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PROPRIETARY INFORMATION

PPS 21.15

PRODUCTION PROCESS STANDARD

MACHINE MIXING AND HANDLING OF DHMS S3.01/B2 SEALANT

Issue 10
- This standard supersedes PPS 21.15, Issue 9.
- Vertical lines in the left hand margin indicate changes over the previous issue.
- Direct PPS related questions to christie.chung@aero.bombardier.com or (416) 375-7641.
- This PPS is effective as of the distribution date.

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1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for machine mixing and handling of DHMS S3.01/B2 sealant.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction. The procedure specified in this PPS shall be followed to ensure compliance with all applicable specifications. In general, if this PPS conflicts with the engineering drawing, follow the engineering drawing. The requirements specified in this PPS are necessary to fulfil the engineering design and reliability objectives.

1.1.2 Refer to PPS 13.26 for the subcontractor provisions applicable to this PPS.

1.1.3 Procedure or requirements specified in a Bombardier BAPS, MPS, LES or P. Spec. do not supersede the procedure or requirements specified in this PPS. Similarly, the procedure and requirements specified in this PPS are not applicable when use of a BAPS, MPS, LES or P. Spec. is specified.

2 HAZARDOUS MATERIALS

2.1 Before receipt at Bombardier Toronto, all materials shall be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Toronto Environment, Health and Safety Department. Refer to the manufacturer's MSDS for specific safety data on any of the materials specified in this PPS. If the MSDS is not available, contact the Bombardier Toronto Environment, Health and Safety Department.

3 REFERENCES

3.1 BAERD GEN-023 - Contamination Control for Compressed Air.

3.2 Bombardier Toronto Form DH4289 - Mixing Data Record Log - *Bombardier Toronto internal operating procedure*.

3.3 PPS 13.26 - General Subcontractor Provisions.

3.4 PPS 13.28 - Storage Life of Adhesives, Sealants, Paints and Composite Products.

3.5 PPS 21.20 - Mixing and Handling Two-Part Sealants.

3.6 PPS 31.17 - Solvent Usage.

3.7 QAPI 3.8.8.4 - Corrective Action - *Bombardier internal Quality procedure*.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 DHMS S3.01/B2 sealant, temperature resistant, integral fuel tanks, high adhesion (base in 55 gallon drums and accelerator in 5 gallon pails). DHMS S3.01/B2 Type 1 sealant is replaced by DHMS S3.01/B2 Type 2 sealant according to EO 7336. Therefore, whenever the engineering drawing specifies the use of DHMS S3.01/B2 Type 1 or simply DHMS S3.01/B2 sealant, use DHMS S3.01/B2 Type 2 sealant.

4.1.2 Cartridges and plungers, sealant dispensing, polyethylene, 2.5 oz. size (Semco #250-CP2 1/2) and 6 oz. size (Semco #250-CP6).

4.1.3 Compressed air utilized herein shall meet the requirements of BAERD GEN-023.

4.1.4 Sealant identification and control discs, pre-printed according to Figure 3.

4.1.5 Paperboard containers, disposable, wax-free, 8 oz. and 1 L sizes (e.g., MELO take-out food containers).

4.1.6 Lint-free cotton wiping cloths (e.g., DSC 378-2).

4.1.7 Pyles Admex fluid lubricant, or equivalent.

4.1.8 SAE 10W non-detergent oil.

4.1.9 Methyl alcohol (methanol).

4.1.10 Dry-ice pellets.

4.2 Equipment

4.2.1 Sealant mixing machine, Pyles Model 8908, cartridge fill meter mix system.

4.2.2 Wheeled dolly for handling and moving base component drums.

4.2.3 Triple beam balance type weighing scales, or equivalent, accurate to within $\pm$ 0.1 g.

4.2.4 Primary storage freezer equipped with direct reading temperature indicator and capable of maintaining -40°F or below.

4.2.5 Low temperature refrigeration unit equipped with direct reading temperature indicator and capable of maintaining -85°F or below.

4.2.6 Quick-freeze alcohol tank fitted into low temperature refrigeration unit.

4.2.7 Aluminum displacement blocks used to adjust the alcohol level in the quick-freeze tank.

4.2.8 Sealant cartridge racks.

4.2.9 Steel stirring paddles.

4.2.10 Insulated transport box.

4.2.11 Stainless steel mixing spatula.

4.2.12 Stainless steel drainage tank.

4.2.13 SD8910 sealant cartridge cutting tool.

4.2.14 Neoprene rubber gloves (e.g., DSC 422-5).

4.2.15 Bombardier approved chemical splash goggles and hearing protectors (ear plugs or ear muff type).

5 PROCEDURE

5.1 General

5.1.1 The Pyles Model 8908 is an automatic metering and mixing machine used for mixing and dispensing two-part polysulphide type sealants (see Figure 1). The mixing machine system consists of three basic components:

- The material supply pumps which provide a pressure feed of the sealant base and accelerator to the metering assembly via hoses.
- The metering assembly which controls the exact proportions of base and accelerator to the air powered dynamic mixer.
- The air powered dynamic mixer assembly which thoroughly blends the base and accelerator together and dispenses the mixed sealant through the cartridge fill outlets.

5.1.2 DHMS S3.01/B2 sealant is a two-part, polysulphide polymer compound which cures at room temperature to provide a resilient, fluid-resistant, high-adhesion seal for integral fuel tanks and aircraft pressurized structures. DHMS S3.01/B2 sealant components (base and accelerator) are supplied as matched lot numbers. Ensure that only corresponding lot numbers of components are mixed together.

5.1.3 The use of this material at Bombardier Toronto (de Havilland) according to this PPS involves batch mixing, filling of sealant into polyethylene dispensing cartridges, quick-freezing of the mixed sealant to retard the cure cycle and storing of the sealant in production line freezers until required for use.

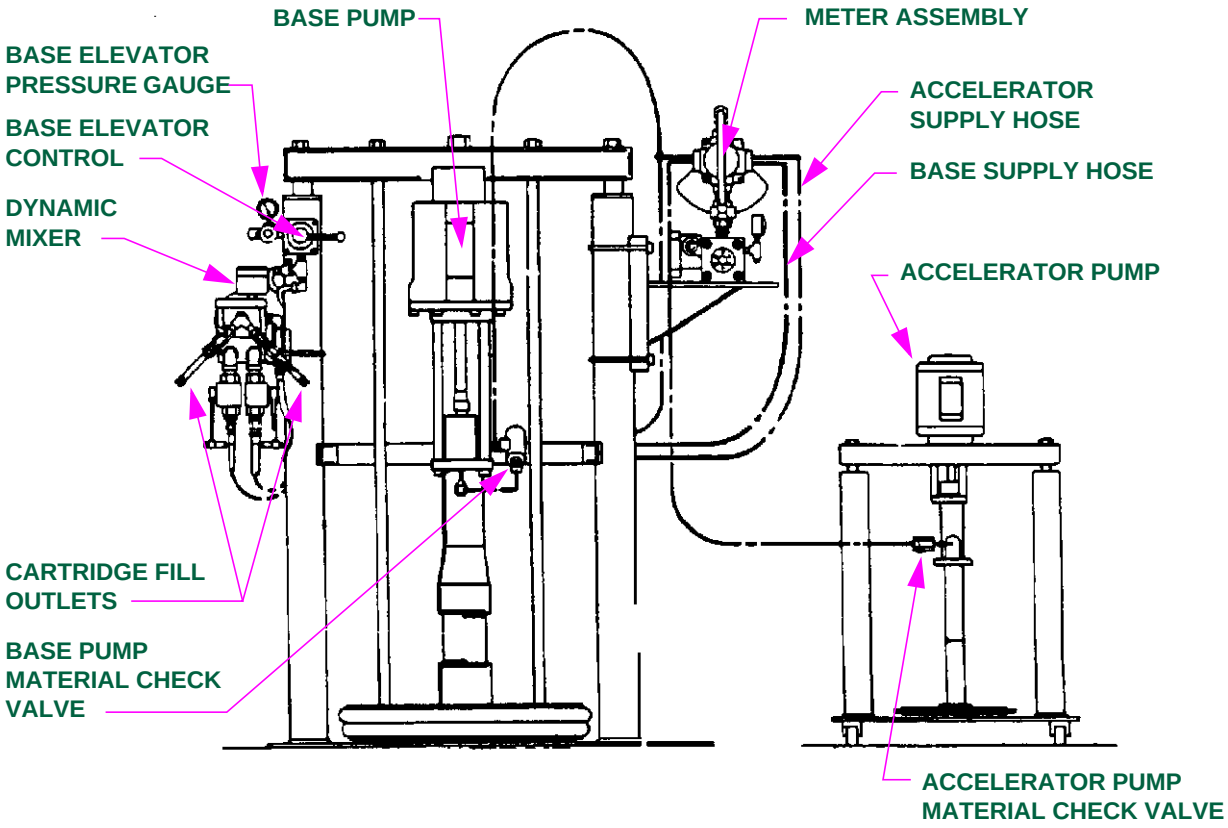

FIGURE 1 - SEALANT MIXING MACHINE COMPONENTS

5.2 Mixing Machine Set-Up Procedure

5.2.1 Tighten pump packing nuts daily during the first week of operation of a new mixing machine and weekly thereafter.

5.2.2 At the start of each shift during which the sealant mixing machine is to be used, perform the following maintenance checks:

Step 1. Using a clean wiping cloth dampened with the solvent specified in PPS 31.17, wipe off the exposed metering cylinder shafts.

Step 2. Check the oil in the air line lubricator. If necessary, refill it with SAE 10W non-detergent oil by adjusting the lubricator to dispense approximately one drop per minute while the machine is running.

Step 3. Check the oil level in the pump shaft lube wells. If necessary, refill it with Pyles Admex fluid lubricant.

Step 4. Drain any water from the filter in the main air line.

Step 5. Visually examine the mixing machine for evidence of loose or worn hoses as well as excessive air or material leakage.

5.2.3 At the start of each shift during which the sealant mixing machine is to be used, start-up the sealant mixing machine as follows:

Step 1. Place a suitable waste container below each cartridge fill outlet to catch sealant which is dispensed before the installation of the new sealant cartridges.

Step 2. Ensure that the base purge ball valve located beside the meter inlet valves is closed and the meter outlet ball valves are open.

Step 3. Turn on the machine cooling unit.

Step 4. Turn on the air power to the machine by engaging the air control valve (black) under the meter base plate.

Step 5. Ensure that the pressure gauges on the base and accelerator pump mechanisms are set as follows:

- Base elevator ram pressure: 50 ± 5 psi.
- Base pump pressure: fill rate as required according to paragraph 5.7.2.
- Accelerator elevator ram pressure: 40 ± 5 psi.
- Accelerator pump pressure: as required to balance meter according to paragraph 5.11.3.

Step 6. Open one outlet on the cartridge filler and open the ball valve to the dynamic air mixer motor.

Step 7. Open the meter outlet coupled ball valves. In a short time, the sealant will begin to flow from the cartridge fill outlet. Allow the machine to run until a consistent mixture is flowing.

Step 8. Close the cartridge fill outlet, open the second outlet and allow the sealant to flow from the second cartridge fill outlet until a consistent mixture is noted.

Step 9. Discard dispensed sealant in their waste containers.

5.2.4 At the start of each shift during which the sealant mixing machine is to be used, and whenever the mixing machine has been shut off for more than one hour, check the weight ratio according to section 5.3.

5.2.5 After each weight ratio check, perform a base purge operation according to section 5.14. If more sealant cartridges will be filled, perform a paper test according to section 5.4.

5.3 Weight Ratio Check

5.3.1 Collect samples of base and accelerator for weight ratio checks in identical pre-weighed 8 oz. paperboard containers as follows:

Step 1. Close the meter outlet coupled ball valves (see Figure 2).

Step 2. Open the ratio check coupled ball valves.

Step 3. While the material is flowing, place both containers under the flow at the same time and hold them there until approximately 300-400 grams of base material fill one of the paperboard containers. If necessary, allow the meter to change direction before taking samples.

Step 4. Withdraw both paperboard containers simultaneously and close the coupled ratio check valves.

Step 5. Weigh the base component and accelerator in the paperboard containers on a triple beam balance and subtract the weight of the container. The tare weight on the triple beam balance may be pre-set to compensate for the weight of the containers.

Step 6. Enter the weights of the base compound and accelerator in the appropriate weight ratio columns on the Mixing Data Record Log.

Step 7. Divide the weight of the base component by the weight of the accelerator to establish the base/accelerator ratio and enter this number, to 2 decimal places, in the appropriate weight ratio check column on the Mixing Data Record Log.

5.3.2 The weight ratio is acceptable in the range of 9.25 to 10.75. If the weight ratio does not fall within these limits, ensure that the accelerator meter is balanced and the material check valves in the manifold are clean and perform a second weight ratio check. If the second weight ratio check fails to meet these limits, contact Liaison Engineering.

5.3.3 Ensure that a Quality Control inspector is available to witness each weight ratio check and, if acceptable, to apply an inspection stamp against the appropriate test on the Mixing Data Record Log.

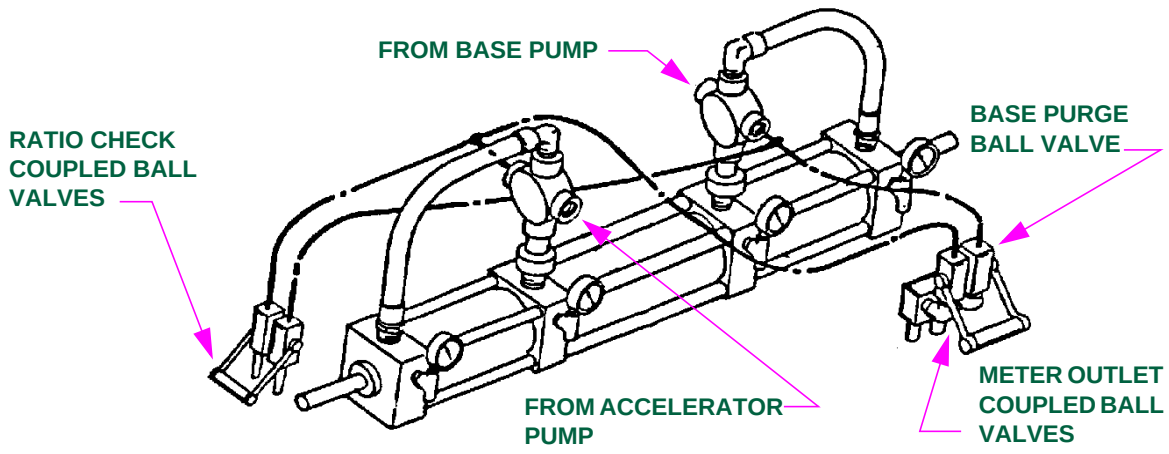

FIGURE 2 - METER OUTLET AND RATIO CHECK COUPLED BALL VALVES

5.4 Paper Test

5.4.1 Perform the paper test as follows:

Step 1. Fold an approximately 8" x 12" paper towel in half (to 8" x 6").

Step 2. From the mixing machine, dispense an approximately 4" long bead of sealant onto the centre of the paper towel.

Step 3. Fold the towel in half over the sealant bead and apply pressure to spread the sealant out for approximately 2” inside the folded paper towel.

Step 4. Unfold the paper towel and check for incomplete mixing, indicated by streaks in the sealant.

5.4.2 If streaks in the sealant are evident, check the mixer tachometer with the machine running, and if necessary, re-adjust it to 180-190 rpm. If the tachometer reading was too low, perform a second paper test. If the second paper test fails, contact Liaison Engineering.

5.4.3 Ensure that a Quality Control inspector is available to witness each paper test and, if acceptable, to apply an inspection stamp against the appropriate test on the Mixing Data Record Log.

5.5 Low Temperature (Quick-Freeze) Freezer Set-up

5.5.1 At the start of each shift during which the sealant mixing machine is to be used, perform the following set-up procedures and checks:

Step 1. Check that the freezer has been operating for a minimum of 24 hours at a temperature setting of -85°F before being used for the quick-freezing of sealant.

Step 2. Ensure that the alcohol level in the quick-freeze tank of the freezer is kept at a depth of 6" with the displacement blocks out of the tank. As required, top up the alcohol level with methanol. It is recommended that the alcohol tank be topped-up at the end of each shift during which the mixing machine is used.

Step 3. Check that the alcohol tank is approximately centred in the freezer with the gap at each end fully packed with dry-ice pellets.

Step 4. Ensure that the temperature of the alcohol, before commencement of quick-freezing, is -85°F or below as determined by direct thermometer or thermocouple immersion in the alcohol. If required, add dry-ice pellets directly to the alcohol bath to establish the required temperature. If dry-ice has been added to the alcohol bath, thoroughly stir the bath before re-checking the temperature.

Step 5. If 2.5 oz. sealant cartridges are to be quick-frozen, place an aluminum displacement block into the alcohol tank to compensate for the difference in volume displacement between the 2.5 oz. and 6 oz. sealant cartridges. It is recommended that the displacement blocks be kept in refrigerated storage when not in use to minimize the temperature change when used in the alcohol bath. Whenever a displacement block is placed into the alcohol bath, add one 8 oz. cup of dry-ice pellets to the bath to maintain the temperature of the alcohol.

5.6 Sealant Identification/Control Discs

5.6.1 Prepare sealant identification/control discs as follows:

Step 1. Stamp the sealant expiry date (mixing date + 14 days) onto a number of sealant identification/control discs equal to the estimated number of sealant cartridges to be filled that day (see Figure 3).

Step 2. Enter the applicable mixing date and expiry date on the Mixing Data Record Log.

5.6.2 Discard stamped, unused sealant identification/control discs at the end of each shift.

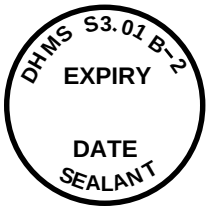

FIGURE 3 - SEALANT IDENTIFICATION/CONTROL DISC

5.7 Sealant Mixing and Filling Procedure

5.7.1 With the mixing machine set up and operating, and after acceptable weight ratio and paper tests, fill sealant into polyethylene sealant cartridges as follows:

Step 1. Thread a sealant cartridge onto each cartridge fill outlet.

Step 2. Open the valve corresponding to the cartridge to be filled while closing the other valve.

Step 3. When the cartridge has been filled to within approximately 1" of the flanged end, close the corresponding valve and open the other to fill the second cartridge.

Step 4. If necessary, slightly squeeze filled cartridges in the centre before removing them from the cartridge fill outlets. This will reduce the amount of sealant forced out of the outlets by residual pressure.

Step 5. Immediately place the cartridge into a suitable cardboard box or tray next to the machine.

Step 6. Repeat this procedure until all the sealant is dispensed.

5.7.2 It takes approximately 25-35 seconds to fill a 6 oz. cartridge and 10-15 seconds to fill a 2.5 oz. cartridge. The fill time is determined by the base pump pressure (i.e., increasing the base pump pressure will increase the material flow rate and reduce the fill time). Re-balance the accelerator pressure whenever the base pump pressure is changed.

5.7.3 If the base pump pressure is adjusted to change the fill time, perform another weight ratio check according to section 5.3.

5.7.4 While the mixing machine is operating, monitor the mixer tachometer and adjust the air pressure, as necessary, to maintain a mixing speed of 180-190 rpm.

5.7.5 Fill cartridges in batches of 20 and place them into a sealant rack for quick-freezing.

5.7.6 One extra cartridge for the first lot of 20 on each shift shall be filled and submitted to Quality Control for accelerated cure testing according to section 5.13.

5.7.7 Visually examine each cartridge, before placing it into the sealant rack, for evidence of striping (light coloured bands) along the length of the cartridge. Discard all cartridges showing evidence of striping.

5.7.8 Once filling of sealant cartridges has started, the filling operation shall proceed without interruption. The time interval between filling of the first cartridge and placing the completed rack (20 cartridges) into the quick-freeze alcohol bath shall not exceed 15 minutes.

5.7.9 Check the air line filter-water trap between filling of sealant racks and, if necessary, drain it before filling the next rack.

5.7.10 Rapid cycling of the base or accelerator pumps during the operation of the mixing machine indicates that the applicable sealant component container is empty. If this occurs, immediately shut off the machine and change the container according to section 5.9.

5.8 Quick-Freezing Procedure

5.8.1 In order to ensure the maximum application life of the refrigerated sealant in production, it is extremely important that all of the following steps in the quick-freezing procedure are accomplished with a minimum of delay.

5.8.2 Immediately after filling each sealant rack, quick-freeze the mixed sealant as follows:

Step 1. Open the freezer and remove any previously frozen sealant rack from the alcohol bath and allow the alcohol to drain back into the tank for 15 to 30 seconds. Place the previously frozen rack in the drainage tank on the floor.

Step 2. Fill a 1 litre paperboard container with dry-ice pellets and pour the pellets into the approximate centre of the alcohol tank.

Step 3. Immediately place the filled sealant rack into the alcohol tank such that the majority of the dry-ice pellets stays within the confines of the rack.

Step 4. Close the freezer and allow the mixed sealant to quick-freeze for 15 minutes minimum before transfer to the primary storage freezer.

5.8.3 Ensure that the alcohol bath is operating at -85°F or below at the beginning of the quick-freezing and is maintained at -70°F or below during quick-freezing by the addition of dry-ice, as necessary.

5.8.4 Take periodic temperature measurements of the alcohol bath by direct thermometer or thermocouple immersion after quick-freezing each fifth rack of sealant (100 cartridges). This will ensure that the above temperature limits are maintained.

5.8.5 Immediately before placing cartridges into the primary storage freezer, a pre-stamped sealant identification/control disc shall be inserted, printed side up, into each cartridge plunger.

5.8.6 Place previously frozen sealant into the primary storage freezer, located next to the quick-freeze refrigeration unit, as quickly as possible after placing the freshly mixed sealant into the quick-freeze bath.

5.8.7 Keep frozen sealant in refrigerated storage at -40°F or below from completion of quick-freezing until immediately before transfer to production line storage freezers. Issue oldest stock of frozen sealant first.

5.9 Changing Sealant Component Containers

5.9.1 Change base and accelerator component containers as follows (see Figure 4):

Step 1. Shut off the main air inlet to the pump air motor (0 psi).

Step 2. Close the ball valve on the pump outlet.

Step 3. Open the petcock at the bottom of the air injection line at the elevator follower plate.

Step 4. Move the elevator control to the UP position and slowly raise the elevator.

Step 5. Open the petcock at the top of the air injection line at the elevator control to force air below the elevator follower and break the vacuum between the elevator follower plate and the material in the container. Close both petcocks when the follower is out of the container.

Step 6. Remove the material container and position a new container on the base plate directly below the elevator follower plate. Before use, stir each new 5 gal. pail of accelerator material to a uniform consistency using a suitable flat-bladed steel mixing paddle. Take care to avoid entrapping air in the material while stirring.

Step 7. Check that the batch number on the certification label on the new container corresponds to that of the old container. If the batch numbers are different, both accelerator and base containers shall be changed at the same time to ensure the use of corresponding batch numbers. Base and accelerator components having different batch numbers shall never be mixed together.

Step 8. Check that there are no dents in a base component drum deeper than 0.5" and that any such dents are blended over at least 6". If there are any drums of base component with dents deeper than 0.5" or with localized dents that may foul the pump follower plate or allow leakage by the follower plate seals, return them to the supplier to be transferred into a new drum.

Step 9. Check that there are no dents in a new pail of accelerator deeper than 0.25" and that any such dents are blended over at least 3". If pails of accelerator have dents deeper than 0.25" or localized dents that may foul the pump follower plate or allow leakage by the follower plate seals, transfer the contents into a clean undamaged 5 gallon pail and mark the new pail with the material batch number using a felt- tip permanent marker. Take care when transferring material into another pail to minimize air entrapment.

Step 10. Set the elevator control in the DOWN position and lower the pump into the container.

Step 11. Loosen the T-handle at the follower plate to allow any air below the follower to escape.

Step 12. Bleed the supply pumps according to section 5.10.

Step 13. Establish meter flow rates according to section 5.11.

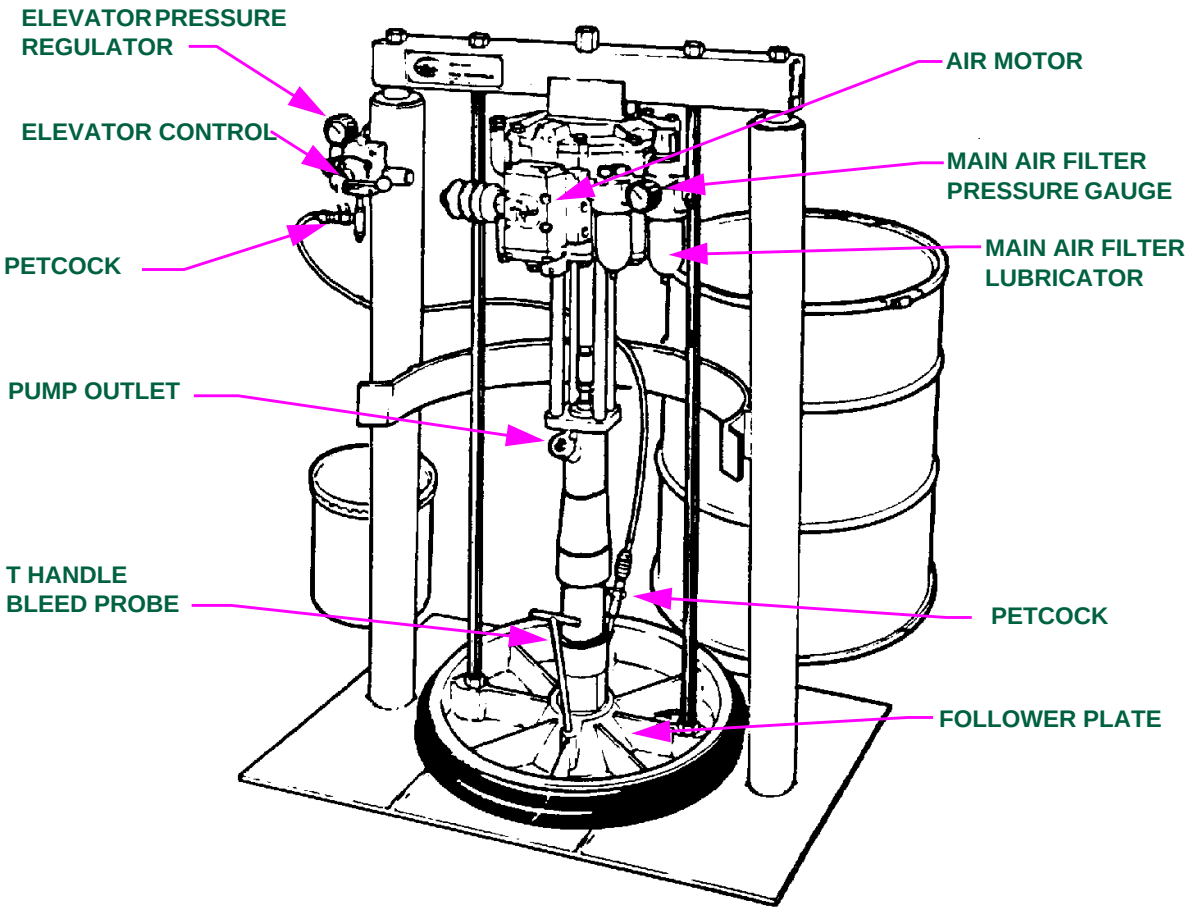

FIGURE 4 - BASE PUMP AND ELEVATOR ASSEMBLY

5.10 Procedure for Bleeding Supply Pumps

5.10.1 Bleed base and accelerator pumps as follows:

Step 1. Turn the main air control ON.

Step 2. Set the elevator pump pressure to 40 psi.

Step 3. Increase the air to the air motor until the pump begins to cycle.

Step 4. Place a suitable waste container under the pump outlet.

Step 5. Open the outlet on the pump using a suitable wrench.

Step 6. Allow the pump to cycle until the material being dispensed through the pump outlet runs air-free and then close the pump bleed valve.

Step 7. Individually open each pump outlet ball valve. The machine is now ready to fill cartridges.

5.11 Set-up of Meter Flow Rates and Balanced Pressures

5.11.1 There is an inlet and outlet pressure gauge for both the base and accelerator sides of the meter. Depending upon the direction of travel of the rod connecting the meter cylinders, read the pressure gauges as follows (see Figure 5):

- If the meter rod is moving from right to left, the right side gauge is the inlet and the left side gauge is the outlet.
- If the meter rod is moving from left to right, the left side gauge is the inlet and the right side gauge is the outlet.

5.11.2 Noting the direction of travel of the meter rod, adjust the pressure to the base pump air motor until the flow rate is as specified in paragraph 5.7.2.

5.11.3 Adjust the accelerator pump air pressure until the accelerator meter inlet pressure is slightly greater than or equal to the accelerator meter outlet pressure. It is imperative that the inlet and outlet pressures for the accelerator side of the meter be balanced, but these pressures do not necessarily have to equal the base side pressures.

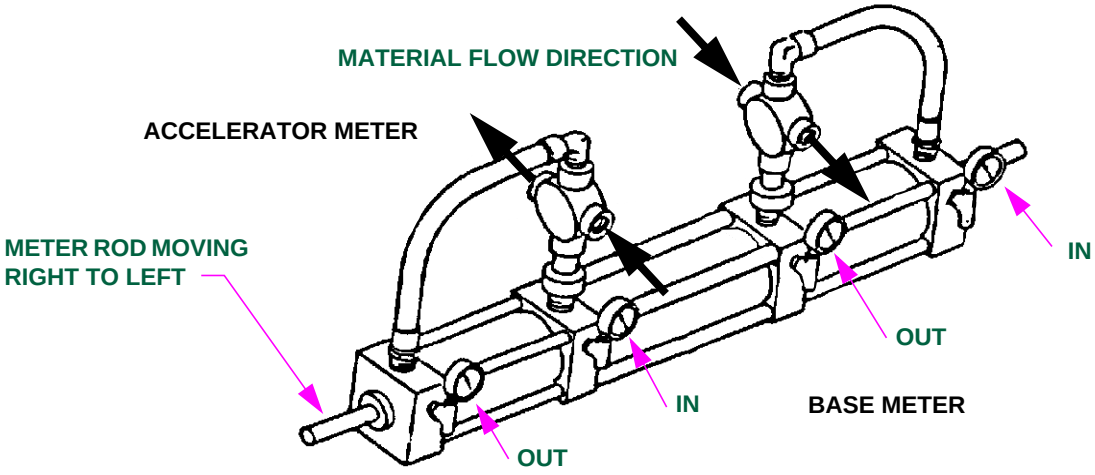

FIGURE 5 - METER INLET AND OUTLET PRESSURE GAUGES

5.12 Refrigeration Control

5.12.1 At the beginning of each shift, Quality Control shall check and record the temperatures of all primary storage freezers used for the refrigerated storage of sealant. If the temperature of a primary storage freezer is above -40°F, Quality Assurance shall be contacted to raise a Corrective Action Request (e.g., according to QAPI 3.8.8.4).

5.12.2 At the start of each shift during which the sealant mixing machine is to be used and periodically (at least twice more during quick-freezing operations) during the shift, Quality Control shall check and record the temperature of the quick-freeze alcohol bath. If the temperature of the quick-freeze alcohol bath is above -70°F, stop sealant mixing and quick-freezing and not re-commence until the temperature of the alcohol bath has been lowered to less than -70°F.

5.13 Accelerated Cure Test

5.13.1 Submit one sealant cartridge from the first rack of cartridges mixed each day to Plastic Shop Quality Control for an accelerated cure test to be conducted as follows:

Step 1. Label and fill the accelerated cure test cartridge in the same manner as production cartridges. Do not subject them to quick-freezing or refrigerated storage.

Step 2. Oven cure the test cartridge at 120°F maximum for 2 hours.

Step 3. Cool to room temperature (approximately 45 minutes). If necessary, cooling to room temperature may be accelerated with an initial cold water bath.

Step 4. Cut the test cartridge in half, lengthwise, using a sealant cartridge cutting tool.

Step 5. Test the cartridge section according to section 6.

5.13.2 Quarantine each day's batch of mixed sealant in the primary storage freezer at -40°F maximum pending results of the accelerated cure test.

5.13.3 Upon completion of satisfactory accelerated cure testing, the Quality Control Inspector shall apply an inspection stamp to the Mixing Data Record Log against the applicable batch mixing date.

5.13.4 Application of the inspection stamp to the log is considered authority to release the sealant batch to Production.

5.14 Base Purge Operation and Procedure

5.14.1 The sealant mixing machine is equipped with a base purge ball valve which is used to force mixed sealant from the mixer using the base component only. The base purge ball valve shall be used along with the meter outlet ball valves. With the base purge ball valve open, only base material is pumped directly from the pump to the mixer, bypassing the meter.

5.14.2 Before shut-down of the machine or whenever the mixing machine is to be idle for 1 hour or longer, in order to prevent any of the mixed sealant from curing in the mixer, the mixer shall be base purged as follows:

Step 1. Place the meter outlet ball valves in the closed position to prevent metered base and accelerator components from entering the mixer.

Step 2. With the mixer motor on and one of the cartridge fill outlets open, place an 8 oz. paperboard container under each cartridge fill outlet.

Step 3. Open the base purge valve. Allow the machine to dispense sealant through the open cartridge fill outlet until only base material appears.

Step 4. Close the cartridge fill outlet, repeat the procedure through the other cartridge fill outlet and close the base purge valve.

5.15 Shut-Down of Machine

5.15.1 Shut down the dynamic mixer by closing the ball valve at the dynamic mixer inlet.

5.15.2 Shut down the air power to the machine by pushing in the black knob on the main air control.

5.16 Transporting Refrigerated Sealant

5.16.1 Transport refrigerated sealant according to the procedure specified in PPS 21.20.

5.17 Clean-Up

5.17.1 Remove DHMS S3.01/B2 base material and uncured mixed sealant from tools and equipment by solvent cleaning according to PPS 31.17.

5.17.2 Remove DHMS S3.01/B2 accelerator material from tools and equipment by washing with water.

5.17.3 Remove DHMS S3.01/B2 cured mixed sealant by mechanical means using a suitable scraper or spatula or by soaking overnight in the solvent specified in PPS 31.17. Do not soak non-metallic tools or materials in solvent. After soaking overnight, thoroughly rinse tools or equipment in warm water to remove all traces of sealant or solvent.

6 REQUIREMENTS

6.1 Mixing Machine

6.1.1 At the start of each shift during which the sealant mixing machine is to be used, and whenever the machine has been idle for 1 hour or more, a weight ratio check on the base and accelerator shall be performed according to section 5.3.

6.1.1.1 Quality Control shall witness each weight ratio check and, when acceptable, the inspector shall apply his inspection stamp against the applicable check on the Mixing Data Record Log.

6.1.2 After each weight ratio check, a paper test shall be conducted according to section 5.4.

6.1.2.1 Evidence of air bubbles, streaks, granular particles or incomplete mixing of the sealant during the paper test are not acceptable, and the cause of such failure shall be determined and rectified before mixing sealant.

6.1.2.2 Quality Control shall witness each paper test and, when acceptable, the inspector shall apply his inspection stamp against the applicable test on the Mixing Data Record Log.

6.1.3 The mixer shall be maintained at a speed of 180-190 rpm during the filling-off of mixed sealant.

6.2 Quick-Freezing

6.2.1 Filled cartridges shall be quick-frozen according to section 5.8 within 15 minutes of filling.

6.2.2 The quick-freeze alcohol bath shall be operating at a temperature of -85°F or less at the beginning of the quick-freezing operation and the maximum allowable temperature of the bath shall be -70°F at any time during the quick-freezing operation.

6.2.3 The temperature of the alcohol bath shall be monitored, by direct measurement, after every fifth rack (100 cartridges) has been quick-frozen.

6.2.4 Sealant cartridges shall remain in the quick-freeze alcohol bath for a minimum of 15 minutes before being transported to a primary storage freezer operating at -40°F.

6.3 Mixed Sealant

6.3.1 One extra cartridge from the first lot of 20 on each shift shall be submitted to Quality Control for accelerated cure testing according to section 5.13.

6.3.1.1 The accelerated cure test section shall be subjected to a momentary hardness test using a Shore Durometer. The minimum acceptable momentary hardness shall be Shore A35.

6.3.1.2 The accelerated cure test section shall be visually examined as follows:

- The cured sealant shall be of a uniform colour with no evidence of streaks of base component or accelerator.
- The cured sealant shall be smooth and uniform in texture with no evidence of coarseness.
- There shall be no evidence of flakes or granular particles interspersed in the sealant.
- In the cured sealant section, the maximum acceptable number of air bubbles between 0.020" and 0.062" in diameter shall be 6 and the maximum acceptable size of any single air bubble shall be 0.062". Air bubbles smaller than 0.020" in diameter shall not be cause for rejection.

6.3.2 Failure of the accelerated cure test cartridge to meet either the hardness or visual requirements specified above shall be cause for rejection of the entire shift's production of sealant represented by the test cartridge.

6.3.3 Mixed sealant shall be quarantined in the sealant room primary storage freezer, at -40°F, pending the results of the accelerated cure test.

6.3.3.1 On completion of satisfactory accelerated cure testing, the Quality Control Inspector shall enter the Shore hardness reading and apply his inspection stamp against the applicable accelerated cure test in the Mixing Data Record Log.

6.3.4 Application of the Quality Control Inspector's inspection stamp against the Weight Ratio Check, Paper Test and Accelerated Cure Test shall authorize the release of the applicable lot of mixed sealant to Production.

6.3.5 All sealant cartridges filled-off according to this standard shall be identified by means of a Sealant Ident/Control disc, clearly marked with the DHMS number and the expiry date, inserted into the cartridge plunger. Sealant cartridges which are not identified as to sealant type and expiry date shall be discarded.

7 SAFETY PRECAUTIONS

7.1 Observe standard plant safety precautions when performing the procedure specified herein.

7.2 When connecting or disconnecting air lines, grip the hose with one hand and actuate the connect/disconnect with the other hand to prevent the hose from flying off the coupling as a result of residual air pressure.

7.3 Neoprene rubber gloves shall be worn at all times when handling dry-ice and when working with the refrigerated alcohol bath in order to prevent freeze burns to the skin.

7.4 Neoprene rubber gloves shall be worn at all times when changing sealant component containers. Take extreme care to avoid skin contact with accelerator material because it absorbs readily into the skin. If skin contact occurs, wash the affected area immediately and thoroughly with soap and warm water.

7.5 Always wear Bombardier approved splash goggles when working with the refrigerated alcohol bath and when changing sealant component containers. If eye contact with accelerator or base compounds occurs, thoroughly flush the eyes for 15 minutes minimum at the nearest eye wash station and report to the Health Centre immediately.

7.6 Always wear Bombardier approved hearing protectors when operating the sealant mixing machine.

7.7 Avoid ingestion of any of the materials specified herein. After operating the mixing machine or handling any of the chemicals specified herein, always wash hands thoroughly before eating or smoking.

7.8 Keep sealant components away from fire and other sources of ignition.

7.9 Keep the sealant stripper tank cover in place at all times.

7.10 *Ensure the sealant mixing room is well ventilated. For threshold limit values, consult Health and Safety.*

7.11 Refer to PPS 31.17 for the safety precautions for handling and using solvents.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for machine mixing of DHMS S3.01/B2 sealant shall have a good working knowledge of the applicable procedure and requirements as specified herein and shall have exhibited their competency to their supervisor.

9 MAINTENANCE OF EQUIPMENT

9.1 Perform regularly scheduled general machine maintenance according to the manufacturer's instructions.

9.2 The machine operator shall perform daily maintenance checks according to paragraph 5.2.2.

10 STORAGE

10.1 Store sealant at a temperature of 16 to 26°C (60 to 80°F) according to the precautions necessary for flammable materials.

10.2 Always use oldest stock first.

10.3 Store sealant base and accelerator together as matched batch numbers.

10.4 Refer to PPS 13.28 for the storage life of the sealant.

10.5 Keep sealant containers tightly closed when not in use.