 1) through the panel (item 2) above the vehicle's pedals, from the interior of the cab to the exterior following the path of the hydraulic hoses previously installed (item 3).
2. **Figure 23:** Attach the two relays (item 1) to the power supply harness (item 2) with electrical tape (item 3).
3. **Figure 24:** Run the end of the power supply harness with the round terminals (item 1) and the bullet type connector (item 2) through the panel (item 3) above the steering cylinder, from the outside of the vehicle to the inside of the cab.
4. **Figure 25:** Insert the end of the power supply harness with the bullet type connector (item 1) in the grommet (item 2) located on the right side under the dashboard and bring it to the compartment under the hood.
5. **Figure 26:** Connect the power supply harness male bullet connector (item 1) to the vehicle's female bullet connector (item 2).

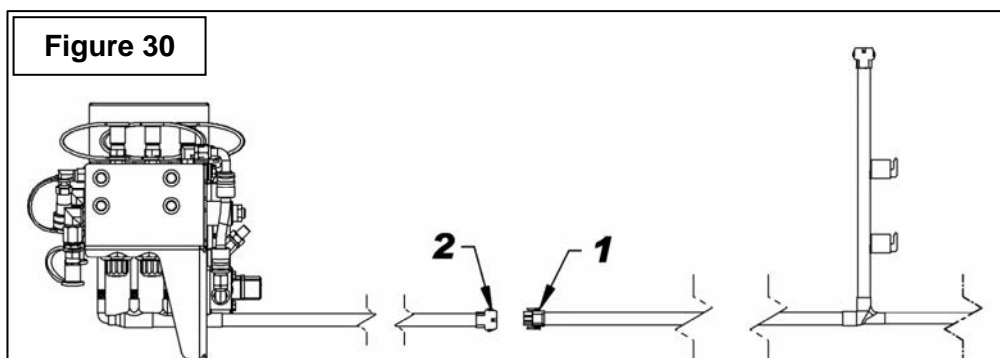
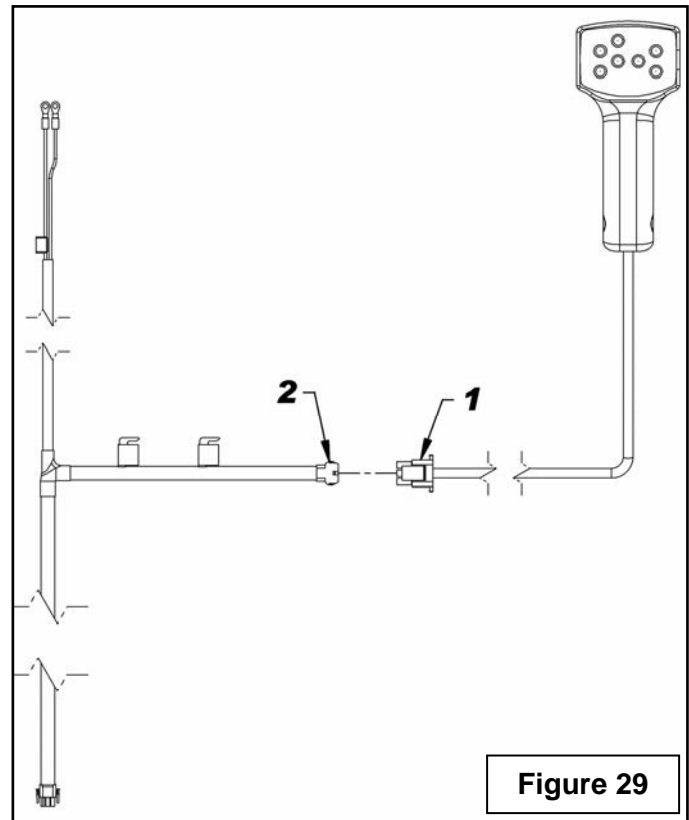


ASSEMBLY

6. **Figure 27:** Run the end of the power supply harness with the two round terminals (item 1) through the panel (item 2) under the driver's seat.
7. **Figure 28:** Connect the round terminal of the red wire (item 1) to the battery's positive terminal (item 2) and the round terminal of the black wire (item 3) to the battery's negative terminal (item 4).

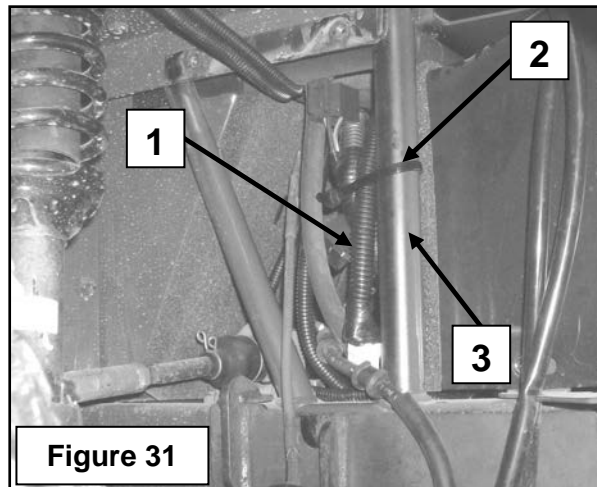


8. **Figure 29:** Connect the handle connector (item 1) to the female connector of the power supply harness (item 2).
9. **Figure 30:** Connect the male connector of the power supply harness (item 1) to the female connector of the hydraulic control harness (item 2).



ASSEMBLY

10. **Figure 31:** Secure the power supply harness (item 1) under the vehicle, between the lengthwise rectangular tubes by attaching it to the vertical tubes (item 3) with 5.0mm X 15" tie wraps (item 2).



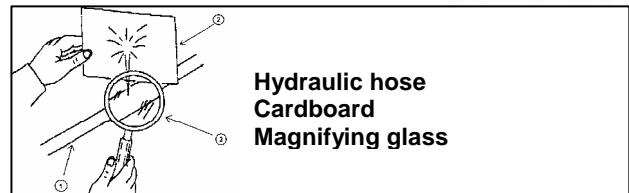
Preparing the Vehicle – RTV900

⚠ WARNING: To avoid serious injury: Park the tractor on level ground, set to neutral, apply parking brake, disengage drive pulley, place all control levers to neutral, shut off the engine, remove the ignition key and make sure all parts in rotation have stopped **BEFORE** doing any work on the vehicle.

1. Install the V4289 quick hitch according to the instructions in the operator's manual.
2. Drain the oil tank (not illustrated). Place a container able to hold at least 50 liters of oil under the vehicle and remove the drain plug located under the reservoir.
Note: Before removing the drain plug, clean it as well as its contour with a slightly humid rag.
3. Once the oil is completely drained, remove the container and cover it to prevent contaminants from getting in. Reinstall the drain plug.
4. Disconnect the hydraulic hose between the pump and the valve of the vehicle (not illustrated).
5. Disconnect the return hose from the valve of the vehicle and remove the adapter installed on the valve.

⚠ WARNING: To avoid serious personal injury. Escaping hydraulic/ diesel fluid under pressure can penetrate the skin causing serious injury.

- Do not use your hands to check for leaks. Use a piece of cardboard or paper to search for leaks.



- Stop engine and relieve pressure before connecting or disconnecting lines.
- Tighten all connections before starting engine or pressurizing lines.

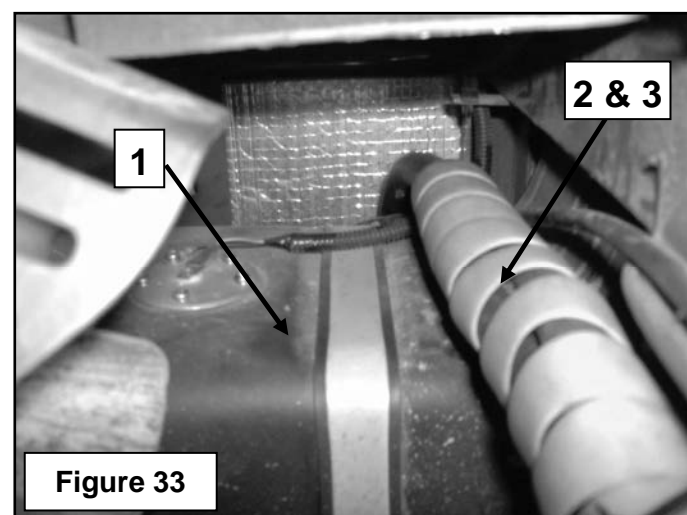
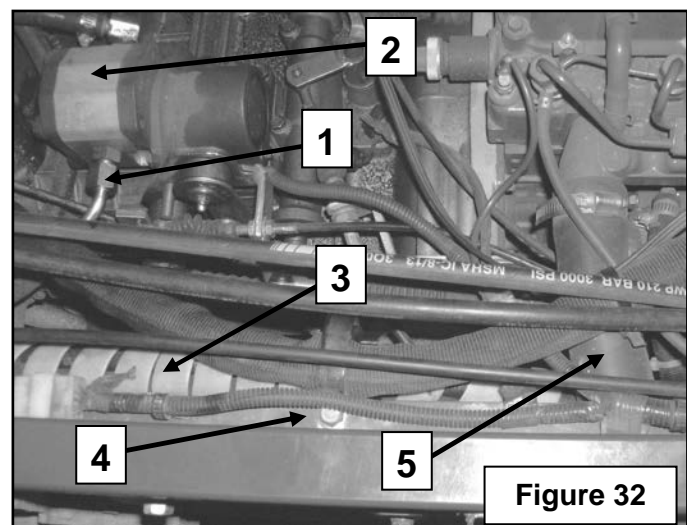
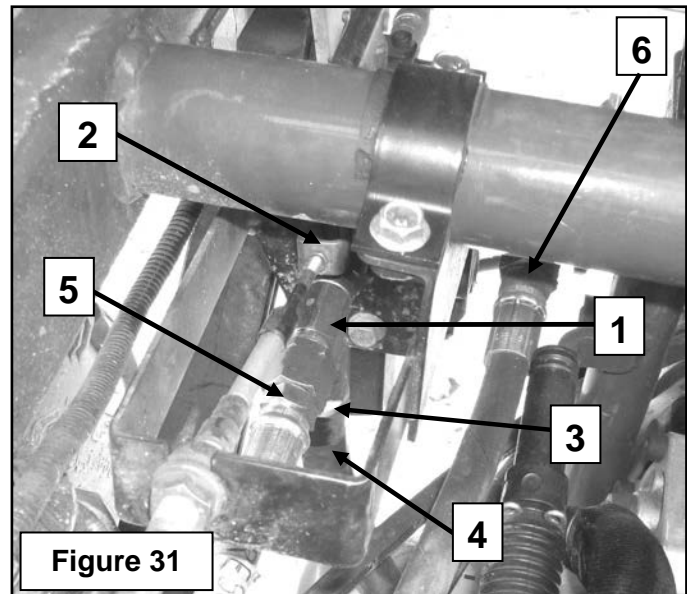
If any fluid is injected into the skin, obtain medical attention immediately or gangrene may result.

ASSEMBLY

Installation of the Hydraulic System - RTV900

(Figures 31 to 38)

1. **Figure 31:** Install the 3/4" JIC rigid male x 3/4" JIC rigid male x 3/4" ORB "T" fitting (item 1) on the vehicle's valve (item 2). The perpendicular port of the "T" fitting must face the ground.
2. **Figure 31:** Insert the 3/4" JIC female x 1/2" hose push-on union (item 3) in the vehicle's return hose (item 4).
3. **Figure 31:** Attach the return hose to the "T" fitting port that faces the ground (item 4).
4. **Figure 31:** Attach 3/4" JIC female end of the 140" hose with the blue identification ring (item 5) to the "T" fitting port pointing to the front of the vehicle.
5. **Figure 31:** Attach 3/4" JIC female end of the 140" hose with the green identification ring (item 6) to the pressure outlet of the vehicle's valve.
6. **Figure 32:** Attach 3/4" JIC female bent 45° of the 143" hose with the red identification ring (item 1) on the pump (item 2). Once installed the fitting must point towards the rear of the vehicle so the hose can pass under the linkage of the vehicle.
7. **Figure 32:** Bring together the three hoses just connected and install a plastic guard (item 3).
8. **Figure 32:** Bring the hoses to the front of the vehicle alongside the rectangular tube on the right side of the frame. Run the hoses under the wiring support (item 4) and under the air intake hose (item 5). Attach the hoses to the wiring support with 5.0mm x 15" tie wraps.
9. **Figure 33:** Run the hoses (item 2) along the top and the front of the gas tank (item 1). Install a plastic guard (item 3) around the three hoses.



ASSEMBLY

10. **Figure 34:** Place the hoses (item 4) in the hose support (item 1) under the vehicle and attach to the support 5.0mm x 15" tie wraps (item 2). Insert the hoses in the opening over the front differential (item 3).
11. Open the hood and remove the rubber membrane to gain access to the steering system. Run the hoses over the steering cylinder and install a plastic guard around the three hoses to protect them from the steering cylinder.
12. **Figure 35:** Bring the hoses (item 1) to the front to make them exit in the center of the front guard.
13. **Figure 36:** Install the identification rings; green (item 1), blue (item 2) and red (item 3) on the hydraulic block in the exact positions illustrated.
14. **Figure 37:** Install a 1/4" NPT elbow (item 1), a 1/4" NPT male quick coupler (item 2) and a dust cap (item 3) on the hose with the red identification ring
15. **Figure 38:** Install a 1/4" NPT elbow (item 1), a 1/4" NPT female quick coupler (item 2) and a dust plug (item 3) on the hose with the blue identification ring and the one with the green ring.
16. **Figure 35:** Connect the hoses to the hydraulic block making sure to match the identification rings. The hose fittings must point towards the rear of the vehicle as illustrated.

17. Refill the oil tank.
18. Tighten all fittings according to the "**Torque Specification Table for Hydraulic Fittings**" at the end of the manual.

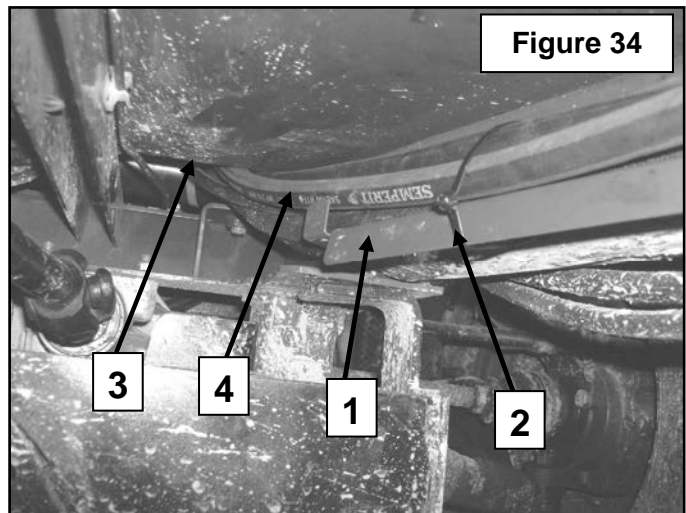


Figure 34

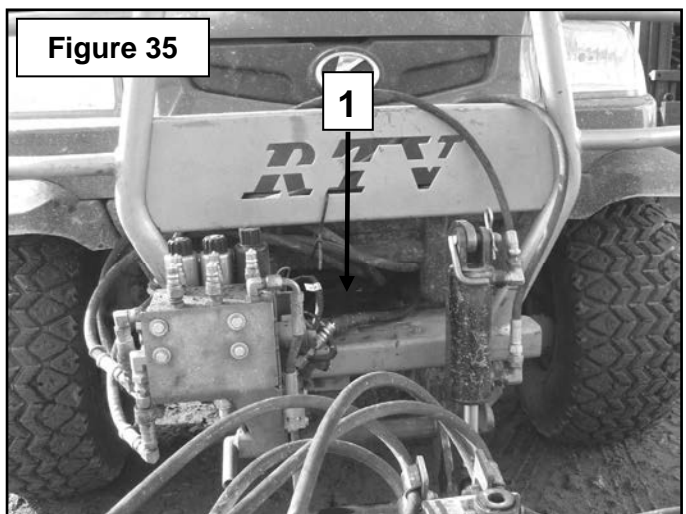


Figure 35

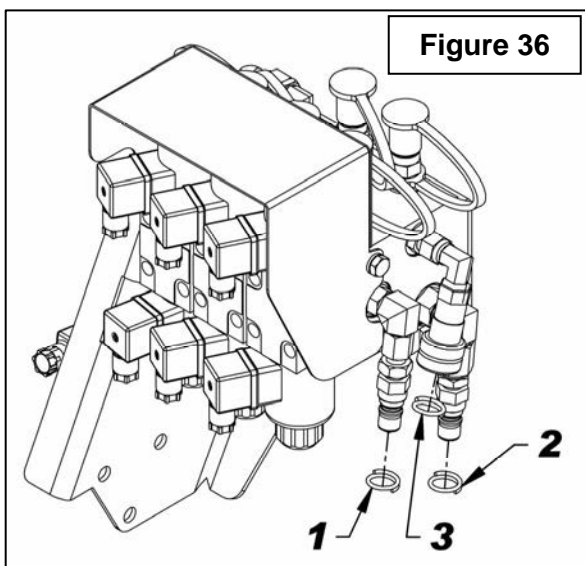


Figure 36

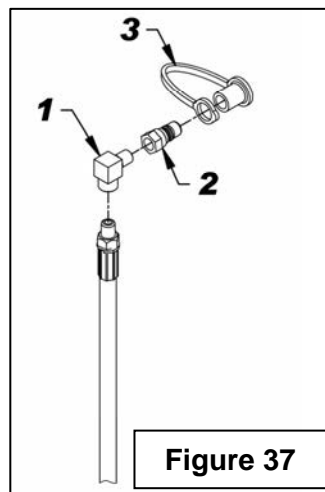


Figure 37

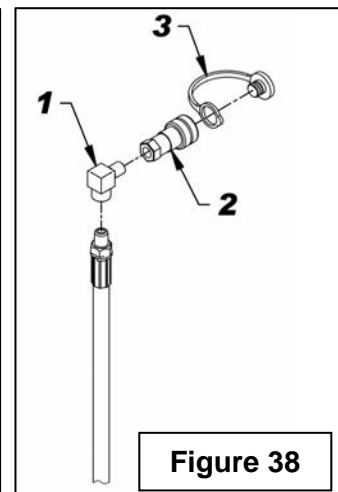
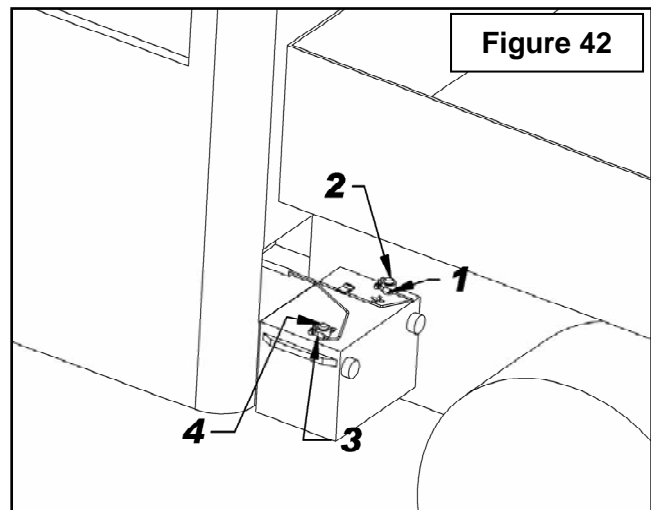
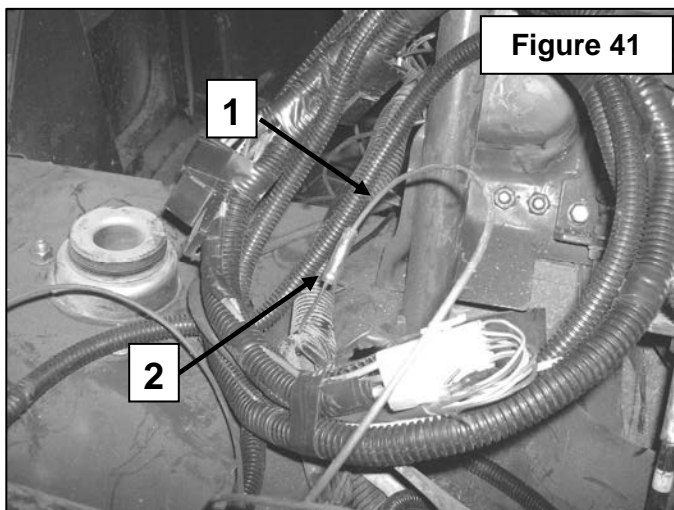
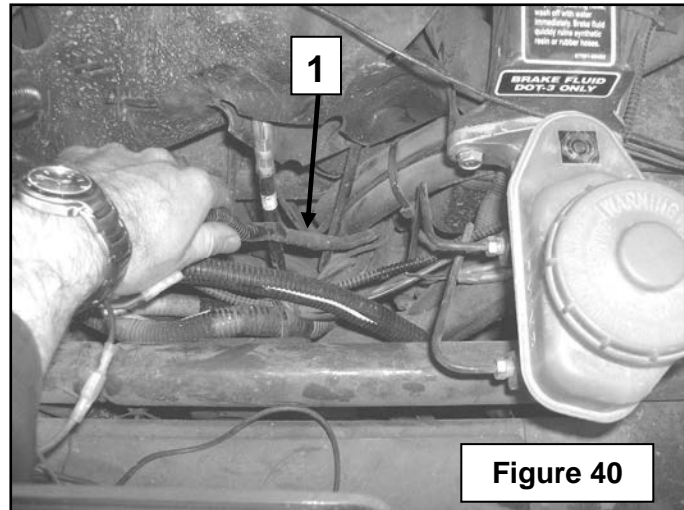
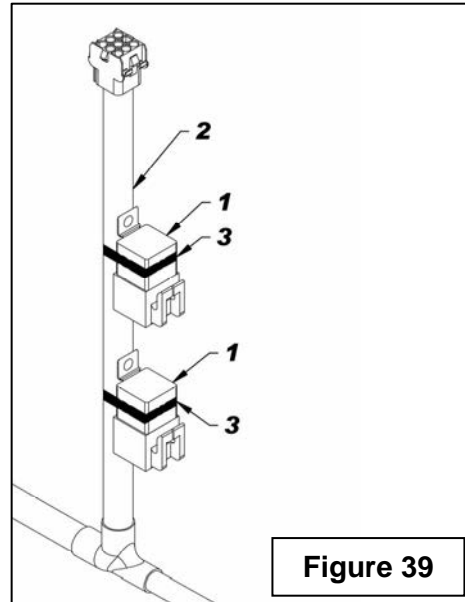


Figure 38

ASSEMBLY

Installation of the Electrical System – RTV900 (Figures 39 to 45)

1. Run the cable of the valve control handle under the dashboard to under the hood. Attach the cable to the frame tubes with 5.0mm X 15" tie wraps.
2. **Figure 39:** Attach the two relays (item 1) to the power supply harness (item 2) with electrical tape (item 3).
3. **Figure 40:** Run the end of the power supply harness with the round terminals (item 1) inside the compartment under the hood towards the underside of the vehicle following the vehicle's existing harness.
4. **Figure 41:** Connect the male bullet connector (item 1) of the power supply harness to the female bullet connector (item 2) of the vehicle's accessory port located inside the compartment under the hood.
5. **Figure 42:** Connect the red wire round terminal (item 1) to the battery's positive terminal (item 2) and the black wire terminal (item 3) to the negative terminal (item 4).
6. Bring the hydraulic control harness through the middle opening of the front guard in order to bring the connector in the compartment under the hood.



ASSEMBLY

- 7. Figure 43:** Connect the handle connector (item 1) to the female connector of the power supply harness (item 2).
- 8. Figure 44:** Connect the male connector of the power supply harness (item 1) to the female connector of the hydraulic control harness (item 2).
- 9. Figure 45:** Secure the power supply to the vertical tube on the right of the frame (item 1) with 5.0mm X 15" tie wraps (item 2).

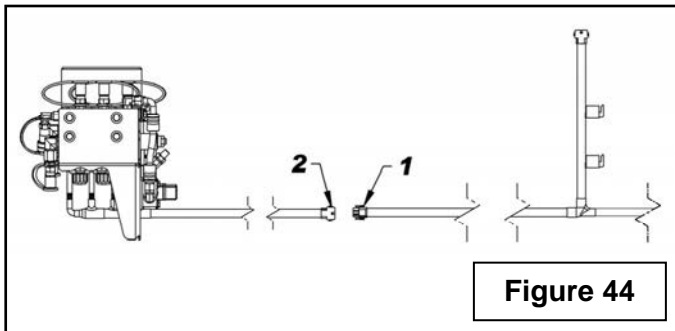


Figure 44

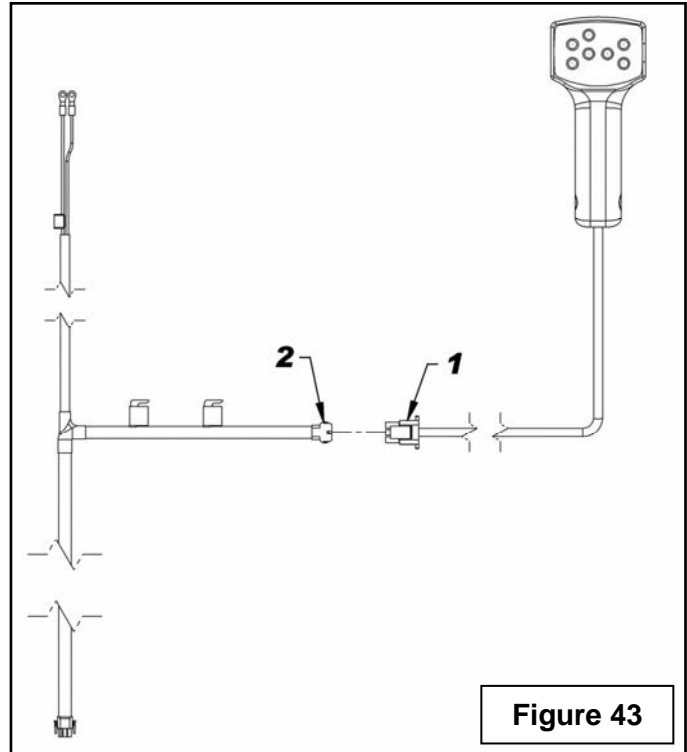


Figure 43

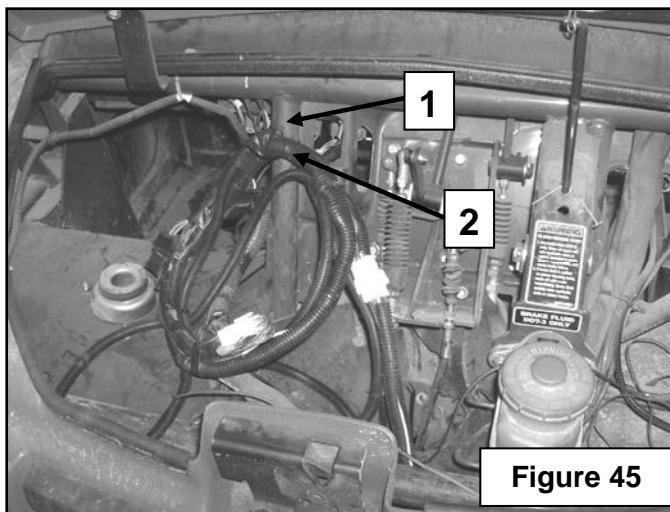
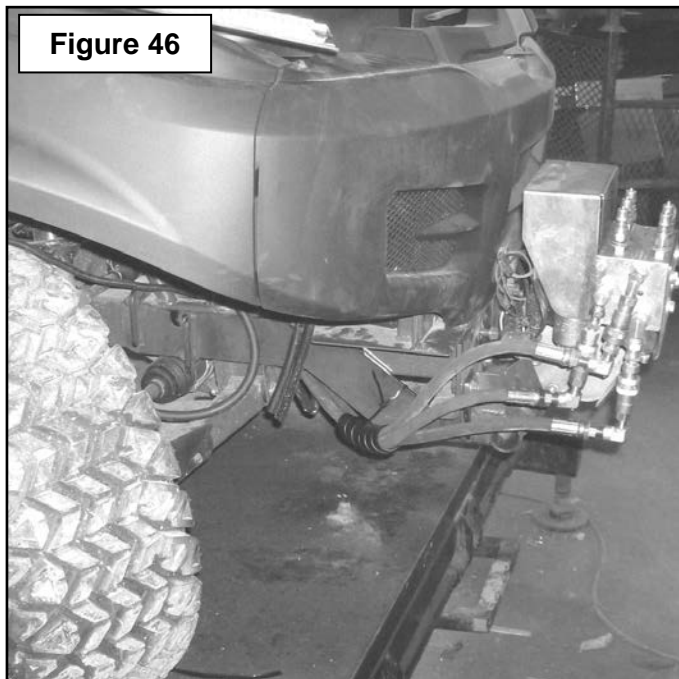


Figure 45

OPERATION

GENERAL PREPARATION

1. Make sure the hydraulic control hoses are properly connected.
2. Connect the hoses of the V4289 quick hitch making sure to match the identification rings.
3. Connect the hoses of the equipment to be used making sure to match the identification rings.

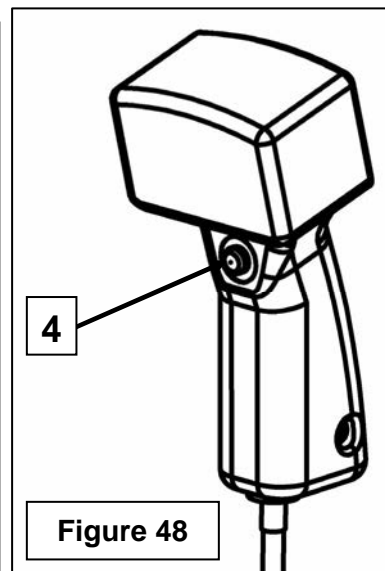
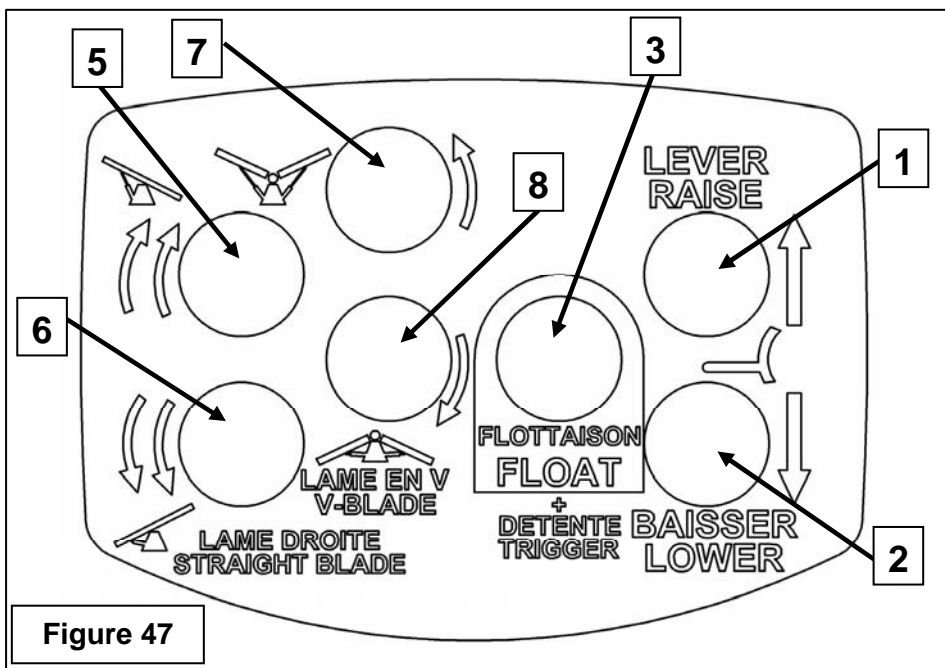


WARNING: To avoid serious injuries:

- Do not allow bystanders near working area.
- Before cleaning, adjusting or repairing the hydraulic control: bring the vehicle to a complete stop, wait for all movement to stop, apply parking brake, lower the equipment to the ground, shut off the engine and remove the ignition key.
- The oil supply and return hoses of the hydraulic control must be correctly connected to the hydraulic block before starting the engine (see figure 46). Starting the vehicle's engine with the hoses not connected could seriously damage the engine.
- This hydraulic control kit was designed to be used on Kubota approved equipment only.

ATTENTION

Always operate the hydraulic control from the driver's seat.



OPERATION

Handle Control Functions

Functions with the V4291 "V" blade

(See figures 47 and 48 for the numbering of the buttons)

Function	Button	Description
RAISE	1	Press button #1 to raise the quick hitch and disengage the "FLOAT" mode.
LOWER	2	Press button #2 to lower the quick hitch and disengage the "FLOAT" mode.
FLOAT	3 & 4	Press buttons #3 and #4 together to engage the "FLOAT" mode.
EXTENSION OF THE LEFT WING	5	Press button #5 to extend the left wing (the wing moves away from the vehicle).
RETRACTION OF THE LEFT WING	6	Press button #6 to retract the left wing (the wing moves closer to the vehicle).
EXTENSION OF THE RIGHT WING	7	Press button #7 to extend the right wing (the wing moves away from the vehicle).
RETRACTION OF THE RIGHT WING	8	Press button #8 to retract the right wing (the wing moves closer to the vehicle).

Functions with the V4290 straight blade

(See figures 47 and 48 for the numbering of the buttons)

Function	Button	Description
RAISE	1	Press button #1 to raise the quick hitch and disengage the "FLOAT" mode.
LOWER	2	Press button #2 to lower the quick hitch and disengage the "FLOAT" mode.
FLOAT	3 & 4	Press buttons #3 and #4 together to engage the "FLOAT" mode.
ROTATION TO THE RIGHT	5	Press button #5 to rotate the blade to the right.
ROTATION TO THE LEFT	6	Press button #6 to rotate the blade to the left.

OPERATION

HYDRAULIC BLOCK DISASSEMBLING

(Figures 49-50)



WARNING To avoid vehicle damage or serious injury:

The oil supply and return hoses of the hydraulic control must be correctly connected (figure 50), or as mentioned below, to the hydraulic block before starting the engine. Starting the vehicle's engine with the hoses not connected could seriously damage the pump and other vehicle components.



WARNING To avoid vehicle damage or serious injury:

Before assembling or disassembling the hydraulic control, bring the vehicle to a complete stop, wait for all movement to stop, apply parking brake, lower the equipment to the ground, shut off the engine and remove the ignition key.

PREPARATION - RTV900

Hydraulic Block Disassembling

1. Bring the vehicle to a complete stop, apply parking brake, lower the equipment to the ground, shut off the engine and remove the ignition key.
2. **Figures 49-50:** According to the figure 49, connect the supply hose from the RTV pump (item 1; red identification ring) to the oil return hose toward the RTV lift kit valve (item 2; green identification ring).
3. Install the dust cap on the quick coupler of the oil return hose toward the RTV tank (item 3; blue identification ring).
4. Secure the hoses to the vehicle.
5. Make sure the hoses are well connected before starting engine. **Starting engine with hoses wrongly connected may causes major damages to the pump and other vehicle components.**

Hydraulic Block Reassembling

1. Bring the vehicle to a complete stop, apply parking brake, lower the equipment to the ground, shut off the engine and remove the ignition key.
2. Connect the supply hose from the RTV pump (item 1; red identification ring), the oil return hose toward the RTV lift kit valve (item 2; green identification ring) and the oil return hose toward the RTV tank (item 3; blue identification ring) to the hydraulic block by matching the identification rings.
3. Make sure the hoses are well connected to the block before starting engine. **Starting engine with hoses wrongly connected may causes major damages to the pump and other vehicle components.**

OPERATION

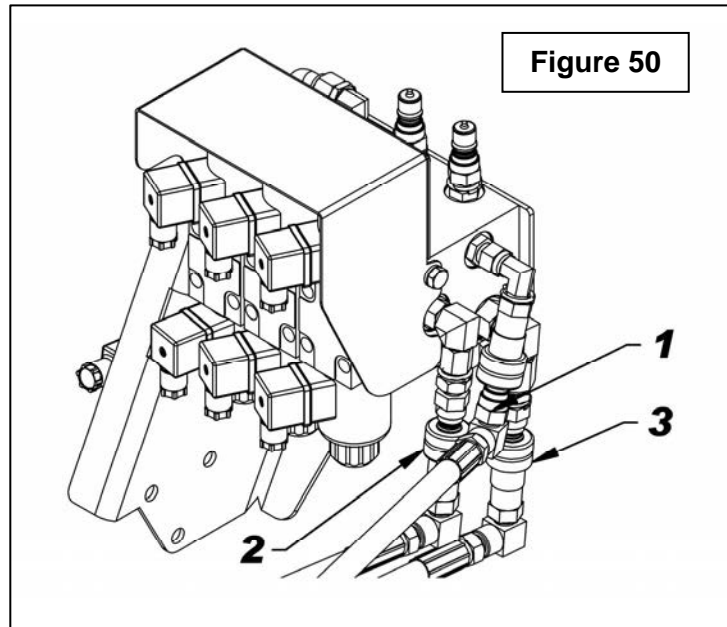
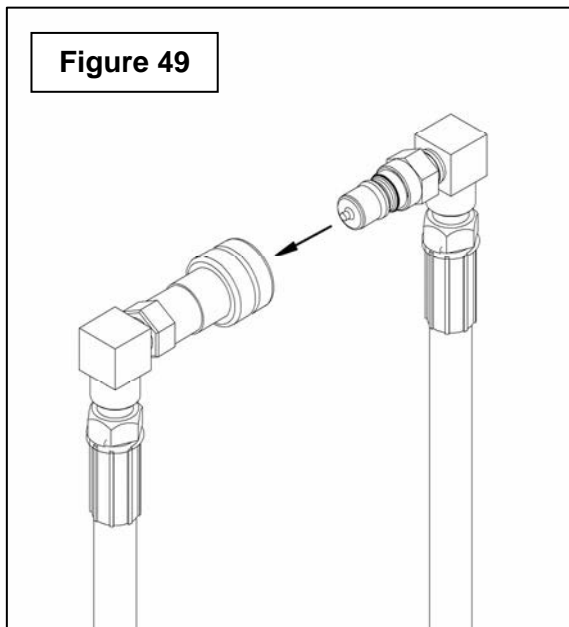
PREPARATION - RTV1100

Hydraulic Block Disassembling

1. Bring the vehicle to a complete stop, apply parking brake, lower the equipment to the ground, shut off the engine and remove the ignition key.
2. **Figures 49-50:** According to the figure 49, connect the supply hose from the RTV pump (item 1; green identification ring) to the oil return hose toward the RTV lift kit valve (item 2; red identification ring).
3. Install the dust cap on the quick coupler of the oil return hose toward the RTV tank (item 3; blue identification ring).
4. Secure the hoses to the vehicle.
5. Make sure the hoses are well connected before starting engine. **Starting engine with hoses wrongly connected may causes major damages to the pump and other vehicle components.**

Hydraulic Block Reassembling

1. Bring the vehicle to a complete stop, apply parking brake, lower the equipment to the ground, shut off the engine and remove the ignition key.
2. Connect the supply hose from the RTV pump (item 1; green identification ring), the oil return hose toward the RTV lift kit valve (item 2; red identification ring) and the oil return hose toward the RTV tank (item 3; blue identification ring) to the hydraulic block by matching the identification rings.
3. Make sure the hoses are well connected to the block before starting engine. **Starting engine with hoses wrongly connected may causes major damages to the pump and other vehicle components.**



MAINTENANCE

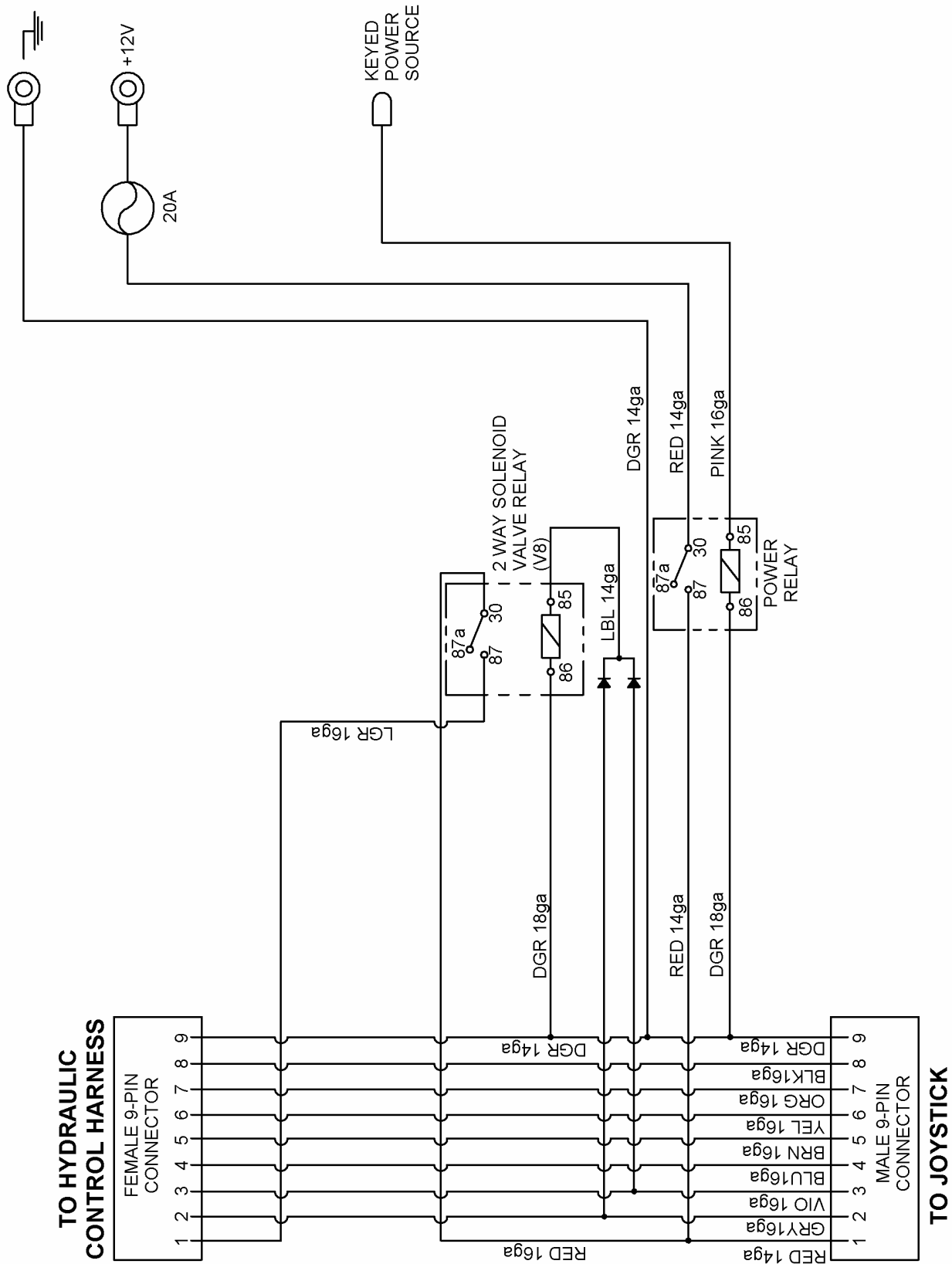
STORAGE

Before storing the hydraulic control certain precautions should be taken to protect it from deterioration.

1. Clean the bock.
2. Make all necessary repairs.
3. Replace all decals that are damaged, lost, or otherwise become illegible. If a part to be replaced has a sign on it, obtain a new decal from your dealer and install it in the same place as on the removed part.
4. Repaint all parts from which paint has worn or peeled.
5. Store in a dry place
6. Install the dust caps on the quick couplers and install the appropriate dust plugs on the hoses.

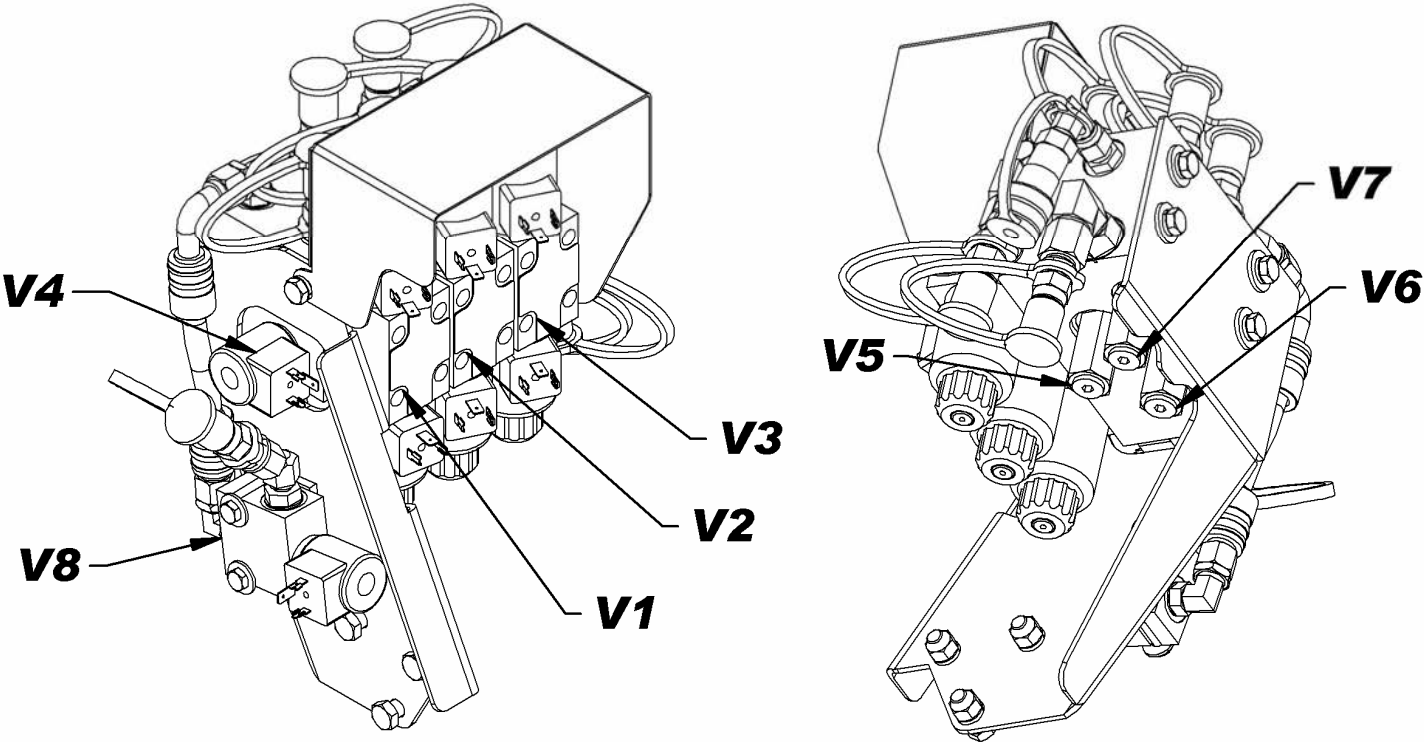
HYDRAULIC AND ELECTRICAL DIAGRAMS

POWER SUPPLY HARNESS



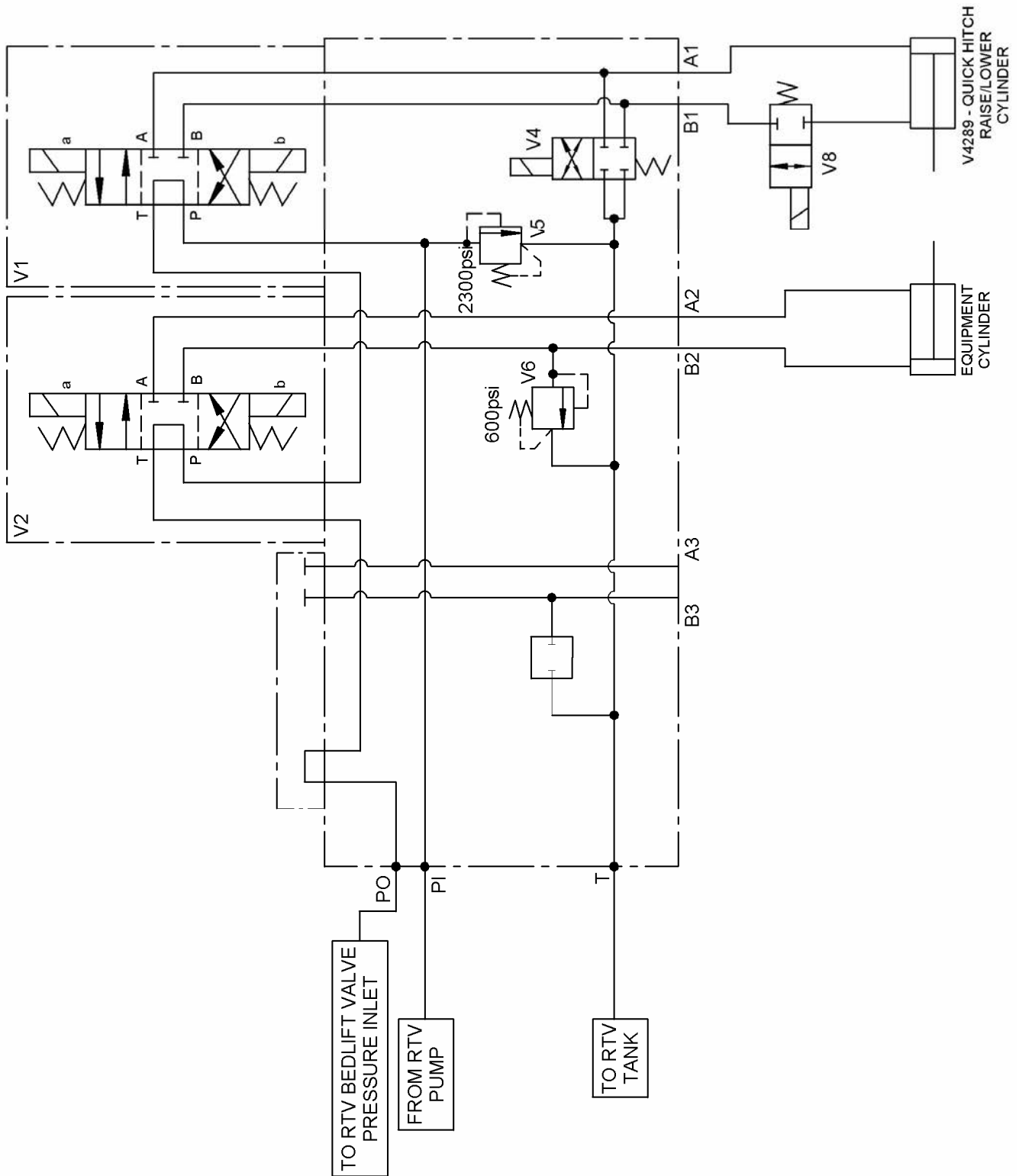
HYDRAULIC AND ELECTRICAL DIAGRAMS

VALVES



HYDRAULIC AND ELECTRICAL DIAGRAMS

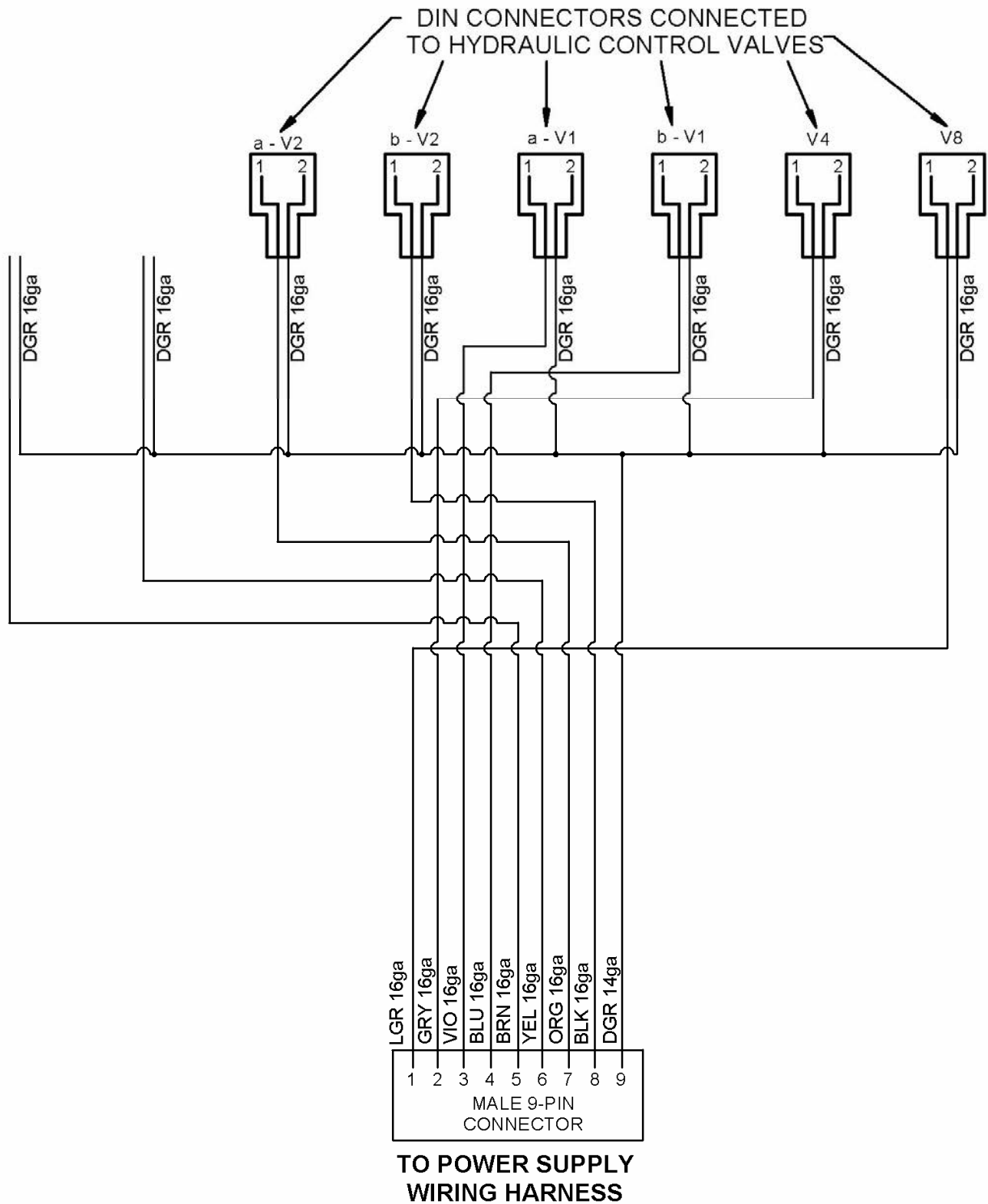
HYDRAULIC DIAGRAM – V4203



NOTE: When the V4205 Hydraulic Conversion Kit is installed, the V4203 becomes a V4204 therefore refer to the appropriate diagram.

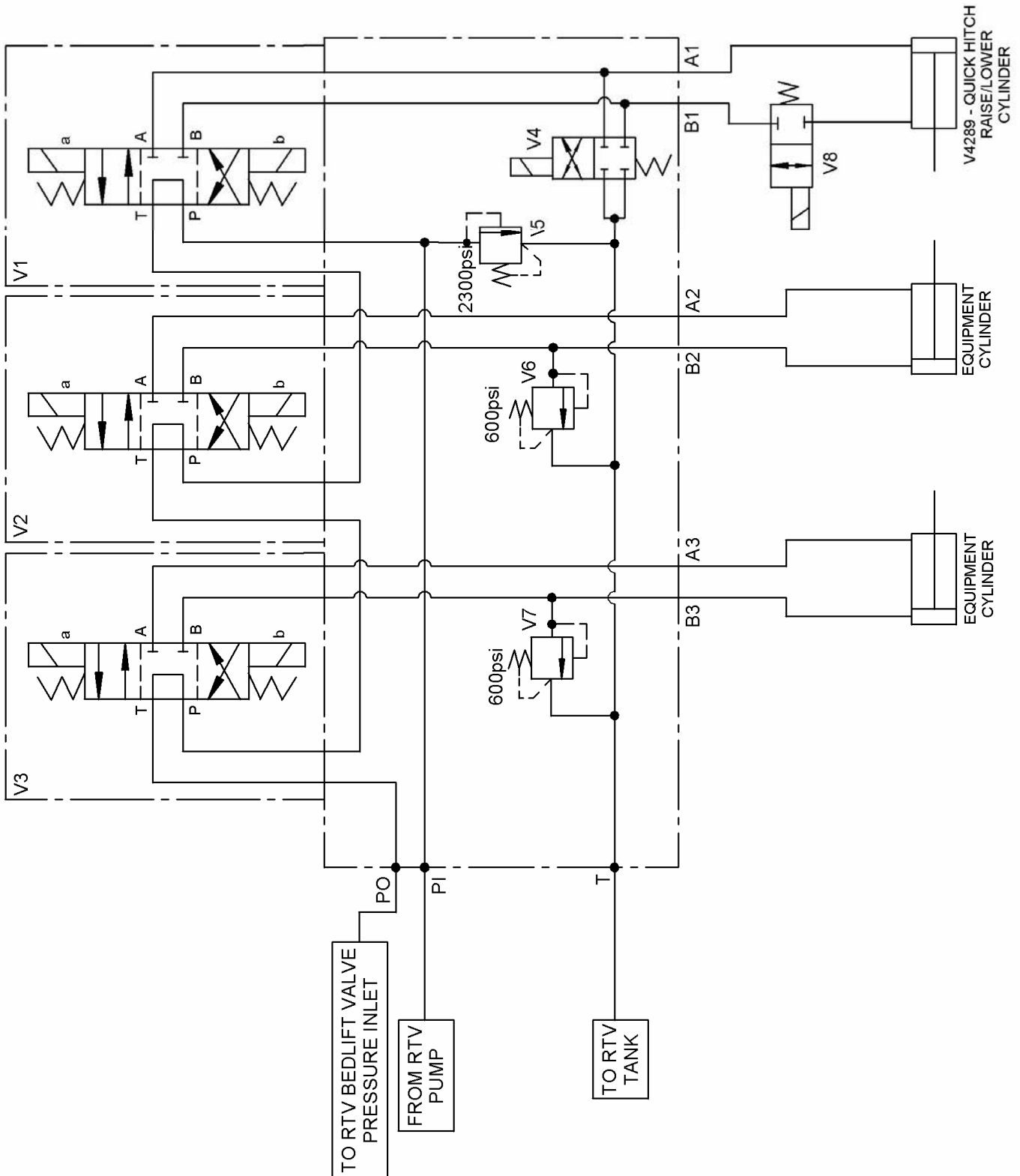
HYDRAULIC AND ELECTRICAL DIAGRAMS

ELECTRICAL HARNESS – V4203



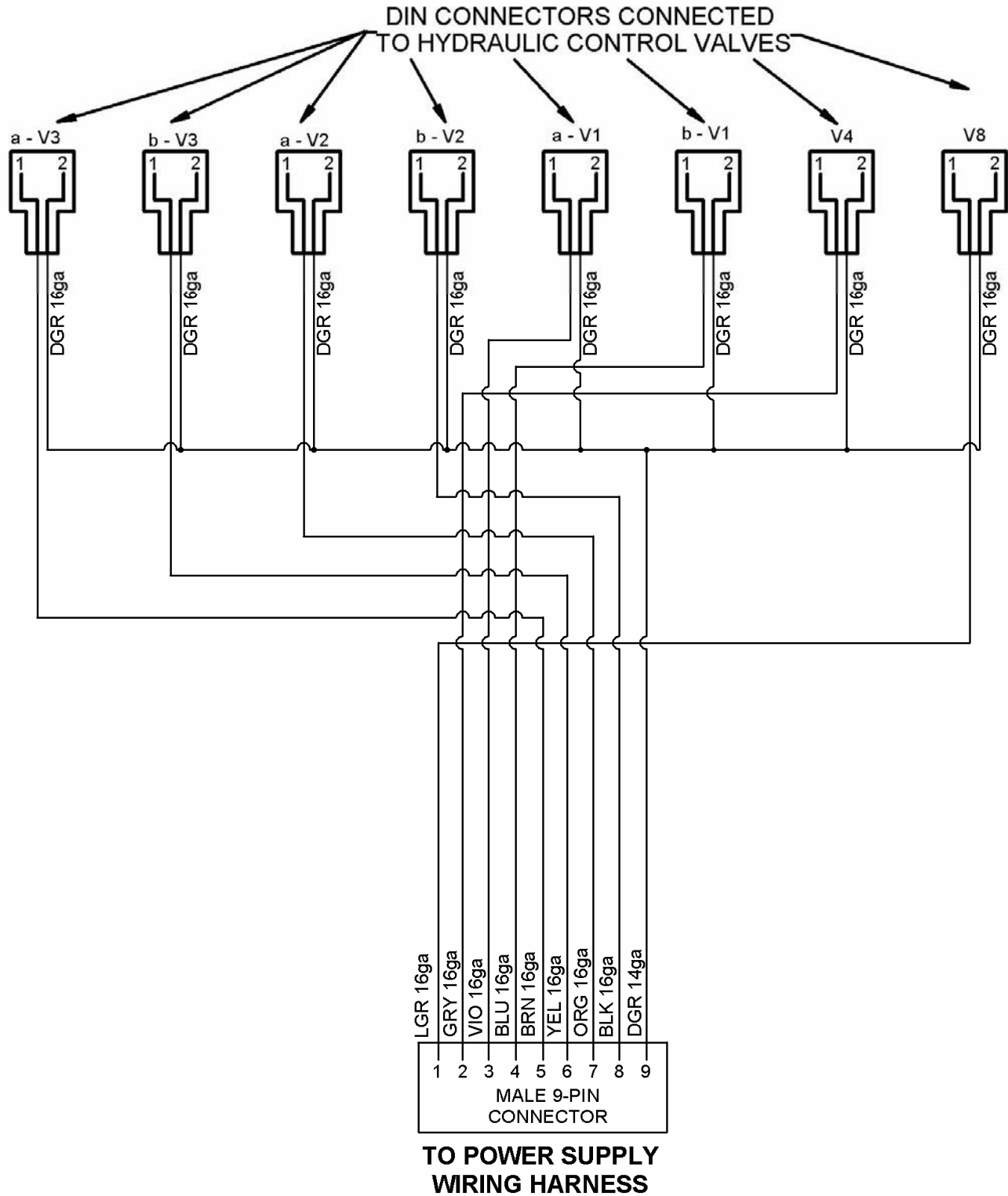
HYDRAULIC AND ELECTRICAL DIAGRAMS

HYDRAULIC DIAGRAM – V4204



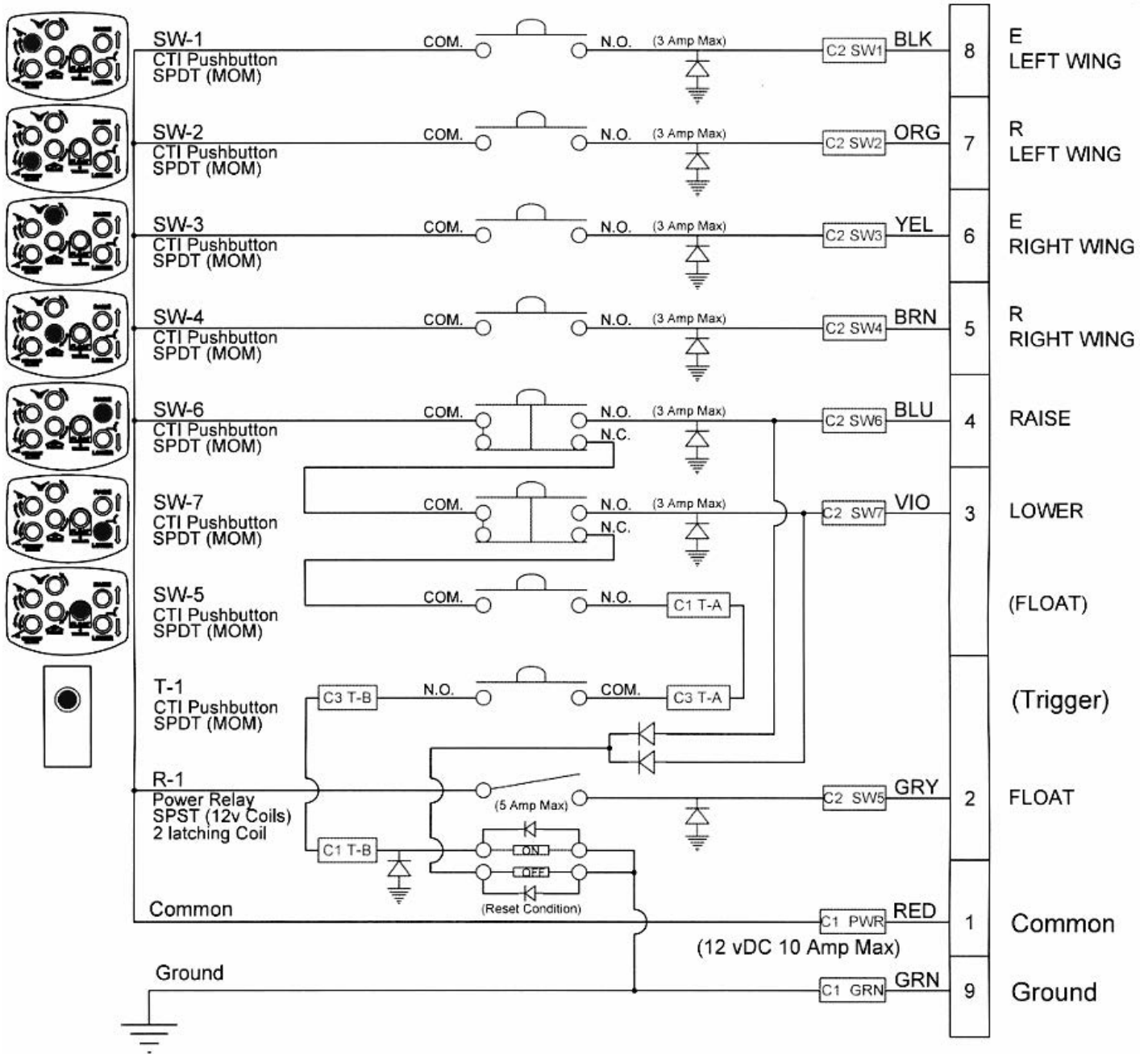
HYDRAULIC AND ELECTRICAL DIAGRAMS

ELECTRICAL HARNESS – V4204



HYDRAULIC AND ELECTRICAL DIAGRAMS

ELECTRICAL DIAGRAM – VALVE CONTROL HANDLE



PARTS

INTRODUCTION

All parts are illustrated in "exploded views" which show the individual parts in their normal relationship to each other. Reference numbers are used in the illustrations. These numbers correspond to those in the "Reference Number" (REF) column, and are followed by the description and quantity required.

"Right Hand" and "Left Hand" sides of the machine are determined by those seen by the conductor looking at the back of the machine.

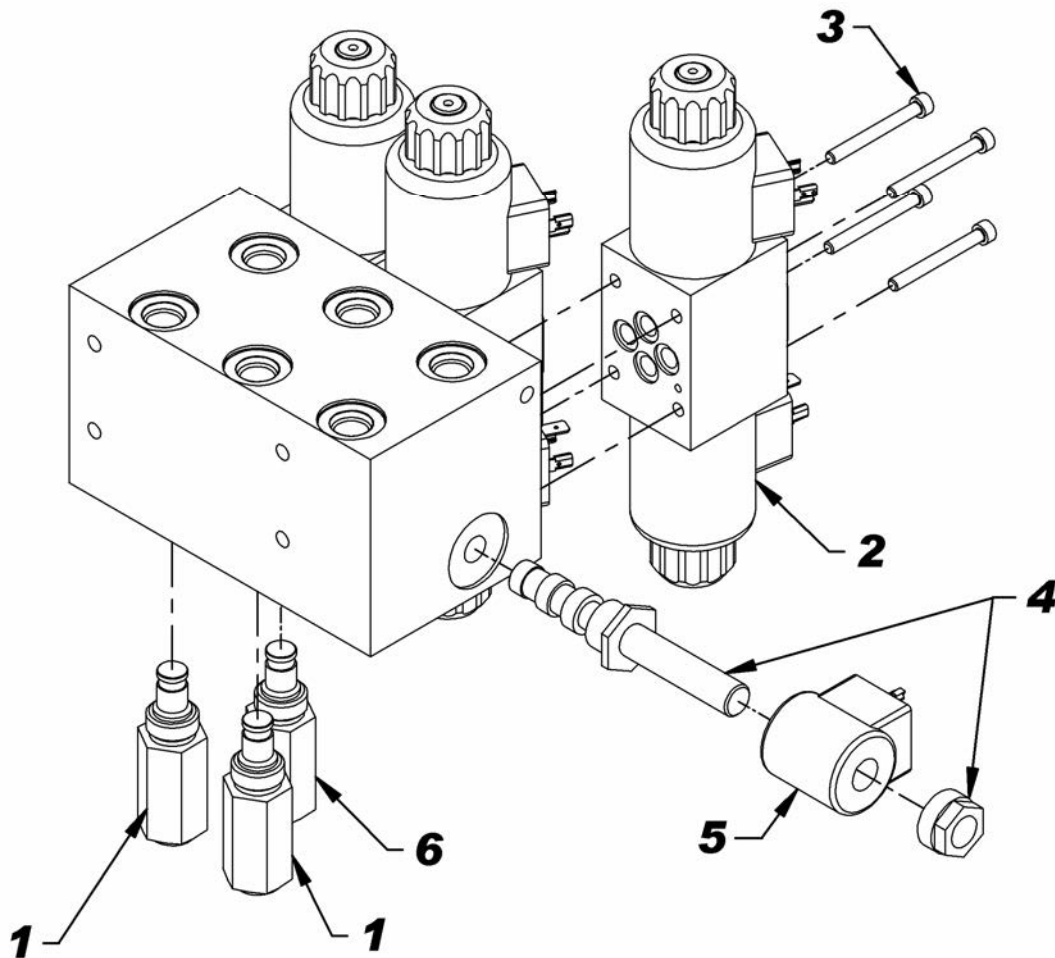
Orders must give the complete description, correct part number, the total amount required, the serial number, the method of shipment and the shipping address.

The manufacturer reserves the right to change, modify, or eliminate from time to time, for technical or other reasons, certain or all data, specifications, or the product or products themselves, without any liability or obligation.

PARTS

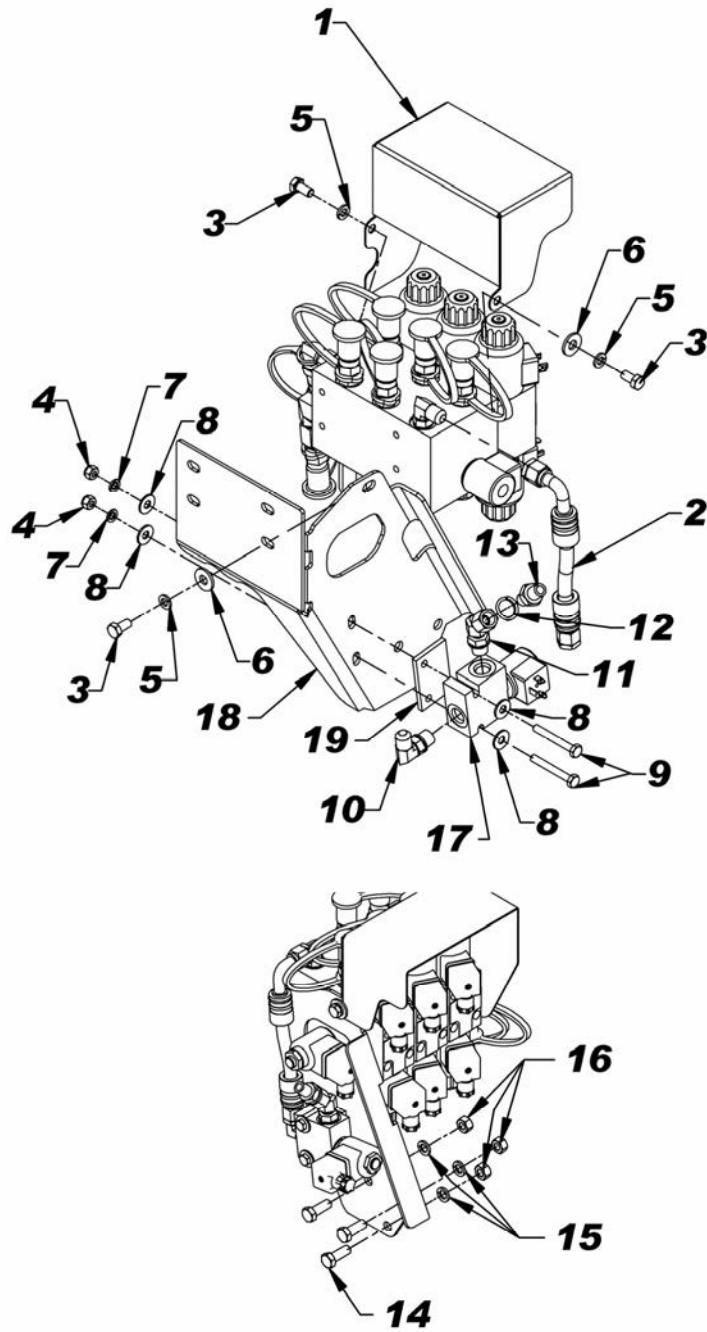
HYDRAULIC BLOCK– V4203 & V4204

REF.	DESCRIPTION	QTY	QTY	PART NUMBER	CODE
		V4203	V4204		
1	Relief valve preset at 600 PSI	1	2	77700-01120	3900437
2	Valve double action D03 with DIN connectors	2	3	77700-01119	3900436
3	Allen socket head capscrew 10-24 NC x 1 3/4" Gr.5 black	8	12	77700-01166	0800018
4	Cartridge 4 way, 2 positions (nut included)	1	1	77700-01158	3920020
	Seal kit	1	1	77700-01161	3920023
5	Coil 12 VDC DIN connector	1	1	77700-01159	3920021
6	Relief valve preset at 2300 PSI	1	1	77700-01172	3900445



PARTS

HYDRAULIC BLOCK ASSEMBLY – V4203-V4204



PARTS

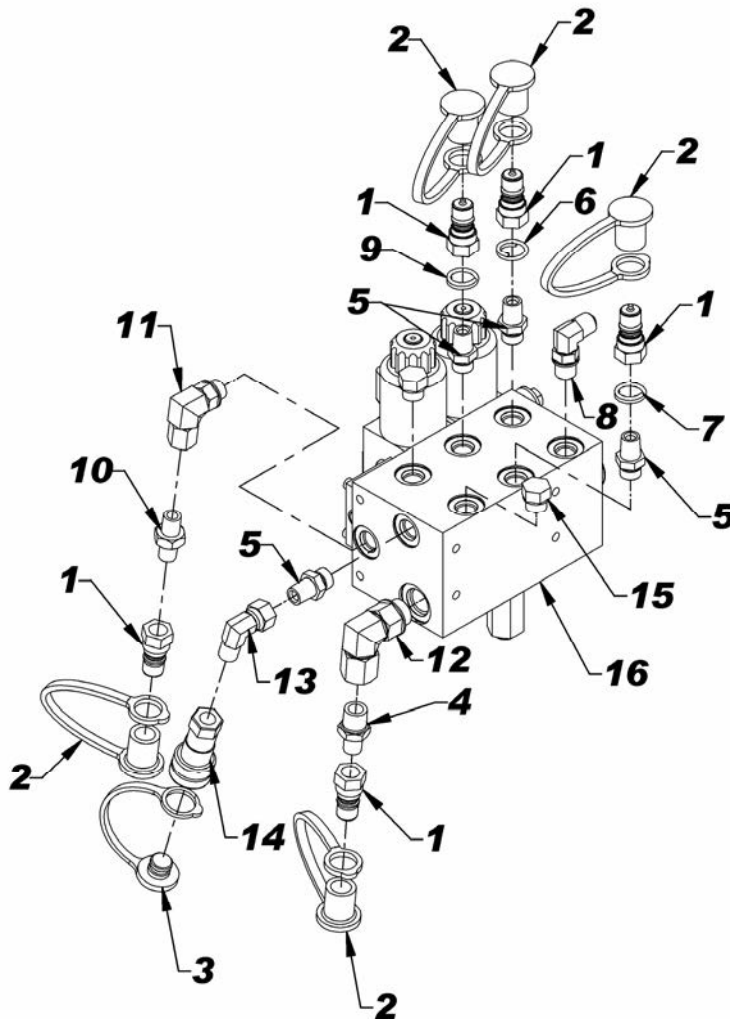
HYDRAULIC BLOCK ASSEMBLY – V4203-V4204

REF.	DESCRIPTION	QTY	PART NUMBER	CODE
	Hardware bag – CAN (not illustrated)	1	77700-01130	668773
	Hardware bag – US (not illustrated)	1	77700-01131	668836
1	Valve guard	1	77700-01134	668849
2	Hose 1/4" x 7 3/8" lg, 9/16"JIC swf x 9/16"JIC swf shb 90°	1	77700-01150	3700151
3	Bolt hex. 5/16"NC x 5/8" lg. Gr.5, PTD	6	75599-01212	0100017
4	Nut nylon insert ø1/4"NC PTD	2	75599-31911	1000003
5	Lockwasher 5/16" PTD.	6	75599-33012	1200003
6	Flat washer 5/16"(ø3/8" int.) PTD	5	75599-32012	1400003
7	Lockwasher 1/4" PTD	2	75599-33011	1200002
8	Flat washer 1/4"(ø5/16" int.) PTD	4	75599-32011	1400002
9	Bolt hex. Ø1/4"NC x 2 " gr.5 PTD	2	75599-01140	0100010
10	Elbow 90°, 9/16"JIC male x 9/16"ORB male	1	77700-01145	2600147
11	Elbow 45°, 9/16"ORB male x 1/4"NPT swf	1	77700-01129	655885
12	Identification ring - orange	1	77700-00998	4200033
13	Adapter 1/4"NPT male x 1/4" NPT male	1	70060-04152	660780
14	Bolt 3/8" x 1"NC, gr.5, PTD	3	75599-01320	0100038
15	Lockwasher 3/8", PTD.	3	75599-33013	1200004
16	Nut hex. Ø3/8"NC PTD	3	75599-31013	0900003
17	Solenoid valve	1	77700-01151	3900440
18	Hydraulic block support	1	77700-01133	668841
19	Spacer	1	77700-01135	668850

PARTS

HYDRAULIC BLOCK & FITTINGS – V4203

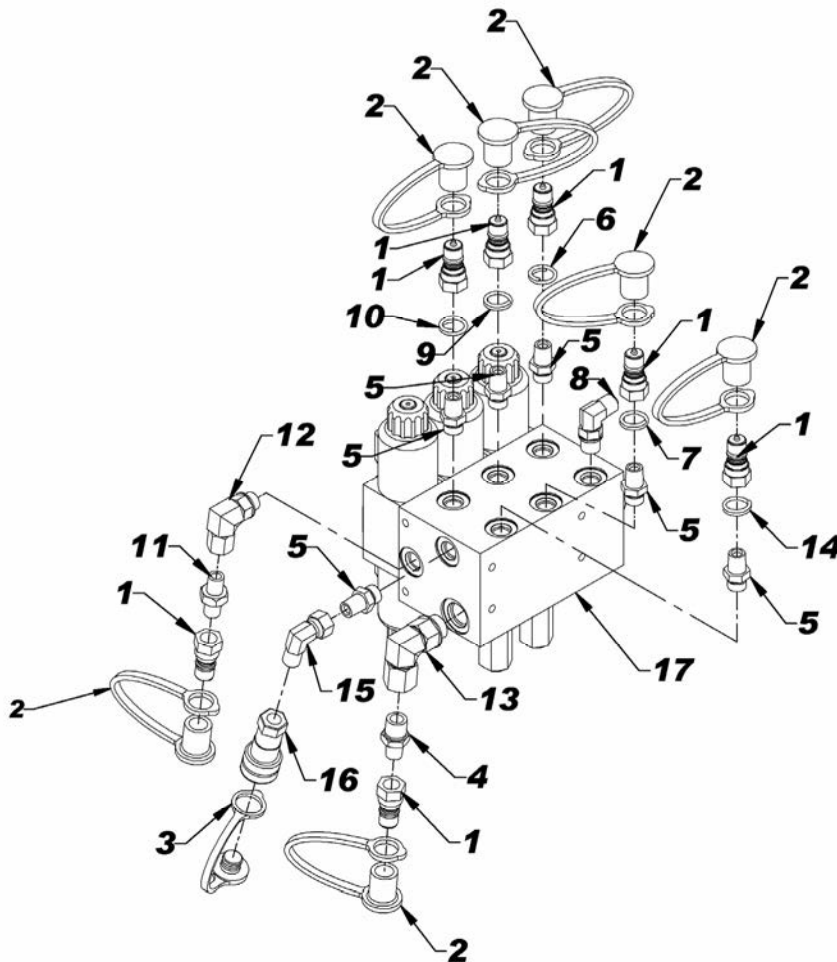
REF.	DESCRIPTION	QTY	PART NUMBER	CODE
1	Quick coupler 1/4"NPT male	5	70060-04361	2600051
2	Dust cap 1/4"NPT	5	70060-04362	2600052
3	Dust plug	1	70060-00336	2600061
4	Adapter 3/8"NPT male x 1/4"NPT male	1	77700-01148	2600193
5	Adapter 9/16"ORB male x 1/4"NPT	4	77700-01118	2600188
6	Identification ring - white	1	77700-00997	4200032
7	Identification ring - blue	1	70060-01727	658205
8	Elbow 90°, 9/16"JIC male x 9/16"ORB male	1	77700-01145	2600147
9	Identification ring - red	1	70060-01726	658204
10	Adapter 1/4"NPT male x 1/4"NPT male	1	70060-04152	660780
11	Elbow 90°, 9/16"ORB male x 1/4"NPT swf	1	70060-01017	654849
12	Elbow 90°, 3/4"ORB male x 3/8"NPT swf	1	70060-04353	655374
13	Elbow 90°, 1/4"NPT male x 1/4"NPT swf	1	70001-00599	655211
14	Quick coupler 1/4" female	1	70060-04310	664668
15	Plug Ø 9/16" ORB	1	70060-01013	655730
16	Hydraulic block – 2 functions	1	77700-01154	3920016



PARTS

HYDRAULIC BLOCK & FITTINGS – V4204

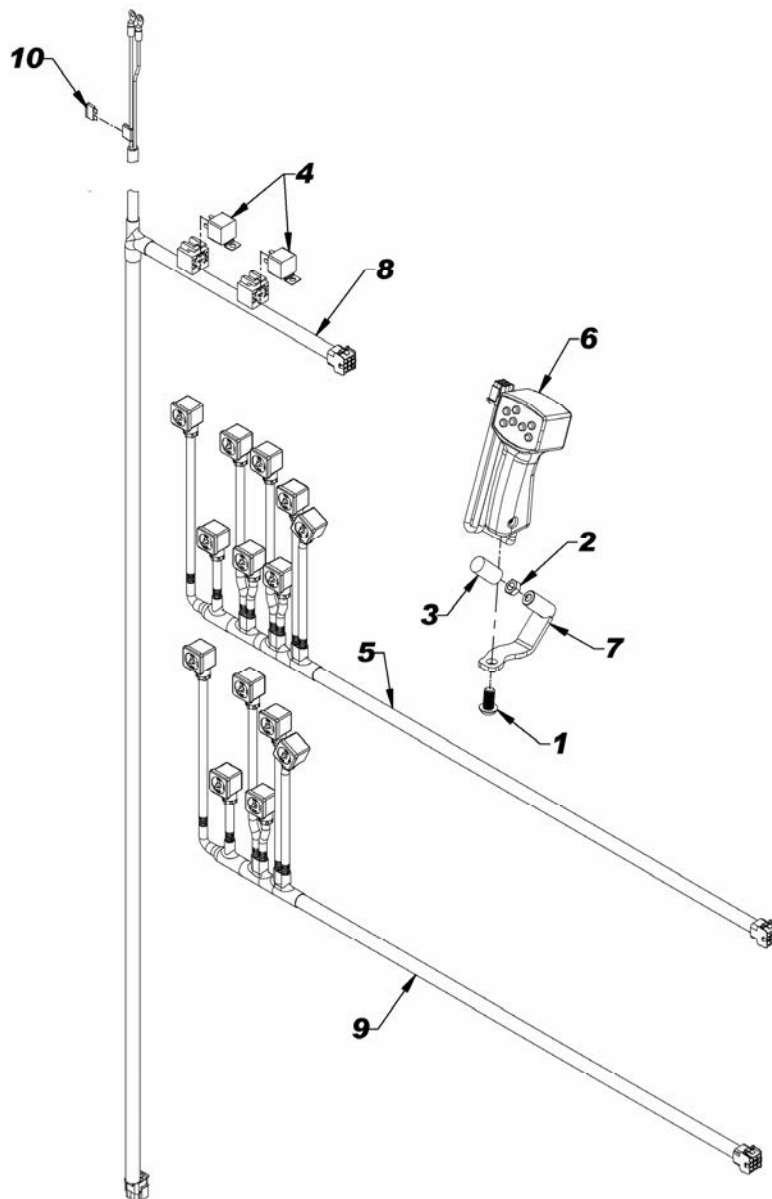
REF.	DESCRIPTION	QTY	PART NUMBER	CODE
1	Quick coupler 1/4"NPT male	7	70060-04361	2600051
2	Dust cap 1/4"NPT	7	70060-04362	2600052
3	Dust plug	1	70060-00336	2600061
4	Adapter 3/8"NPT male x 1/4"NPT male	1	77700-01148	2600193
5	Adapter 9/16"ORB male x 1/4"NPT male	6	77700-01118	2600188
6	Identification ring - white	1	77700-00997	4200032
7	Identification ring - blue	1	70060-01727	658205
8	Elbow 90°, 9/16"JIC male x 9/16"ORB male	1	77700-01145	2600147
9	Identification ring - red	1	70060-01726	658204
10	Identification ring - green	1	70060-01570	658209
11	Adapter 1/4"NPT male x 1/4"NPT male	1	70060-04152	660780
12	Elbow 90°, 9/16"ORB male x 1/4"NPT swf	1	70060-01017	654849
13	Elbow 90°, 3/4"ORB male x 3/8"NPT swf	1	70060-04353	655374
14	Identification ring - yellow	1	70001-00599	655211
15	Quick coupler 1/4" female	1	70060-04310	664668
16	Plug Ø 9/16" ORB	1	70060-01013	655730
17	Hydraulic block - 3 functions	1	77700-01153	3920015



PARTS

ELECTRICAL COMPONENTS – V4203 & V4204

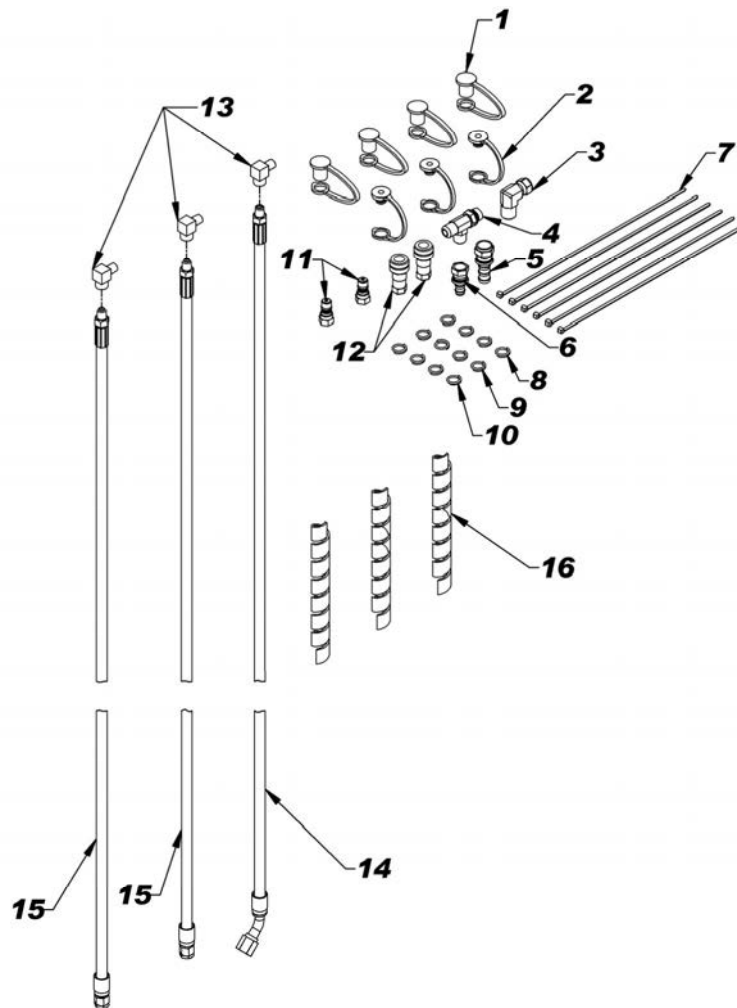
REF.	DESCRIPTION	QTY	QTY	PART NUMBER	CODE
		V4203	V4204		
1	Allen socket head cap screw 1/2" NC x 1" lg. Gr. 5 button head PTD	1	1	77700-01168	0800045
2	Nut hex. M10 x 1.25mm PTD	1	1	77700-01169	0900075
3	Cap 3/4" – 13/16" diam. x 1" lg	1	1	77700-01166	4200034
4	Relay, 12 V plastic	1	2	77700-00951	4000028
5	Wiring harness for hydraulic control - V4204	N/A	1	77700-01163	4000074
6	Valve control handle	1	1	77700-01162	4000073
7	Handle support	1	1	77700-01132	668840
8	Wiring harness for power supply	1	1	77700-01165	4000076
9	Wiring harness for hydraulic control - V4203	1	N/A	77700-01164	4000075
10	Fuse ATO 20 amp	1	1	77700-01170	663327



PARTS

HYDRAULIC COMPONENTS – V4203 & V4204

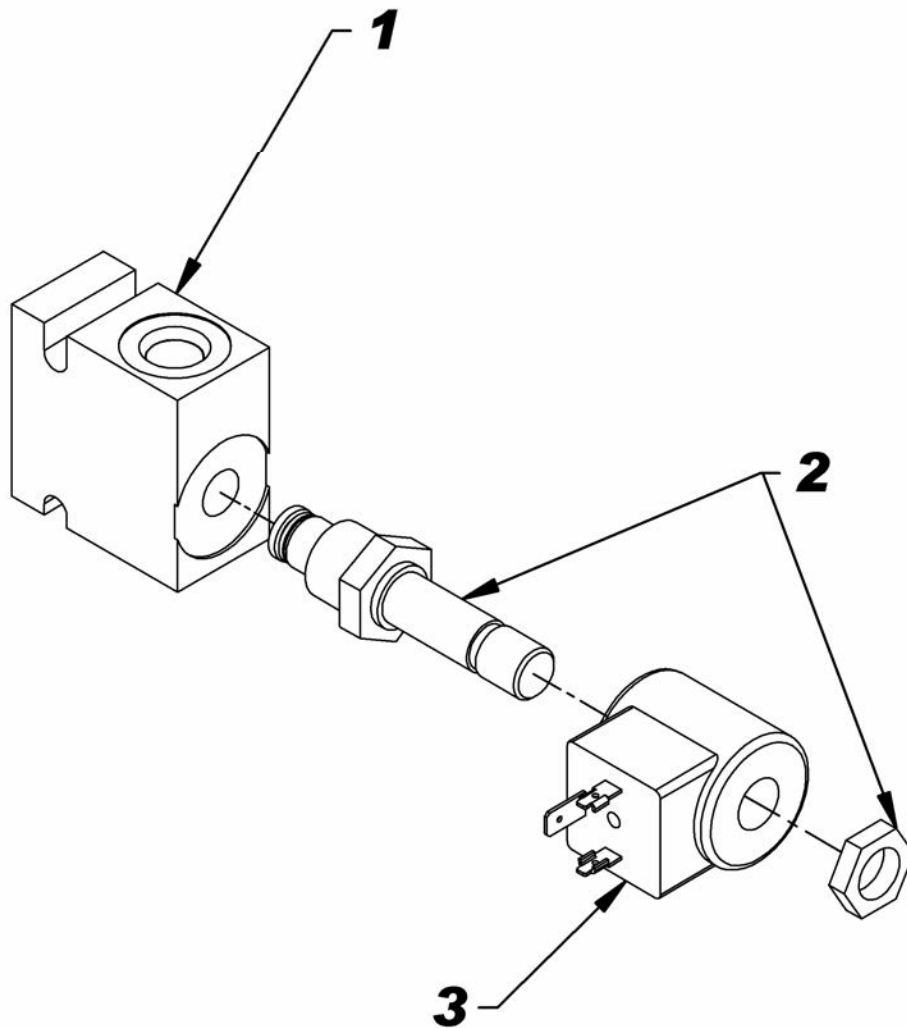
REF.	DESCRIPTION	QTY	PART NUMBER	CODE
1	Dust cap 1/4"NPT	4	70060-04362	2600052
2	Dust plug 1/4" non threaded	3	70060-00336	2600061
3	Elbow 90°, 7/8" JIC male x 3/4" JIC swf	1	77700-01144	2600130
4	Fitting "T", 3/4" ORB male x 3/4" JIC m	1	77700-01146	2600190
5	Union 7/8" JIC female for 5/8" low pressure hose	1	77700-01171	2600192
6	Union 3/4" JIC female for 1/2" low pressure hose	1	77700-01147	2600191
7	Tie wrap 5.0mm x 15" lg., black	7	77700-01137	2100006
8	Identification ring - green	4	70060-01570	658209
9	Identification ring - blue	4	70060-01727	658205
10	Identification ring - red	4	70060-01726	658204
11	Quick coupler 1/4"NPT male	2	70060-04361	2600051
12	Quick coupler 1/4" female	2	70060-04310	664668
13	Elbow 90°, 1/4"NPT male/fem	3	70060-01753	655254
14	Hose 3/8" x 143" Lg, 1/4"NPT male x 3/4" JIC swf shb 45°	1	77700-01150	3700150
15	Hose 3/8" x 140" Lg, 1/4"NPT male x 3/4" JIC swf	2	77700-01149	3700149
16	Plastic guard for 10" hose, black	3	77700-01136	668890



PARTS

SOLENOID VALVE ASSEMBLY – 77700-01151

REF.	DESCRIPTION	QTY	PART NUMBER	CODE
1	Hydraulic block, 2 way port	1	77700-01157	3920019
2	Cartridge, 2 way (nut included)	1	77700-01155	3920017
	Seal kit	1	77700-01160	3920022
3	Coil 12 VDC DIN connector	1	77700-01156	3920018



TORQUE SPECIFICATION TABLES

GENERAL SPECIFICATION TABLE

Use the following torques when special torques are not given. Note: These values apply to fasteners as received from supplier, when dry. These values do not apply if lubricants are used.

BOLT SIZES (SAE)	TORQUE	
INCHES	Pounds-Foot	Newton-Meters
1/4	5	7
5/16	10	14
3/8	20	27
7/16	25	41
1/2	88	119
5/8	165	224
3/4	297	403
9/16	121	164
7/8	440	597
1	638	865
1 1/8	840	1139
1 1/4	1180	1600
1 3/8	1570	2129
1 1/2	2070	2807

BOLT SIZES (METRIC)	TORQUE	
MILLIMETERS	Pounds-Foot	Newton-Meters
M6	10	13
M8	22	30
M10	40	54
M12	59	80
M14	93	126
M16	130	176
M18	168	228
M20	205	278

TORQUE SPECIFICATION TABLES

TORQUE SPECIFICATION TABLE FOR HYDRAULIC FITTINGS

Use the following torques when a specific torque is not given. Note: These values apply to fittings when dry. These values do not apply if lubricants are used..

SIZE OF FITTINGS	TORQUE	
	foot-pounds	Newton-meters
SIZE (JIC) - INCHES		
03 - 3/8" - 24	8-9	12-13
04 - 7/16" - 20	13-15	18-20
05 - 1/2" - 20	14-15	19-21
06 - 9/16" - 18	23-24	32-33
08 - 3/4" - 16	40-43	55-57
10 - 7/8" - 14	43-48	59-64
12 - 1 1/16" - 12	68-75	93-101
14 - 1 3/16" - 12	83-90	113-122
16 - 1 5/16" - 12	112-123	152-166
20 - 1 5/8" - 12	146-161	198-218
24 - 1 7/8" - 12	154-170	209-230
32 - 2 1/2" - 12	218-240	296-325

SIZE (ORB) - INCHES	TORQUE	
	foot-pounds	Newton-meters
03 - 3/8" - 24	8-10	11-13
04 - 7/16" - 20	14-16	20-22
05 - 1/2" - 20	18-20	24-27
06 - 9/16" - 18	24-26	33-35
08 - 3/4" - 16	50-60	68-78
10 - 7/8" - 14	72-80	98-110
12 - 1 1/16" - 12	125-135	170-183
14 - 1 3/16" - 12	160-180	215-245
16 - 1 5/16" - 12	200-220	270-300
20 - 1 5/8" - 12	210-280	285-380
24 - 1 7/8" - 12	270-360	370-490

TORQUE SPECIFICATION TABLES

SIZE (NPT) - INCHES	Torque FFT
1/8" - 27	2.0 - 3.0
1/4" - 18	2.0 - 3.0
3/8" - 18	2.0 - 3.0
1/2" - 14	2.0 - 3.0
3/4" - 16	2.0 - 3.0
1" - 11 1/2"	1.5 - 2.5
1 1/4" - 11 1/2"	1.5 - 2.5
1 1/2" - 11 1/2"	1.5 - 2.5

ASSEMBLY

The method used to assemble fittings with NPT threads is in two stages. First tighten firmly by hand then tighten one again according to the number of turns listed on the above table. The following method is recommended to minimize the risks of leaks and/or damages to the parts.

6. Inspect threads and tapping to make sure they are clean.
7. Apply a sealant/lubricant product to the NPT threads (teflon covered threads are preferable to other lubricating products). If PTFE tape (teflon) is used, make 1,5 or 2 turns clockwise.

Attention: More than 2 turns can cause distortion or cracks in the orifice.

8. Tighten the fitting by hand.

9. Screw the fitting the number of turns listed on the above table making sure that in the case of a shape fitting the end is aligned to the desired position. **Never unscrew a fitting to obtain the proper alignment.**

10. If the leak persists after having followed the preceding instructions, check that the threads are not damaged and the number of seated threads.

If the threads are very damaged, replace the fitting. If the tapping is damaged, retap if possible or replace the part.

Usually, the number of threads seated is between 3, 5 and 6. If the range is different it would indicate that the fitting was tightened too much or not enough or that the tightening was not within thread tolerances. If the fitting is not tight enough, tighten but never more than one turn. If it's too tight, control the threading and tapping and replace the section that has threads that are not within tolerances.

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