2SD

Block

800-VALACE2SD V.14A

Mechanic's manual

R. 13.07

HYDRAULICS

ACE
Take control

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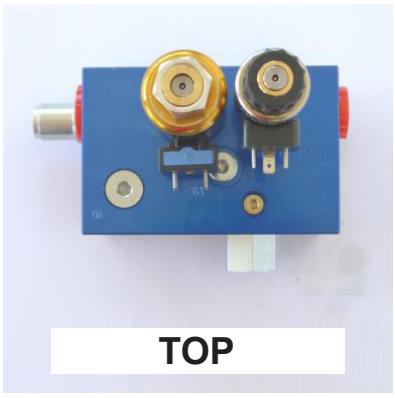
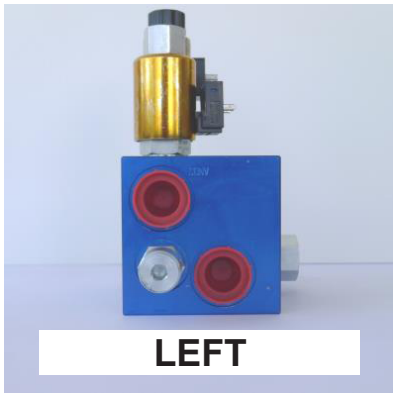
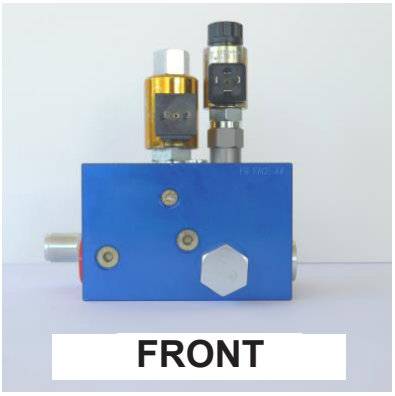
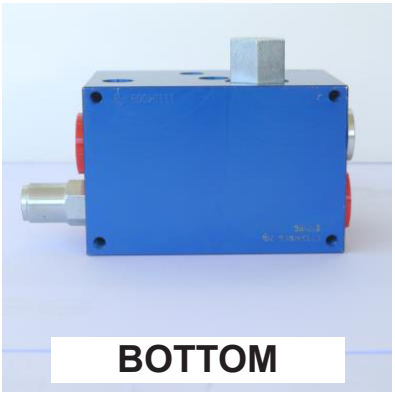
IMPORTANT WARNING

FACE IDENTIFICATION









All of the ACE blocks can be identified in the same way :

- Top face : coils of conveyor and spinner cartridges
- Front face : marked FR FACE AV
- Bottom face : opposite from Top face- all inlets and outlets regrouped- possible for assembly
- Back face : possible for assembly
- Left and right faces : seen from Front face

PRODUCT DESCRIPTION

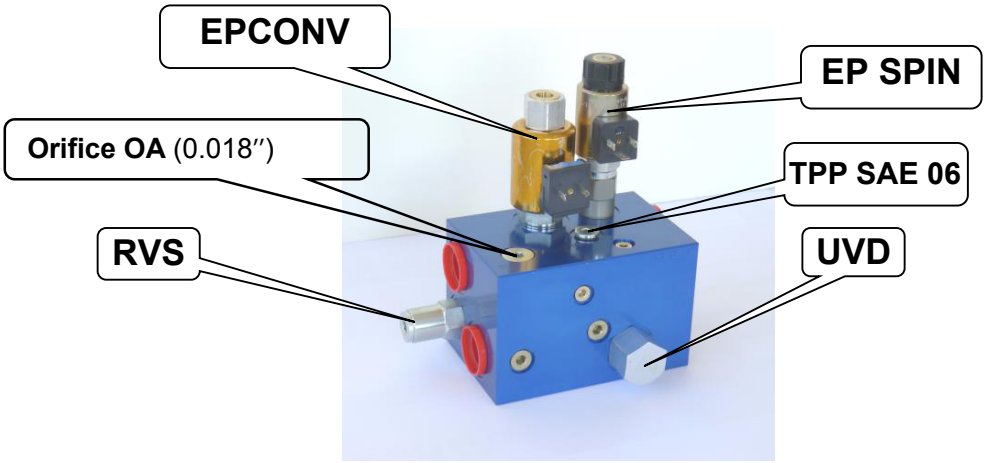
The 2SD hydraulic distributor is a simple and lightweight spreader block that allows you to operate a spreader's conveyor and spinner functions as well as its liquid option from a variable flow pump as its source of power.

Other equipments must be operated by another system. It is already indicated on trucks equipped with plows how to install a spreader.

This housing case, made of anodized machined aluminum for this application, contains all necessary passages, cavities and connections. It sets itself on the Back face (4 holes) or on the Bottom face (4 holes).

COMPONENTS

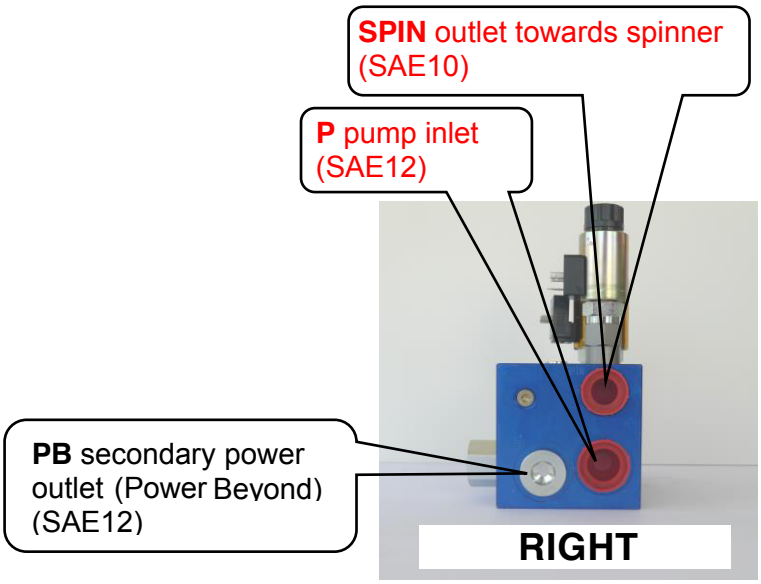
- The following components are integrated :
- on the Left side, an **RVS)** relief valve,
- on the top face, an **EPCONV)** electro-proportional cartridge to control the speed of the conveyor, an **EPSPIN)** electro-proportional cartridge to control the speed of the spinner, as well as an OA orifice (0,018'').
- on the Front face, a **UVD)** unloading valve to maintain the pressure required to operate the system and to allow excess oil to evacuate towards the reservoir.

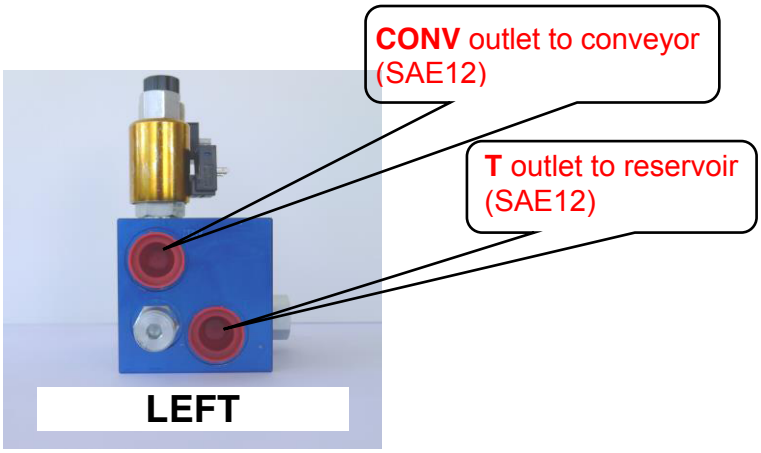


INLETS/OUTLETS

A TPP port (to measure the pump's pressure in the block) is installed on the Top face (see previous image).

Note : this port does not exist on 2SD versions prior to 2013.

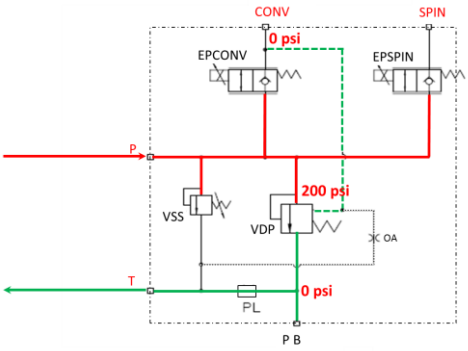




OPERATION PRINCIPLES

OPERATING IN NEUTRAL :

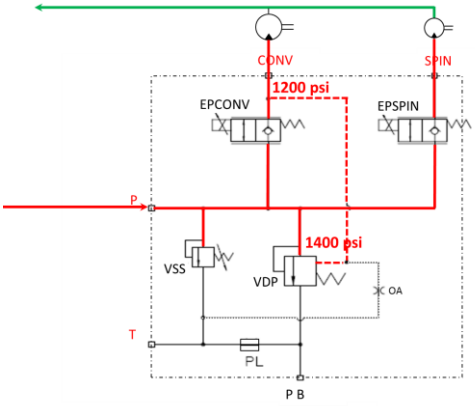
Oil coming from the pump enters into the block via the port marked «P». It fills the EPCONV) and EPSPIN) supply passages. It pushes on the RVS) relief valve's inlet and on the UVD) controlled valve. When the block is "in neutral", the oil pressure pushed by the pump rises until it opens the UVD) valve. In front of EPCONV) and EPSPIN), a neutral pressure builds.



WHEN THE SPREADER IS STARTED

If the spreader is started, the spreader controller commands the opening of the EPCONV) and EPSIN) cartridges, linked respectively to the conveyor and spinner outlets.

The UVD) unloading valve opens to 200 psi above the conveyor's labour pressure, the valve will not open so that it may raise pressure until the controller's flow demand is reached. The spinner's flow is dependent on the conveyor's pressure. Any oil surplus continues to be evacuated by the UVD) cartridge.



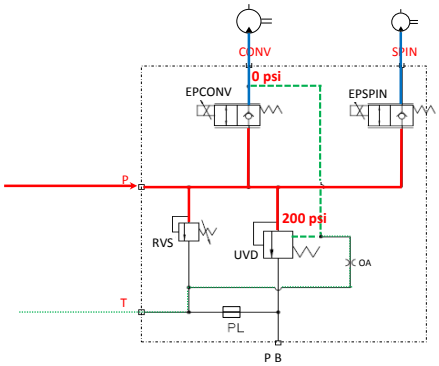
If, for any reason, the system's pressure goes higher than the adjustment of the RVS) relief valve, the relief valve will open and allow the oil to flow directly towards the reservoir's return line.

WHEN THE SPREADER IS STOPPED

The piloting line is no longer fed with pressure.

The OA orifice bleeds the piloting line. Its pressure goes down to about 0 psi.

The block returns to neutral.



TECHNICAL SPECIFICATIONS

2SD VALVE	METRIC	CDA - US
Block dimensions (W x H x D) Total dimensions (W x H x D) Weight Conveyor flow Spinner flow Reserve pressure Maximum working pressure Security clearance pressure	15,0 x 10,1 x 10,1 cm 19,5 x 21,7 x 12,5 cm 5,4 kg	6 x 4 x 4 7,3/4 x 8,5 x 5 12 lbs. 0 to 16 GPM 0 to 10 GPM 190 PSI (UVD) 3000 PSI 2500 PSI
Orifice dimensions: - Pressurized inlet (P) - Reservoir return (T) - Power beyond (PB) - Conveyor (CONV) - Spinner (SPIN)	 SAE 12 SAE 12 SAE 12 SAE 12 SAE 10	
Oil type	See pump manufacturer's specifications	
Filtration & oil purity	See pump manufacturer's specifications	
Conveyor coil	20 VDC, 30 W, 1,5 A, 13 Ohms	
Spinner coil	12 VDC, 22 W 1,8 A, 3,7 Ohms	

RECOMMENDATIONS FOR PNEUMATIC LINES AND HYDRAULIC CONNECTIONS :

- All pneumatic lines must be cleaned before being installed.
- All connections going to valves motors, cylinders, etc. must conform to SAE 514 (O-ring boss) standard specifications.
- All pneumatic lines must meet or surpass the SAE100-R2AT standard.
- All pneumatic lines and connections should come from the same manufacturer.
- All connections should meet SAE-J514 (JIC 37o) standard specifications.

INSTALLATION AND CONFIGURATION

PLANIFICATION

1. Determine whether you need to install an enclosure or a protective box.
2. Choose where to install the 2LS block in order to allow ease of access for inspections and maintenance.
3. You must anticipate the necessary space to connect the hydraulic tubes on the bottom.
4. You must anticipate access to components and to the OA orifice for maintenance.

IMPORTANT PRECAUTIONS :

Cleanliness is crucial when installing a hydraulic system. Hence, all possible precautions must be used to prevent the introduction of impurities and the contamination of the system, particularly of its oil.

EXECUTION

This valve offers two assembly surfaces : the Bottom face and the Back face. Choose the most appropriate one and pierce the holes with the corresponding pattern (see appendices A1 or A2).

☞ *Note : The holes of the threaded fasteners in the housing case have 5/16 NC by 1/2 threads. It is recommended to leave a cleaning space between the valve's case and the truck's assembly surface by adding a stainless steel spacer (for example, 3/8 SS nuts).*

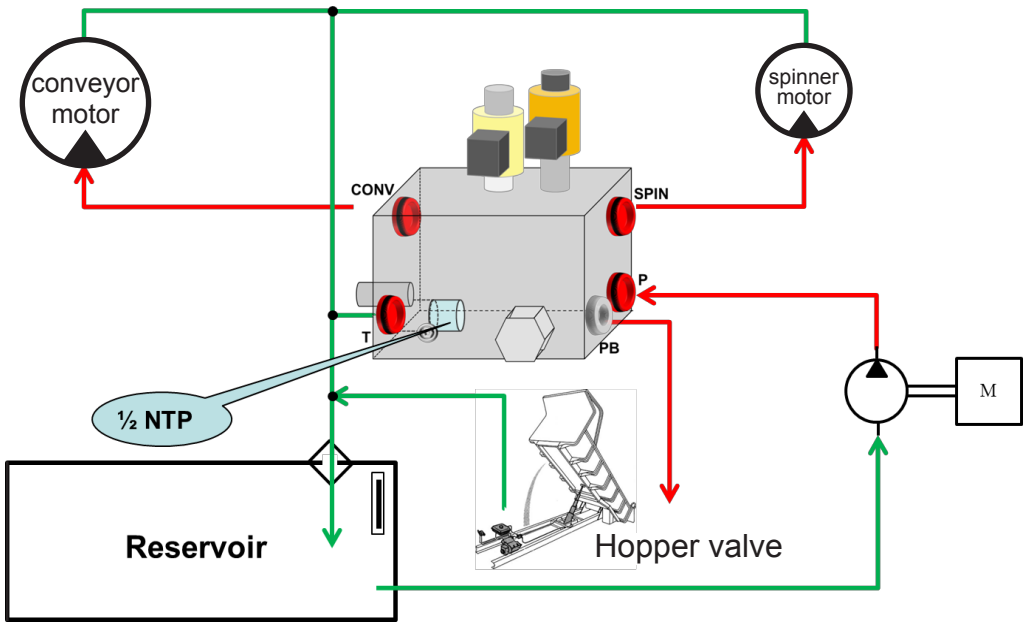
Connect the cleaned and properly dimensioned pneumatic lines to their respective functions according to the photos.

USING THE PB (POWER BEYOND) OUTLET (3/4 SAE - O-RING)

☞ *IMPORTANT NOTICE : The T outlet (reservoir return line) should never be used to hook up another type of valve (for the hopper or the plows). You must use the PB (Power Beyond) outlet as the source of oil flow for other uses than for the spreader's motors.*

If you need the Power Beyond function (for example, to feed the hopper's valve) :

1. Install a 1/2 NPT end cap on the T outlet (on the bottom right corner of the Left side) before connecting the T outlet to the reservoir.
2. Hook up the opposite outlet «PB» (Right side) to the hopper's valve.
3. Collect the motors', spreader's and hopper's return lines directly towards the reservoir.



MAINTENANCE

The only recommended regular maintenance for this valve is to make sure that all the coils are detachable from their respective cartridges.

Separate both comonents, then clean and reassemble them with anticorrosive grease.

Do not forget to verify that the cartridges are covered with a drop of silicone before setup to prevent the manual activation from rusting, which could prevent you from using this precious diagnostic tool. Press with a 7/64 Allen key to manually activate this coil.

SYSTEM DISORDERS

ESSENTIAL PRELIMINARY VERIFICATIONS

When you discover an operation disorder, start by verifying and correcting if needed the following :

- **PV1**. Make sure no mechanical element blocks the conveyor or spinner.
- **PV2**. Make sure the hydraulic oil level is normal.
- **PV3**. Make sure the hydraulic pump's drive shaft is connected as it should be and that it can turn freely when the motor is running. Particularly for automatic transmissions, verify that the PTO is engaged. Make sure that the VD06 and VD10 levers function normally and return to their neutral position.
- **PV4**. Procede to a visual inspection of the pneumatic lines and all of the hydraulic system's components to detect oil leaks.
- **PV5**. Make sure the electronic spreader is fed with 12 VDC current and that it is properly grounded.

TROUBLESHOOTING

If you do not find fault after preliminary verifications described above, follow these steps according to the nature of the problem.

PROBLEM Nº1 : THE CONVEYOR IS NOT WORKING

Step 1 : The purpose of this step is to identify whether the problem is of an electrical or electronic nature.

- Manually activate the head of the EPCONV) conveyor cartridge.

▶ **Case 1.1.1 : The conveyor is still not working**

Verify the cartridge : separate the cartridge into the round stem and its base.

Clean the components and reassemble the cartridge.

If the conveyor is still not working : go to step 2.

▶ **Case 1.1.2 : The conveyor works when the cartridge is manually activated**

- Verify the LED incorporated to the coil's connection.

  ▶ The LED is turned on : there is current. Verify the coil. Its resistance must be of 13 Ohms. If needed, change it,

  ▶ The LED is turned off : verify the electronic controller and the cable.

Step 2 : This step verifies if the problem is of a hydraulic nature.

- Set a pressure dial of 3000 psi to the outlet of the pump that feeds the 2SD block. Allow it to run without activating the spreader.

☞ *Note : 2SD blocks built later than June of 2013 are equipped with a TPP port on the Top face to install this manometer.*

▶ **Case 1.2.1 : The dial indicates less than 300 psi.**

- Verify the pump.
- If the pump is ok, verify the UVD) unloading valve on the Front face.
- If need be, clean it and change it.
- If the conveyor is still not working : consult an ACE service centre with the

reference **SDT 121** because the trouble is major.

▶ **Case 1.2.2 : The dial indicates around 300 psi**

- Place an end cap on the conveyor's outlet and start the conveyor

▶ The dial indicates 2200 psi

▶ The dial does not indicate 2200 psi

- Adjust the RVS) relief valve
- If changes in adjustment do not vary the pressure :
- Disassemble and clean the RVS) relief valve.
- Without result : disassemble and clean the UVD) unloading valve.
- Without result : replace the RVS) and UVD)

Without result after these changes, go to step 3.

Step 3 :

- Adjust the RVS relief valve to 3000 psi. Increase the rpm by activating the spreader.

Normally, the conveyor should operate at less than 2200 psi.

☞ *Important notice : if the spreader's hydraulic system is used with the Power Beyond function, it is the other function's (plows or hopper) relief valve that is used to adjust the maximum pressure of the whole system. In this case, the RVS) relief valve is not used.*

▶ If the conveyor works at 3000 psi, verify the conveyor's mechanics (motor, reducer, chain adjustment...).

▶ If the conveyor does not work even at 3000 psi : consult an ACE service centre with the reference **SDT13** because the trouble is major.

PROBLEM N°2 : THE SPINNER DOES NOT WORK BUT THE SPINNER DOES

☞ Note : if the spreader's mechanics function correctly, the conveyor always operates at a higher pressure than the spinner. To create pressure in the block, you must activate the conveyor, either with the electronic controller or manually.

- Manually activate the head of the spinner and conveyor's cartridges simultaneously.

▶ **Case 2.1 : The spinner still does not work**

- Verify the EPSIPN) cartridge.
- Separate the cartridge into the round stem and its base.
- Clean the components and reassemble the cartridge.
- Without result : replace it.

▶ Still without result : consult an ACE service centre with the reference SDT21 because the trouble is not a minor one.

▶ **Case 2.2 : The spinner works when the coil is activated manually**

- Verify the LED incorporated to the EPSIN) spinner coil's connection.

▶ The LED is turned on : there is current. Verify the coil. Its resistance must be of 3,7 Ohms. If not, change it.

▶ The LED is turned off : verify the electronic controller and the cable.

PROBLEM N°3 : THE CIRCUIT HEATS WHEN THE CONVEYOR IS NOT ACTIVATED.

Step 1 :

- Set a pressure dial of 3000 psi to the outlet of the pump that feeds the spreader's valve.

▶ **Case 3.1.2 : The pressure is above 200 and 300 psi when the conveyor isn't working**

- Verify the OA orifice on the bottom left of the Top face.
- Clean and replace it.
- If the problem persists, verify the UVD) unloading valve on the Front face.
- Clean and replace it.
- If the problem persists, make sure that the EPCONV) conveyor cartridge (left side of the top face) shuts airtight
- Disassemble it, then clean and reassemble it.
- If the problem persists, change the UVD) unloading valve.
- Without result : change the EPCONV) conveyor's cartridge.

- Still without result : consult an ACE service centre with the reference **SDT 312** because the trouble is major.

PROBLEM N°4 : THE CIRCUIT HEATS WHEN THE CONVEYOR IS WORKING

This means there is the conveyor line is overpressured. This indicates a mechanical problem with the conveyor.

REPARATION SERVICES

Customer Service can be reached during regular business hours (8am to 5pm EST) either by phone at 416-907-0915 or by email at acesupportdesk@gmail.com. For an up-to-date list of authorized field repair and service depots, visit www.aceelectronic.ca.

WARRANTY

Accent Electronic Controls Inc. (ACE) warrants to the buyers of electronic products and accessories manufactured by ACE that they are free of defects in material and workmanship. ACE's sole obligation under this warranty is to repair or replace, at ACE's option, any products or parts thereof, which under normal use and proper maintenance have proven defective in material or workmanship.

No claim under this warranty will be valid unless the claimant notifies ACE in writing within a reasonable time of the discovery of such defects, but under no circumstances later than twelve (12) months from the date of shipment of such product by ACE.

As requested by ACE, products or parts for which a warranty claim is made must be returned prepaid to the factory or a designated repair depot.

The risk of loss or damage of any returned product or part thereof will be born by the buyer.

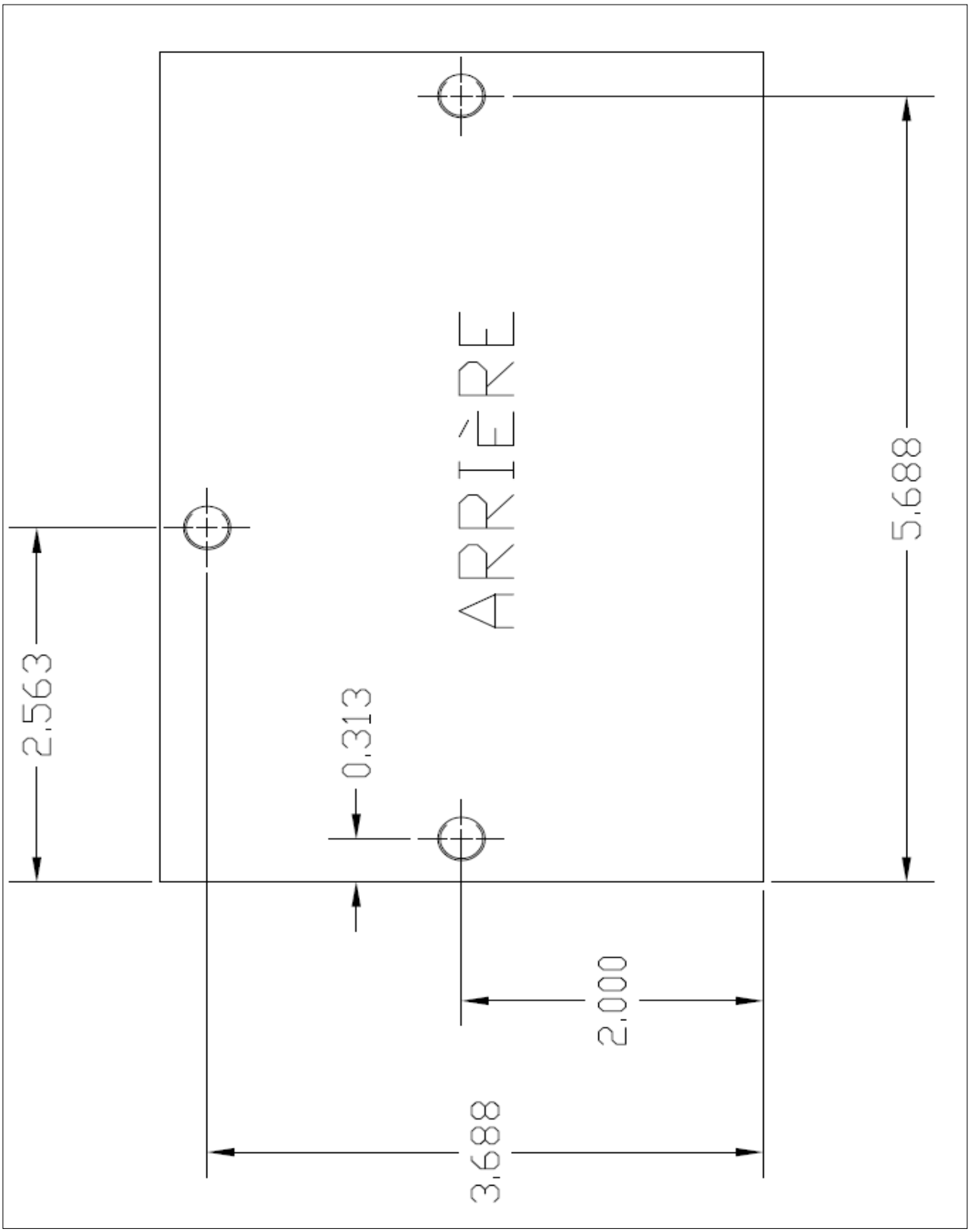
For approved warranty claims, ACE will cover the transport costs to return the equipment to the claimant.

ACE is not liable in any way nor will bear any costs related to :

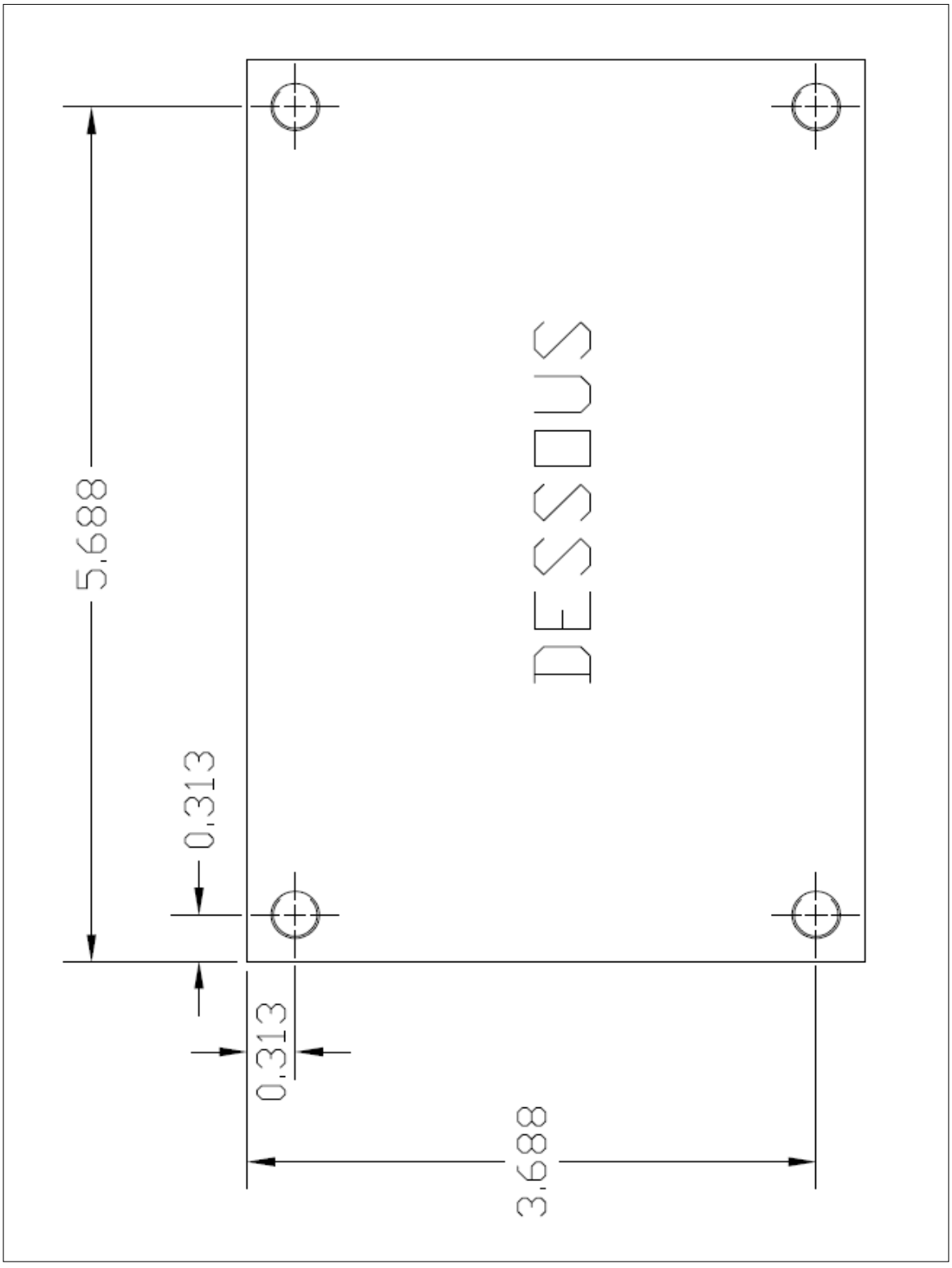
- wear and tear, abuse, misuse, overloading or alterations
- transportation charges or costs of installation, replacement, field repair or other charges related to returning products to ACE or its designated repair depots
- any liability for direct, indirect or consequential damage or delay

No employee or representative of ACE is authorized to change any warranty in any way or grant any other warranty unless such is made in writing and signed by any officer of ACE.

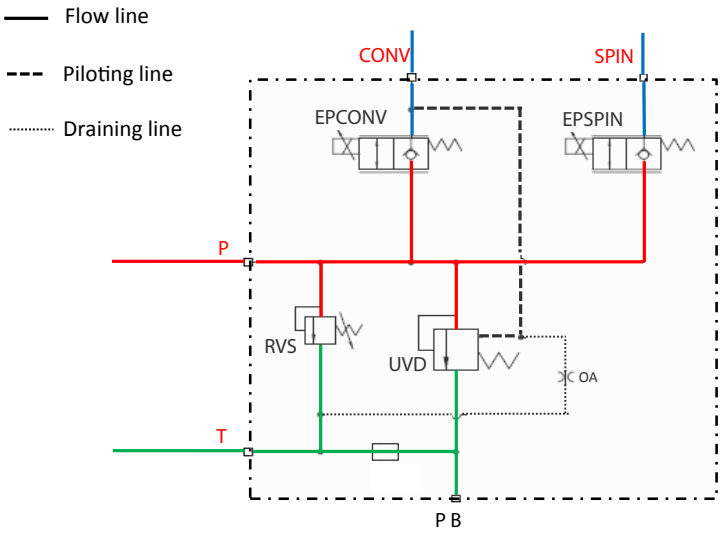
APPENDIX A1 : ASSEMBLY TEMPLATE (BACK FACE)



APPENDIX A2 : ASSEMBLY TEMPLATE (BOTTOM FACE)



APPENDIX B : HYDRAULIC DIAGRAMS



Hydraulic diagram without use of Power Beyond
ACE Electronic Spreader block 800 -VALACE2SD

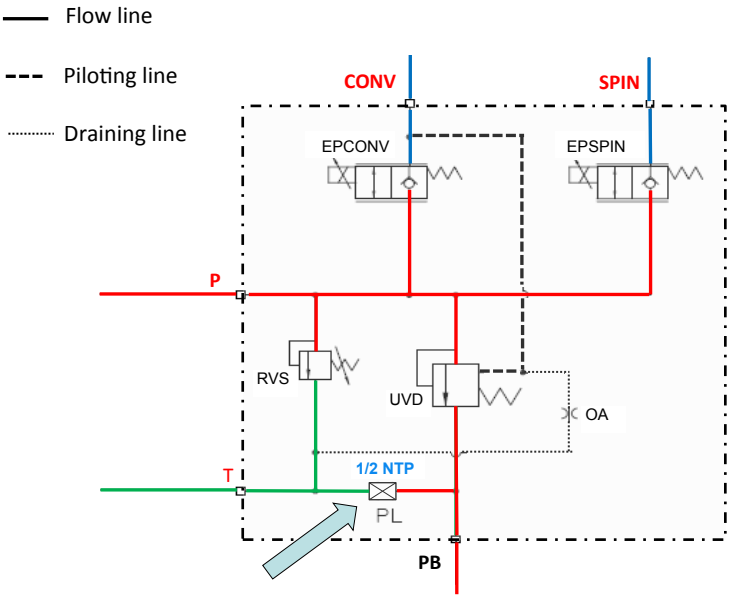
EPCONV : Conveyor's electro-proportional cartridge

EPSPIN : Spinner's electro-proportional cartridge

RVS : Relief valve

UVD : Relief valve piloted by conveyor's working pressure

OA : UVD) piloting circuit's draining line

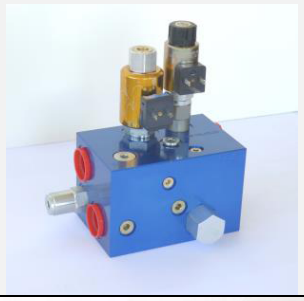
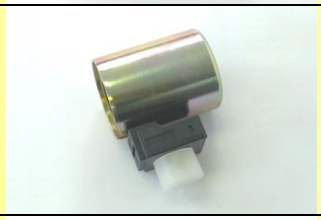


Hydraulic diagram with Power Beyond
ACE Electronic Spreader block 800-VALACE2SD

Power Beyond

- Install a cap (1/2 NTP) (PL) at the bottom of the T outlet's cavity
- Connect the PB outlet to the secondary activator to use the spreader when hydraulic power is stopped

APPENDIX C : LIST OF PIECES

Ref.	PIECE No	Photo	Descriptions
800-VALACE2SD			DUAL FUNCTION SPREADER BLOCK FOR FIXED FLOW PUMP
RVS	700-CP210-2		RELIEF VALVE
UVD	700-CP701-1		UNLOADING VALVE
EP CONV	700-D14E-30W		20V 30W COIL FOR CONVEYOR
	700-PFC12-RC		ELECTRO-PROPORTIONAL CARTRIDGE FOR CONVEYOR
EP SPIN	700-M19P-12D		12V 22W COIL FOR SPINNER
	700-PFC10-RC		ELECTRO-PROPORTIONAL CARTRIDGE FOR SPINNER
OA	700-ORI-0180		CAP WITH 0.018'' MICRO DRAINING CONDUCT
PL (Option)	700-PNPT-8		1/2 NTP cap for Power Beyond (insert at the bottom of the T outlet