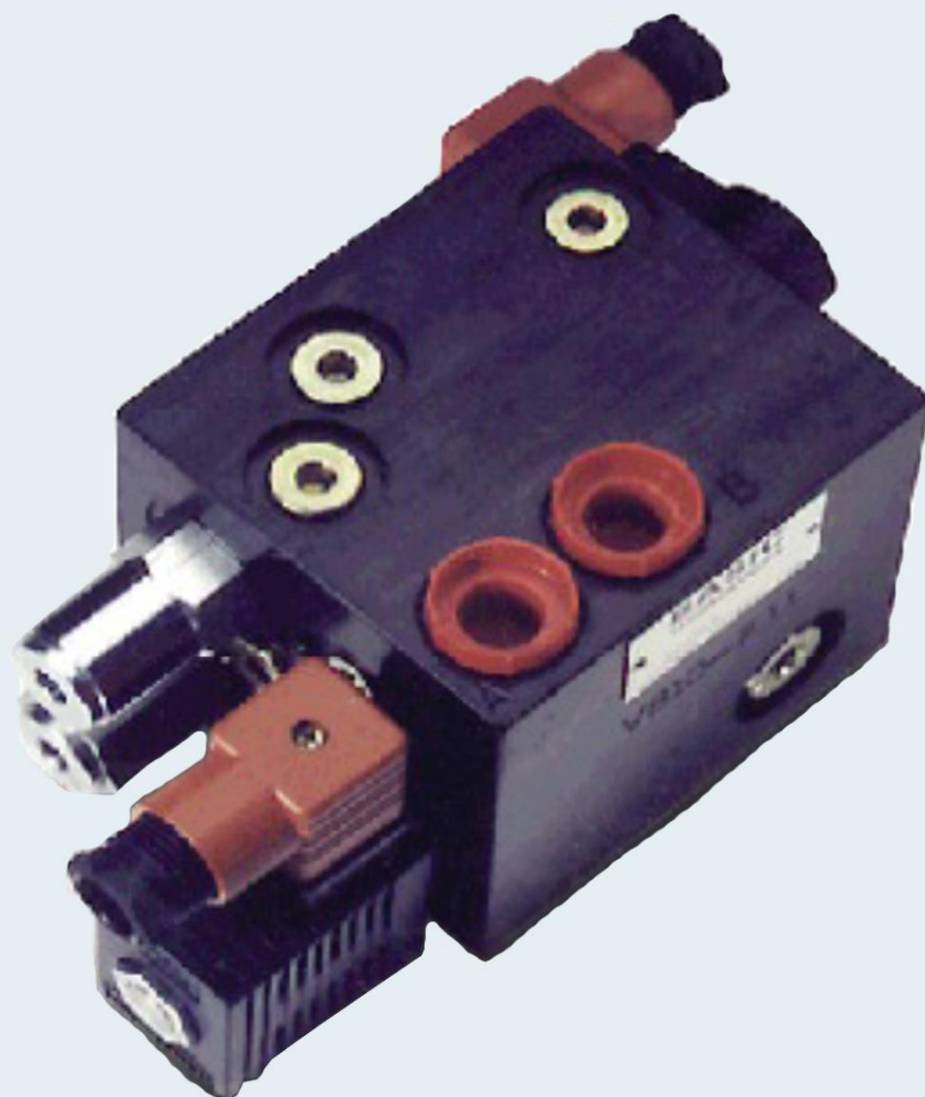


# Power Float Manifold

Installation and Operations Manual  
Module 11A



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# 1 Features

Using the Power Float System when plowing will provide you the following benefits:

1. Reduced blade wear
2. Reduced damage to the road surface
3. Reduced fuel consumption
4. Increased maneuverability of the vehicle on icy surfaces

**Warning:** Only trained personnel should operate this equipment. Repairs and adjustment have to be done by trained personnel.

**Read this instruction carefully:**

High-pressure oil easily punctures skin causing serious injury or death.

If injured, seek emergency medical help. Immediate surgery is required to remove oil. Do not use fingers or skin to check for leaks. Lower load or relieve hydraulic pressure before loosening fittings.

# 2 Functional Purpose

The Power Float Manifold reduces the effective weight of the plow on the road surface. This is achieved by lifting some weight from the plow edge off the road with pressure from the truck's hydraulic system.

# 3 Specifications

The Power Float Manifold will only work in conjunction with a load sense pump when the hydraulic valve for the plow function is in neutral position and all ports are closed in the centre to the plow cylinder.

- Maximum operating pressure is 3000 PSI
- Maximum plow lift pressure 50 to 1500 PSI
- Maximum flow through the manifold is 6 GPM

## 4 System Installation

The Power Float Manifold can be added to most existing and new installations.

### 4.1 Hydraulic Connection

1. Connect the “A” port (#8SAE) of the Power Float Manifold with a T connection into the existing cap end hydraulic line of the plow-lifting cylinder.
2. Connect the “B” port (#8SAE) of the Power Float Manifold with a T connection into the existing rod side hydraulic line of the plow-lifting cylinder. If you have a single acting plow cylinder you have to plug the “B” port on the Power Float Manifold.
3. Connect the “T” port (#12SAE) of the Power Float Manifold with a T connection in to the tank line of the vehicle’s hydraulic system.
4. Connect the “G1” port (#4SAE) of the Power Float Manifold to the existing load-sensing line of the vehicle’s hydraulic system. This has to be done by using a shuttle valve. The shuttle valve has to be installed so that either the main-hydraulic valve or the Power Float Manifold can send the signal to the pump. Also see the attached schematic.
5. Connect the “IN” port (#8SAE) of the Power Float Manifold to the existing pressure line of the vehicle’s hydraulic system. This has to be done by using a T connection to connect into the line coming out of the main pump.

### 4.2 Electric Connection

1. Connect the Power Float Manifold to the electrical system with the CS-105 Power Float control unit as per the attached schematic for your controller option.
2. For manual operation see page # 9.
3. For automatic operation a proximity sensor can be installed on the plow lift mechanism to monitor the plow position and to keep the system off when the plow is in the travel position. The sensor sends a 12 volt signal to the CS-105 control console when the plow is within 1/2” to 1” from the ground. This activates the Power Float System when the main power switch is also in the on position. See the attached schematic on page #10.

## 5 Calibration

1. Install a pressure gauge in the GA port (#4SAE) of the Power Float Manifold. Use a gauge that can withstand the maximum system pressure.
2. Start the vehicle engine.
3. Raise the front plow off the ground to a normal transport position.

4. Record the pressure reading from the gauge, which is needed to hold the plow in the air. Make sure that you have not reached the end position of the plow lift cylinder.
5. Lower the plow to the ground.
6. Switch the Power Float Manifold on and adjust the Pressure-Reducing-Relieving valve on the Power Float Manifold (position #60.5 on the attached schematic #2983) to half the recorded pressure in step #4. This will remove half of the weight on the plow blade edge.
7. Drive the truck at a normal plowing speed and see if the plow follows the ground without leaving patches of snow on the road when you go over bumps. It may be necessary to put some weight back onto the plow or it may be possible to remove more than half of the weight of the plow from the road.
8. Reducing the setting of the Pressure-Reducing-Relieving valve will increase the weight of the plow on the road when the Power Float Manifold is switched on.
9. Increasing the setting of the Pressure-Reducing-Relieving valve will reduce the weight of the plow on the road when the Power Float Manifold is switched on.
10. The proximity sensor must sense when the plow is on the road surface. This connection must be broken once the blade edge is 1" – 1 ½" or greater from the road surface. Set the plow edge 1" to 1 ½" off the road surface. (Pieces of 2x4 woods make a good spacer). Turn the Power Float on. Position the inductive sensor so that the Power Float active light just goes off at this plow position. The sensor must be mounted not less than 10mm away from a metal surface.

## 6 Spare Parts

### 6.1 Power Float Manifold

Part Number	Description
123768	Power Float Manifold

### 6.2 Spare Parts for Power Float Manifold (See Schematic # 2983)

Part Number	Description
009371	Reducing valve #60.5
124386	Directional valve #60.3
124115	Coil for valve #60.3.1
011957	Electrical connector Z45 for valve #60.3.2
121708	Poppet valve #60.2
124627	Coil for valve #60.2.1
004231	Electric connector Z45 for valve #60.2.2

Part Number	Description
135693	Flow control valve #60.4
194516	Plug STP-3 #60.6
194517	Plug STP-4 #60.7
194519	Plug STP-6 #60.8

## 7 Trouble Shooting and Maintenance

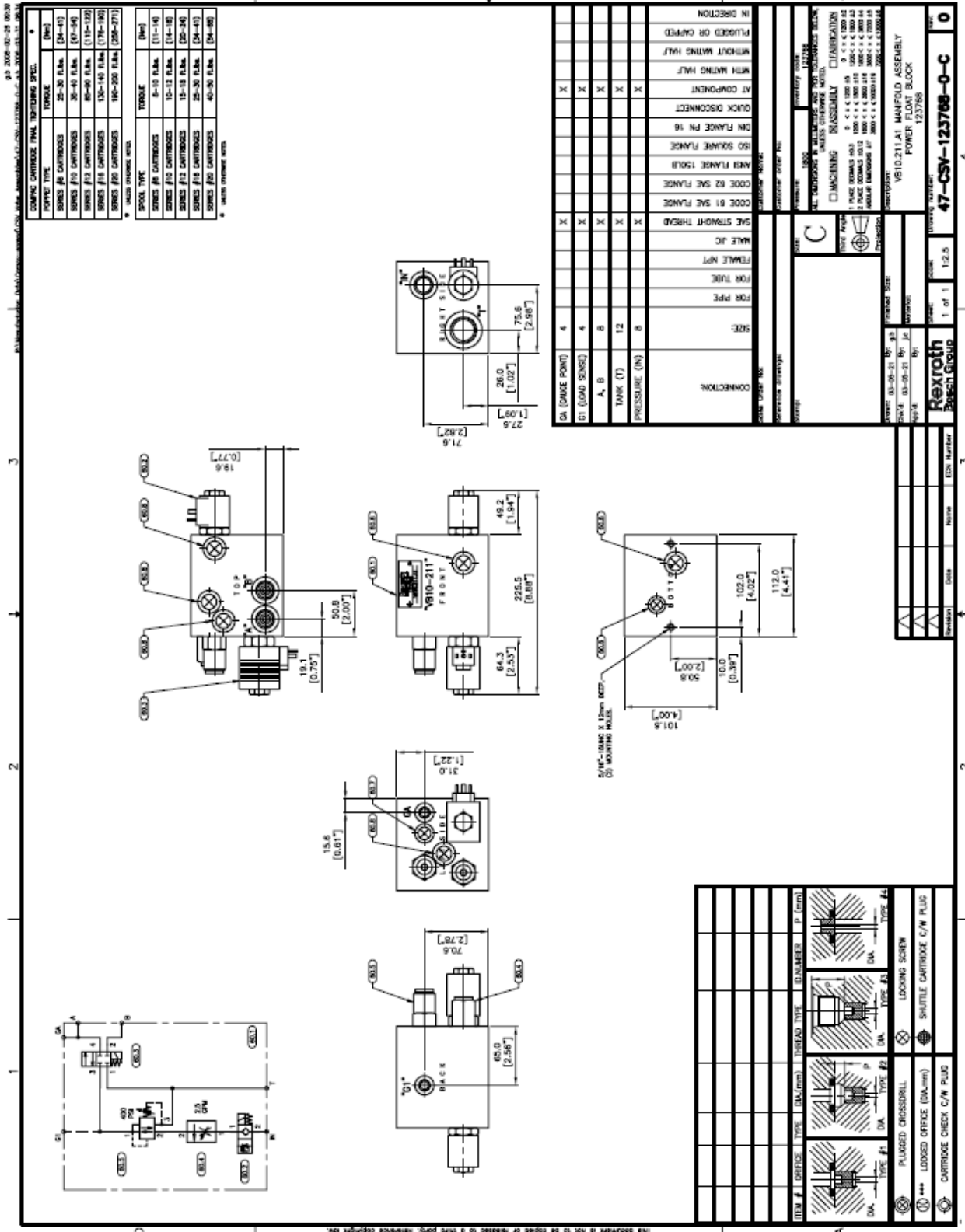
Symptoms	Probable Causes	Corrective Actions
Plow does not lift	Wrong installation of shuttle valve in load-sensing line.  Power Float manifold is switched on and does not switch off automatically.	Install the shuttle valve correctly.  Check the installation of the proximity sensor or check the installation of the electric connection from the joystick to the CS-105 Power Float Controller.
Plow only lifts with the main hydraulic block	Wrong installation of the shuttle valve in load-sensing line.  Wrong electric connection to the Power Float Manifold.	Install shuttle valve correctly.  Check the electric installation.
Plow does not stay up or lifts up too slowly	Power Float Manifold is switched on and does not switch off automatically if the plow is operated from the cab.  Solenoid valve #60.3 is stuck open.	Check the electric connection to the CS-105 Power Float Controller.  Check the setting for the proximity sensor in systems that have this option.  Check solenoid valve #60.3 and replace if necessary.
Plow lifts off road surface when Power Float is on	Pressure setting too high on valve #60.5.	Remove, clean and re-install valve cartridge #60.3.  Reset item # 60.5.
Power Float active light does not come on when the plow is on the road surface	Improper sensor position.	Check proximity sensor position. Cannot be greater than 10 mm away from a metal surface.

## 8 Maintenance

1. Check the electric connections before each use.
2. Use di-electric grease to protect all electric connections against corrosion.
3. Replace defective electric plugs before you use the system.
4. Replace any hydraulic valve only with a clean new valve from Bosch Rexroth. See the spare parts list for details.
5. When replacing the valves do not exceed the following installation torque ratings:

Valve # 60.4	35 - 40 ft.lbs or 47 - 54 Nm
Valve # 60.2	25 - 30 ft.lbs or 34 - 41 Nm
Valve # 60.3	10 - 12 ft.lbs or 14 - 16 Nm
Valve # 60.5	10 - 12 ft.lbs or 14 - 16 Nm
6. All components are machined to very tight tolerances and therefore any contamination has to be removed from the system. Only use clean and filtered hydraulic oil to clean any components.

**Caution:** All components can be hot at anytime. Work only on the system when the power is switched off and without any hydraulic oil flow. Turn the truck engine off before doing any repair or maintenance. Make sure there is no pressure in the system before loosening any fittings. If the plow is already installed on the vehicle, lower it to the ground to avoid any unwanted movement and or oil flow.



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PORT TYPE	TYPE	SIZE	CONNECTION
SA (GAUGE PORT)	4	X	
ST (LOAD SENSE)	4	X	
A, B	8	X	
TANK (T)	12	X	
PRESSURE (IN)	8	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP1 (1)	4	X	
SP2 (2)	4	X	
SP3 (3)	4	X	
SP4 (4)	4	X	
SP5 (5)	4	X	
SP6 (6)	4	X	
SP7 (7)	4	X	
SP8 (8)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP9 (9)	4	X	
SP10 (10)	4	X	
SP11 (11)	4	X	
SP12 (12)	4	X	
SP13 (13)	4	X	
SP14 (14)	4	X	
SP15 (15)	4	X	
SP16 (16)	4	X	
SP17 (17)	4	X	
SP18 (18)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP19 (19)	4	X	
SP20 (20)	4	X	
SP21 (21)	4	X	
SP22 (22)	4	X	
SP23 (23)	4	X	
SP24 (24)	4	X	
SP25 (25)	4	X	
SP26 (26)	4	X	
SP27 (27)	4	X	
SP28 (28)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP29 (29)	4	X	
SP30 (30)	4	X	
SP31 (31)	4	X	
SP32 (32)	4	X	
SP33 (33)	4	X	
SP34 (34)	4	X	
SP35 (35)	4	X	
SP36 (36)	4	X	
SP37 (37)	4	X	
SP38 (38)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP39 (39)	4	X	
SP40 (40)	4	X	
SP41 (41)	4	X	
SP42 (42)	4	X	
SP43 (43)	4	X	
SP44 (44)	4	X	
SP45 (45)	4	X	
SP46 (46)	4	X	
SP47 (47)	4	X	
SP48 (48)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP49 (49)	4	X	
SP50 (50)	4	X	
SP51 (51)	4	X	
SP52 (52)	4	X	
SP53 (53)	4	X	
SP54 (54)	4	X	
SP55 (55)	4	X	
SP56 (56)	4	X	
SP57 (57)	4	X	
SP58 (58)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP59 (59)	4	X	
SP60 (60)	4	X	
SP61 (61)	4	X	
SP62 (62)	4	X	
SP63 (63)	4	X	
SP64 (64)	4	X	
SP65 (65)	4	X	
SP66 (66)	4	X	
SP67 (67)	4	X	
SP68 (68)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP69 (69)	4	X	
SP70 (70)	4	X	
SP71 (71)	4	X	
SP72 (72)	4	X	
SP73 (73)	4	X	
SP74 (74)	4	X	
SP75 (75)	4	X	
SP76 (76)	4	X	
SP77 (77)	4	X	
SP78 (78)	4	X	

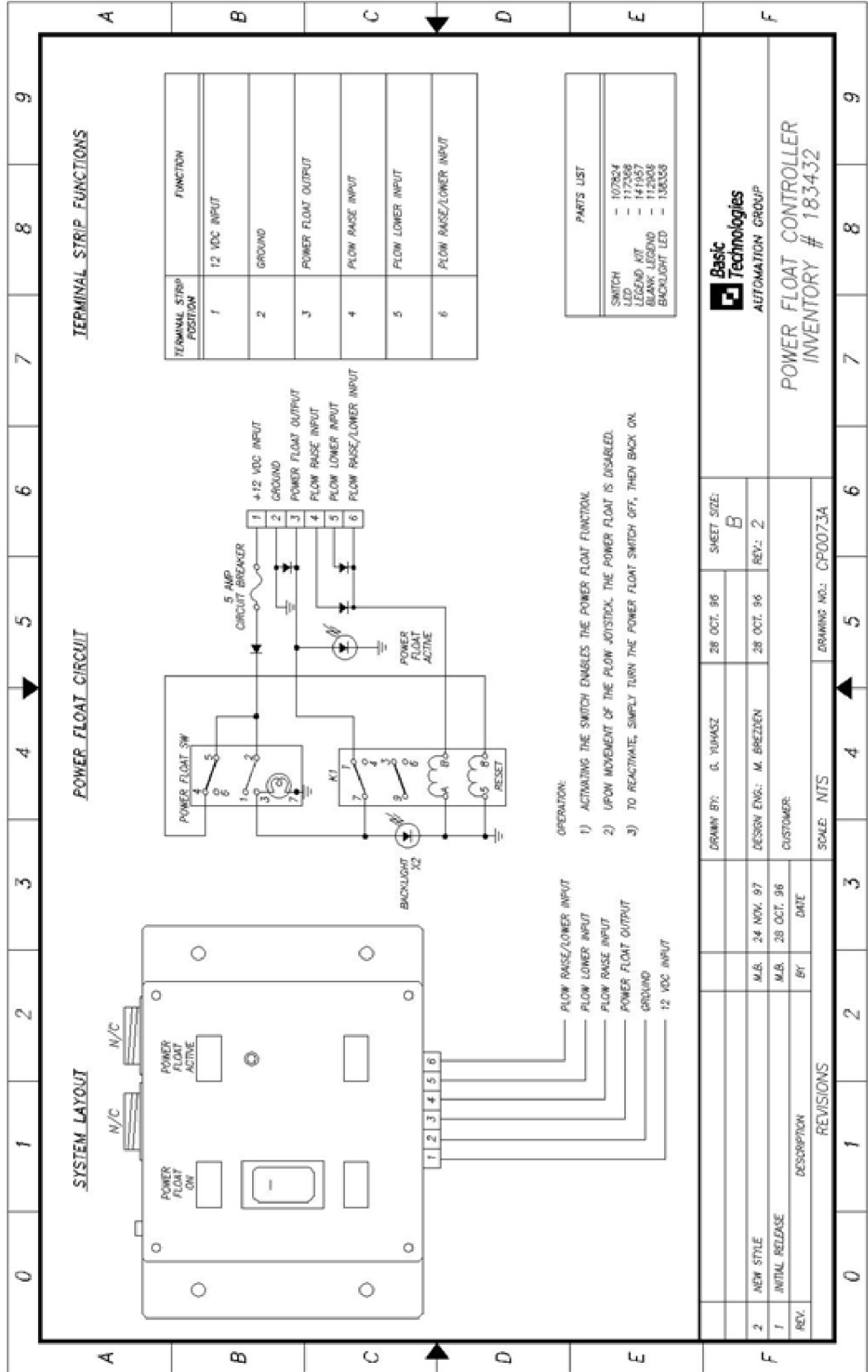
PORT TYPE	TYPE	SIZE	CONNECTION
SP79 (79)	4	X	
SP80 (80)	4	X	
SP81 (81)	4	X	
SP82 (82)	4	X	
SP83 (83)	4	X	
SP84 (84)	4	X	
SP85 (85)	4	X	
SP86 (86)	4	X	
SP87 (87)	4	X	
SP88 (88)	4	X	

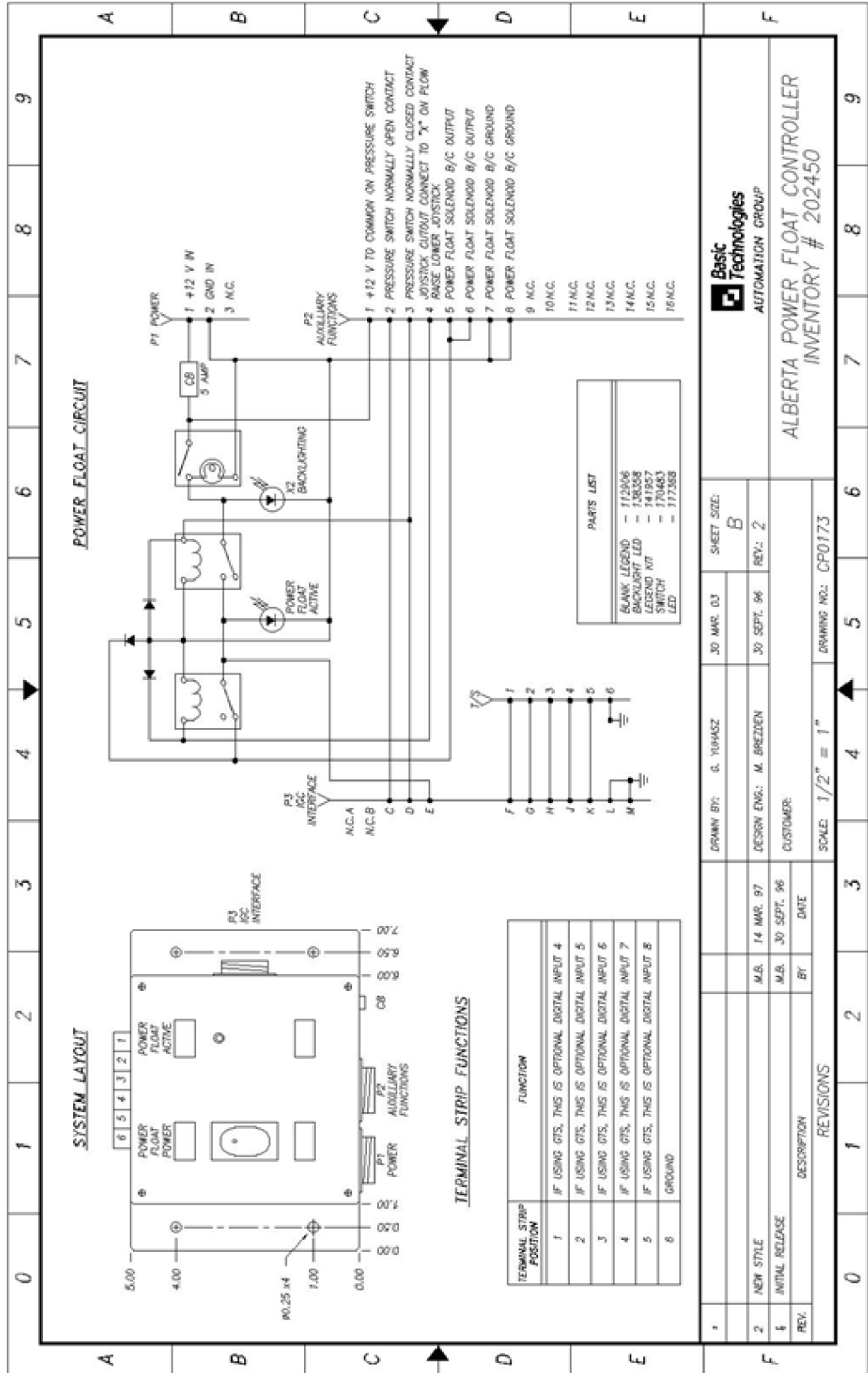
PORT TYPE	TYPE	SIZE	CONNECTION
SP89 (89)	4	X	
SP90 (90)	4	X	
SP91 (91)	4	X	
SP92 (92)	4	X	
SP93 (93)	4	X	
SP94 (94)	4	X	
SP95 (95)	4	X	
SP96 (96)	4	X	
SP97 (97)	4	X	
SP98 (98)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP99 (99)	4	X	
SP100 (100)	4	X	
SP101 (101)	4	X	
SP102 (102)	4	X	
SP103 (103)	4	X	
SP104 (104)	4	X	
SP105 (105)	4	X	
SP106 (106)	4	X	
SP107 (107)	4	X	
SP108 (108)	4	X	

PORT TYPE	TYPE	SIZE	CONNECTION
SP109 (109)	4	X	
SP110 (110)	4	X	
SP111 (111)	4	X	
SP112 (112)	4	X	
SP113 (113)	4	X	
SP114 (114)	4	X	
SP115 (115)	4	X	
SP116 (116)	4	X	
SP117 (117)	4	X	
SP118 (118)	4	X	







## 9 Warranty Policy

Bosch Rexroth Canada Corp. warrants all products manufactured and distributed by it, to be free from defects in material and workmanship under normal operating conditions and proper application in accordance with the specifications for operation as described in the appropriate Engineering Data Sheet or its equivalent for the periods as specified below.

### Compu-Spread®

- All hydraulic products including: pre-wetting power units, manifold assemblies as manufactured by Bosch Rexroth Canada Corp. axial piston equipment, MP18 style stacking valves, all special in-line valves not part of a main assembly, valve assemblies (pneumatic and electrical), and all rebuilt products. Twelve (12) months after delivery date or six (6) months after the equipment is placed in service, whichever comes first, provided the products have been properly prepared for long term storage when applicable, i.e. greater than 3 months.
- Twelve (12) months after delivery date for all GTS hardware.
- Twenty-four (24) months after delivery date or twelve (12) months after equipment is placed in service, whichever comes first, for CS 130 manual controllers, CS 230 microprocessors, CS-105 joystick consoles, and all pre-wetting system controllers.
- Ninety (90) days after delivery date for ground speed and conveyor speed sensors, oil level and temperature sensors, electric cable assemblies, hydraulic motors, pre-wetting tanks, metal fabricated, equipment and tanks, and all other accessories not listed above.

## 10 Limitations on Warranty

This warranty is expressly in lieu of any other warranties expressed or implied, including any warranty of merchantability or fitness of use for a particular application.

Buyer's sole and exclusive remedy under this warranty shall be limited to the repair or exchange of warranted products at our option.

Equipment and accessories not of our manufacture are warranted to the extent of the warranty of the original manufacturer.

No special, incidental, consequential or other damage shall be recoverable. Bosch Rexroth Canada Corp. shall not be liable for consequential damages or contingent liabilities including, but not limited to, loss of life, personal injury, loss of crops, loss due to fire or water damage, loss of business income, downtime costs and trade or other commercial loss arising out of the failure of the product. Bosch Rexroth Canada Corp. will in no event be liable for any sum in excess of the price received by it for the product for which liability is claimed or associated.

No products shall be returned without prior authorization from Bosch Rexroth Canada Corp.

Buyer shall prepay all transportation charges for the return of such products to seller's factory or branch office location. There will be no acceptance of any charges for labour and/or parts incidental to the removal and remounting of products repaired or replaced under this warranty.

The above warranty does not cover conditions over which we, Bosch Rexroth Canada Corp., have no control, including without limitation, contamination, pressures in excess of recommended maximum, products damaged or subjected to accident, abuse or misuses after shipment from our factory, products altered or repaired by anyone other than Bosch Rexroth Canada Corp. personnel, Authorized Factory Service Center personnel or persons so designated in writing by Bosch Rexroth Canada Corp. prior to commencement of said work.

Bosch Rexroth Canada Corp. will not be held liable in case of requested pre-setting of any pressure-related components.

Systems should be started with 0 pressures and the pressure should be increased slowly to assure system function avoiding harm or damage to people and/or equipment.

Damage or failures which are not attributable to defect in materials and/or workmanship which are not considered by Bosch Rexroth Canada Corp. to be covered under warranty include, but are not limited to:

- Damages due to deterioration during periods of storage by the purchaser prior to installation and operation
- Damage of any kind from erosive or corrosive action of any gases, solids, liquids or hydraulic fluid
- Lack of or incorrect type of hydraulic fluid
- Contamination of the hydraulic fluid

- Damage attributable to accident, abuse or neglect
- Stripped splines or keyways on drive shaft
- Incorrect mounting of external gears, pulley, etc.
- Operation beyond the recommended maximum speeds, pressure and temperatures – use of the product in a manner or purpose for which it was not designed or intended by Bosch Rexroth Canada Corp.
- Repairs by unauthorized personnel
- Misalignment
- Tampering or destruction of the factory seal
- Damage due to inappropriate fusing, over/under voltage application, static discharge, etc.

Notes: