

- KIT NO. 10 – Vacuum Pump Cooling Kit for Airborne Model 200 thru 212CW and CC Dry Air Pumps; and Tempest Models AA3215CC and AA3216CW Dry Air Pumps  
 KIT NO. 11 – Vacuum Pump Cooling Kit for EDO-AIRE Model 1U128, 1U128A and 1U128B; and SIGMA TEK Model 1U128B Dry Air Pumps

**INSTALLATION INSTRUCTIONS**

1. To install Vacuum Pump Cooling Kit No. 10 on Airborne Model 200 thru 212CW and CC Dry Air Pumps, and on the Tempest Models AA3215CC and AA3216CW Dry Air Pumps, or Vacuum Pump Cooling Kit No. 11 on EDO-AIRE Model 1U128, 1U128A, 1U128B, and SIGMA TEK Model 1U128B Dry Air Pumps installed on the aircraft shown above, proceed according to the following instructions and refer to Flange Installation Drawings I-1, I-2, and I-3. For a view of the cooling shroud, ducting and flange, refer to Drawings 1 and 2 for Kit No. 10 and Drawing 3 for Kit No. 11.

**2. COOLING SHROUD INSTALLATION.**

- a. To mount the cooling shroud on the vacuum pump, the shroud must be held open slightly while installing. The shroud is made so the cooling exit is not centered with the cooling inlet. Turn over and/or rotate the shroud on the vacuum pump to best compromise the cooling inlet and outlet with other objects that may interfere with them near and around the vacuum pump.
- b. On the Airborne and Tempest installation (Kit No. 10), the shroud may not be able to be slipped on the pump and rotated to the desired position because of the interference with other parts. In this case, remove the rear fitting on the pump, slip the shroud on and rotate it, then reinstall the rear fitting. If lubrication of the fitting is needed, use only a spray silicone on the threads, shake off the excess and let it dry before installing the fitting. **DO NOT** use oil, grease or tape on the threads.
- c. Optional Shroud Position on Lycoming Engines. Due to tachometer drive interference on some Lycoming engines, an optional position on the shroud may be 1/8" toward the undriven end of the pump, or the shroud can be filed to allow the shroud to center on the pump. **DO NOT** file through the shroud.

3. **COOLING DUCT INSTALLATION.** Install the cooling duct on the shroud inlet using sealant and a nylon cable tie, as per instructions on Drawings 1, 2 or 3, as applicable. Route the cooling duct to the aft side of the rear engine baffle, avoiding sharp bends, sharp objects and moving parts. Do not cut off excess duct at this time.

**4. INSTALLATION OF FLANGE FITTING.** (Refer to Drawings I-1, I-2, or I-3).

- a. Make a 1 1/8" hole in the baffle, maintaining a 1" edge distance minimum, or as per drawing.

Project Engineer: <i>[Signature]</i>	Quality Manager: <i>[Signature]</i>
Date: 6/9/18	Date: 6-7-18
Engineering Manager: <i>[Signature]</i>	Manufacturing Manager: <i>[Signature]</i>
Date: 6/6/18	Date: 6-7-18

**McFarlane**® McFarlane Aviation, Inc.  
 696 East 1700 Road  
 Baldwin City, Kansas 66006

Drawing: COOLING SHROUD INSTALLATION INSTRUCTIONS			
Size: A	Scale: None	Drawn: BWM	Sheet: 1 OF 9
Drawing: 7153			REVISION
CONFIDENTIAL: Proprietary information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)			~

~	06/04/2018	ORIGINAL
<b>X</b>		<b>REVISION</b>

Installation Instructions for Kits No. 10 and 11 (Continued):


- b. Drill four (4) #40 holes and use washers under rivets on flange side. Install the flange through the baffle from the front. Use sealant between flange and baffle. Install the flanged fitting using four (4) AN470AD-3 rivets or drill four (4) #28 holes and use four (4) AN526-632 screws and AN365-632 nuts and AN960-6 washers.
- c. Cut the cooling duct to length—avoid making it too long or too short for best routing. Try to avoid making over 90 degree bends and sharp bends.
- d. Install the cooling duct on the flanged fitting using sealant and a nylon cable tie (see Drawings 1, 2 or 3). Support or tie the cooling duct every 12 inches.

5. SEALING REQUIREMENTS.

- a. To compensate for the 7/8" hole in the rear engine baffle, seal holes in the engine baffling at forward and rear corners, the space between the rear baffle and the engine crankcase, where sheet metal corners have holes in them, and where hoses and wires pass through the baffling. Seal enough holes and gaps to exceed .601 square inch, or 1/8" x 5", or 1/4" x 2.5".
- b. Use 890 or RTV 106 red high temperature sealants per manufacturers' instructions. Alternate sealants are GE RTV 102, 103, 108, 158; Dow Corning 732 RTV sealants; or equivalents.

5. PAPERWORK.

- a. Add the appropriate cooling kit number to the aircraft equipment list.
- b. The weight of this kit is .24 lbs.
- c. Complete FAA Form 337 and make proper logbook entry of the kit installation.
- c. These installation instructions will become part of the permanent aircraft records.

		McFarlane Aviation, Inc. 696 East 1700 Road Baldwin City, Kansas 66006	
Drawing: VACUUM PUMP COOLING KIT			
Size: A	Scale: None	Drawn: BWM	Sheet: 2 OF 9
Drawing: 7146			REVISION 2
<small>CONFIDENTIAL: Proprietary information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)</small>			

KIT NO. 20 - Vacuum Pump Cooling Kit for Airborne Model 400-Series Dry Air Pumps and Tempest  
AA441CC and AA442CW Series Dry Air Pumps

**INSTALLATION INSTRUCTIONS**

(Note: Cooling Shroud must be at least 72° F. before attempting to install.)


1. To install Vacuum Pump Cooling Kit No. 20 on Airborne and Tempest Model 400-Series Dry Air Pumps, installed on the aircraft shown above, proceed according to the following instructions and refer to Flange Installation Drawings I-1, I-2, and I-3. For a view of the cooling shroud, ducting and flange, refer to Drawing 4.

2. **COOLING SHROUD INSTALLATION.** To mount the cooling shroud on the vacuum pump, the shroud must be pushed on over the fins on the pump. If unable to do so, heat the shroud under hot tap water or allow it to set in hot water for five minutes. (Caution: Water should not be hot enough to burn yourself.) The shroud is made so the cooling exit is not centered with the cooling inlet. Turn over and/or rotate the shroud on the vacuum pump to best compromise the cooling inlet and outlet with other objects that may interfere with them near and around the vacuum pump. If a fitting or fittings are removed from the pump during installation, and lubrication is needed, use only a spray silicone on the threads, shake off the excess and let it dry before installing the fitting. **DO NOT** use oil, grease or tape on the threads.

3. **COOLING DUCT INSTALLATION.** Install the cooling duct on the shroud inlet using sealant and a nylon cable tie, as per instructions on Drawing 4. Route the cooling duct to the aft side of the rear engine baffle, avoiding sharp bends, sharp objects and moving parts. **DO NOT** cut off excess duct at this time.

4. **INSTALLATION OF FLANGE FITTING.** (Refer to Drawings I-1, I-2, or I-3).

- a. Make a 1 3/8" hole in the baffle, maintaining a 1" edge distance minimum, or as per drawing.
- b. Drill four (4) #40 holes and use washers under rivets on flange side. Install the flange through the baffle from the front. Use sealant between flange and baffle. Install the flanged fitting using four (4) AN470AD-3 rivets or drill four (4) #28 holes and use four (4) AN526-632 screws and AN365-632 nuts and AN960-6 washers.
- c. Cut the cooling duct to length—avoid making it too long or too short for best routing. Try to avoid making over 90 degree bends and sharp bends.
- d. Install the cooling duct on the flanged fitting using sealant and a nylon cable tie (see Drawing 4). Support or tie the cooling duct every 12 inches.

		McFarlane Aviation, Inc. 696 East 1700 Road Baldwin City, Kansas 66006	
Drawing: <b>VACUUM PUMP COOLING KIT</b>			
Size: <b>A</b>	Scale: <b>None</b>	Drawn: <b>BWM</b>	Sheet: <b>3</b> OF <b>9</b>
Drawing: <b>7146</b>			REVISION <b>2</b>
<small>CONFIDENTIAL: Proprietary Information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)</small>			


Installation Instructions for Kits No. 20 (Continued):

5. SEALING REQUIREMENTS.

- a. To compensate for the 1.07" hole in the rear engine baffle, seal holes in the engine baffling at forward and rear corners, the space between the rear baffle and the engine crankcase, where sheet metal corners have holes in them, and where hoses and wires pass through the baffling. Seal enough holes and gaps to exceed .899 square inch, or 1/8" x 7.2", or 1/4" x 3.6".
- b. Use 890 or RTV 106 red high temperature sealants per manufacturers' instructions. Alternate sealants are GE RTV 102, 103, 108, 158; Dow Corning 732 RTV sealants; or equivalents.

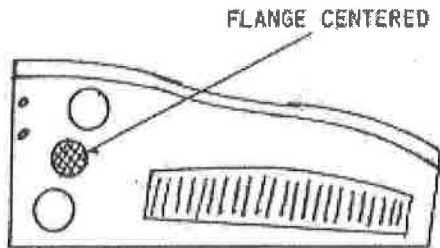
5. PAPERWORK.

- a. Add the appropriate cooling kit number to the aircraft equipment list.
- b. The weight of this kit is .30 lbs.
- c. Complete FAA Form 337 and make proper logbook entry of the kit installation.
- c. These installation instructions will become part of the permanent aircraft records.

		McFarlane Aviation, Inc. 696 East 1700 Road Baldwin City, Kansas 66006	
Drawing: VACUUM PUMP COOLING KIT			
Size: A	Scale: None	Drawn: BWM	Sheet: 4 OF 9
Drawing: 7146			REVISION 2
<small>CONFIDENTIAL: Proprietary Information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)</small>			

CESSNA 310P AND 310Q, TC 3A10

VIEW: L H REAR BAFFLE LOOKING AFT



DRAWING I-1

CESSNA 310R, T310P, T310Q, TC 3A10

VIEW: R H REAR BAFFLE LOOKING AFT

FLANGE CENTERED FROM EXISTING ITEMS NEAR TOP OF BAFFLE.



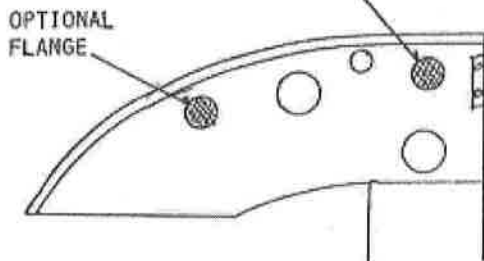
NOTE: BAFFLE CONFIGURATION MAY VARY BETWEEN S/N'S.

DRAWING I-2

CESSNA T310R, TC 3A10

VIEW: R H REAR BAFFLE LOOKING AFT

FLANGE CENTERED FROM EXISTING ITEMS NEAR TOP OF BAFFLE.



NOTE: BAFFLE CONFIGURATION MAY VARY BETWEEN S/N'S.

DRAWING I-3



McFarlane Aviation, Inc.  
696 East 1700 Road  
Baldwin City, Kansas 66006

Drawing:

VACUUM PUMP COOLING KIT

Size: **A** Scale: **None** Drawn: **BWM** Sheet: **5** OF **9**

Drawing:

7146

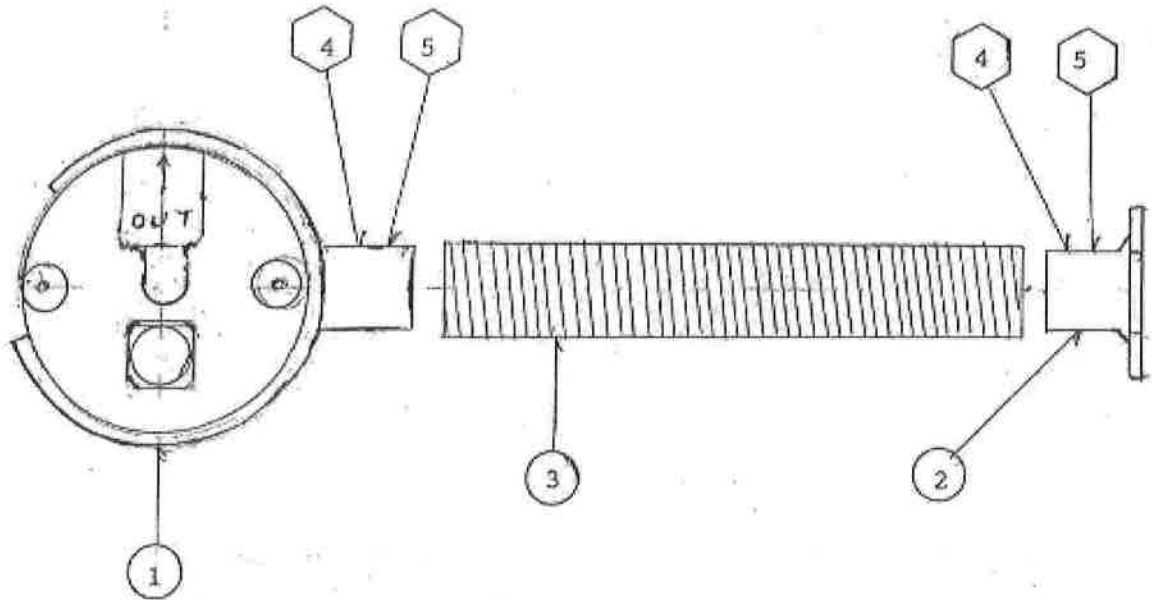
REVISION

2

CONFIDENTIAL: Proprietary information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)

KIT NO. 10

View of Cooling Shroud on TEMPEST Pump, Ducting & Flange



**Note:** Shroud must be centered on the pump.

- 4 Cable Ties – Attach these around ducting at inlet of shroud and outlet of flange after ducting has been sealed into place on the inlet and outlet.
- 5 Sealant – Place sealant on outside of shroud inlet and flange outlet, then push ducting into place. for type of sealant to be used, refer to paragraph 5b of Installation Instructions.

5	A/R	Sealant	
4	2	Cable Ties	2CDH-3
3	A/R	Ducting	2CDH-2
2	1	Flange	2CDH-1
1	1	Shroud	2CDH
Item	Qty	Nomenclature	Part No.

**DRAWING 1**

**McFarlane**<sup>®</sup> McFarlane Aviation, Inc.  
696 East 1700 Road  
Baldwin City, Kansas 66006

---

Drawing: **VACUUM PUMP COOLING KIT**

---

Size: **A**    Scale: **None**    Drawn: **BWM**    Sheet: **6** OF **9**

---

Drawing: REVISION

7146

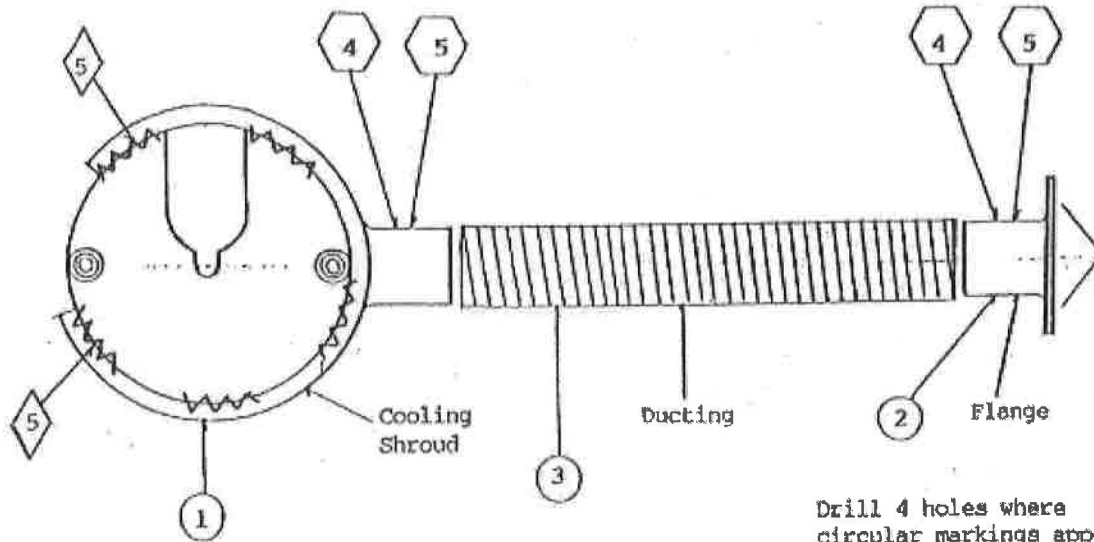
---

CONFIDENTIAL: Proprietary Information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)

2

KIT NO. 10

VIEW OF COOLING SHROUD ON AIRBORNE 200-212CW & CC PUMPS, DUCTING & FLANGE



Drill 4 holes where circular markings appear on the flange.

**Note:** Shroud must be centered on the pump.

- 4 Cable Ties - Attach these around ducting at inlet of shroud and outlet of flange after ducting has been sealed into place on the inlet and outlet.
- 5 Sealant - Place sealant on outside of shroud inlet and flange outlet, then push ducting into place. For type of sealant to be used, refer to paragraph 5b of Installation Instructions. Note: If cooling shroud appears to rotate easily after installation, it may be advisable to place a sealant fillet between shroud and pump as shown.
- 5 Optional - apply sealant fillet between shroud and pump, at the rear of the pump, as shown, to prevent shifting of shroud on pump.

DRAWING 2

Item	Qty	Nomenclature	Part No.
5	A/R	Sealant	
4	2	Cable Ties	2CDH-3
3	A/R	Ducting	2CDH-2
2	1	Flange	2CDH-1
1	1	Shroud	2CDH

**McFarlane** McFarlane Aviation, Inc.  
696 East 1700 Road  
Baldwin City, Kansas 66006

Drawing: **VACUUM PUMP COOLING KIT**

Size: **A** Scale: **None** Drawn: **BWM** Sheet: **7** OF **9**

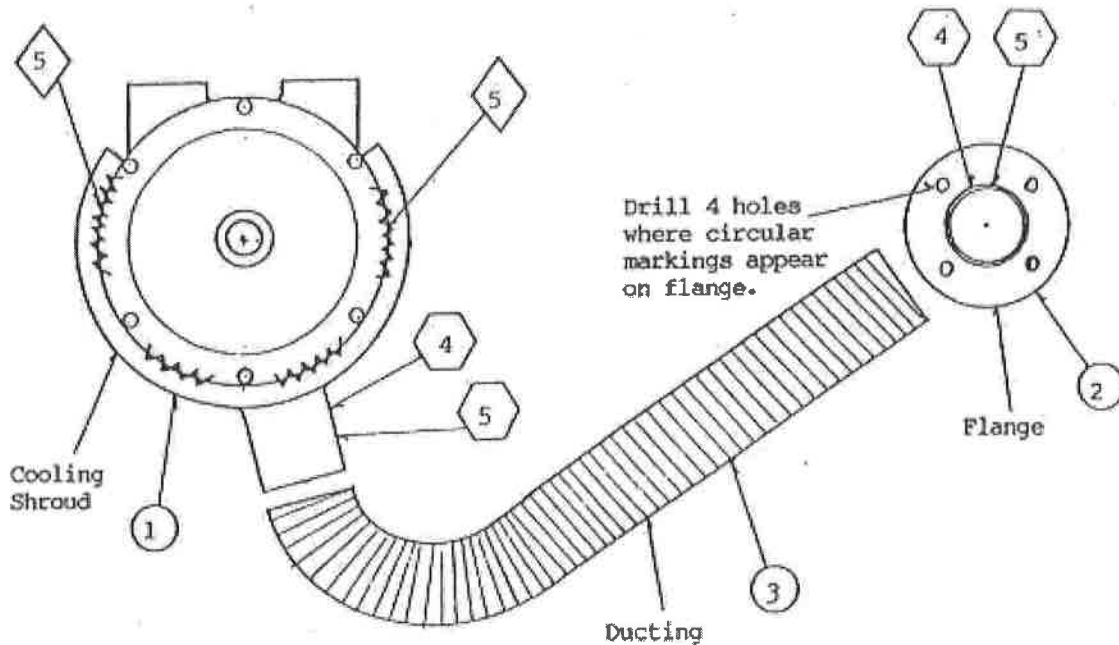
Drawing: **7146**

REVISION **2**

CONFIDENTIAL: Proprietary information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)

KIT NO. 11

View of Cooling Shroud on EDO-AIRE & SIGMA TEK Pumps, Ducting & Flange



Note: Shroud must be centered on the pump. On some installations the pump may have to be rotated on the mounting pad because of interference with other objects.



Cable Ties - Attach these around ducting at inlet of shroud and outlet of flange after ducting has been sealed into place on the inlet and outlet.



Sealant - Place sealant on outside of shroud inlet and flange outlet, then push ducting into place. For type of sealant to be used, refer to paragraph 5b of Installation Instructions.



Apply sealant fillet between shroud and pump, at the rear of the pump, as shown, to prevent shifting of shroud on pump.

DRAWING 3

Item	Qty	Nomenclature	Part No.
5	A/R	Sealant	
4	2	Cable Ties	2CDH-3
3	A/R	Ducting	2CDH-2
2	1	Flange	2CDH-1
1	1	Shroud	4ADH



McFarlane Aviation, Inc.  
696 East 1700 Road  
Baldwin City, Kansas 66006

Drawing:

VACUUM PUMP COOLING KIT

Size: A Scale: None Drawn: BWM Sheet: 8 OF 9

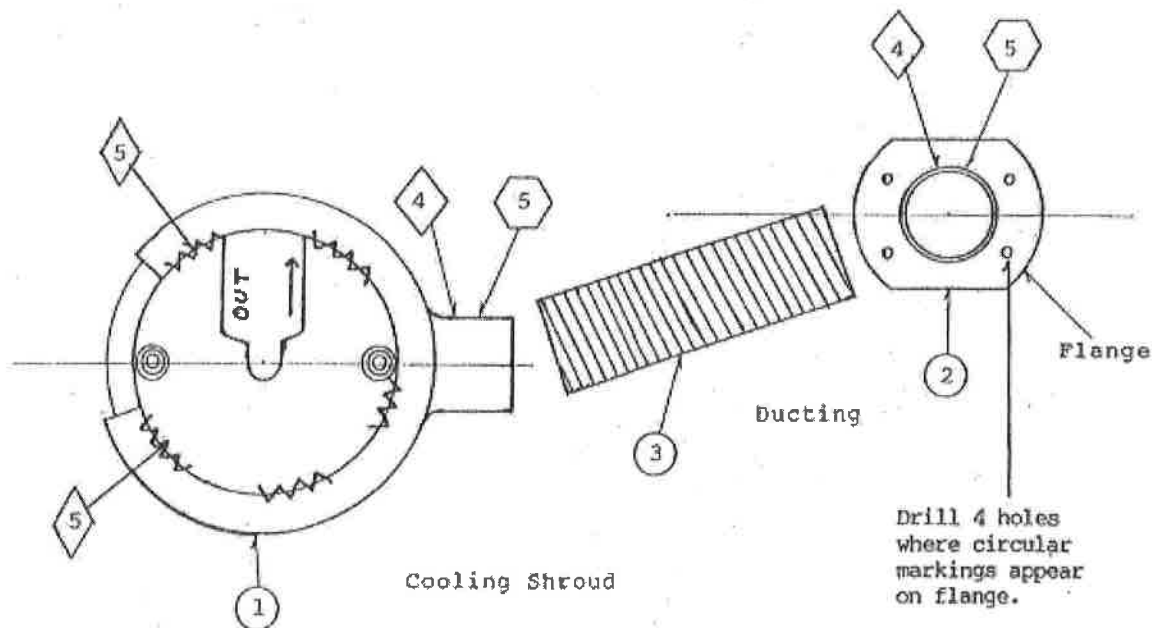
Drawing: 7146 REVISION

CONFIDENTIAL: Proprietary information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)



KIT NO. 20

VIEW OF COOLING SHROUD ON AIRBORNE AND TEMPEST 400-SERIES PUMPS, DUCTING AND FLANGE



**Note:** Shroud must be centered on the pump.

**4** Cable Ties - Attach these around ducting at inlet of shroud and outlet of flange after ducting has been sealed into place on the inlet and outlet.

**5** Sealant - Place sealant on outside of shroud inlet and flange outlet, then push ducting into place. For type of sealant to be used, refer to paragraph 5b of Installation Instructions. Note: If cooling shroud appears to rotate easily after installation, it may be advisable to place a sealant fillet between shroud and pump as shown.

**5** Optional - apply sealant fillet between shroud and pump, at the rear of the pump, as shown, to prevent shifting of shroud on pump.

**DRAWING 4**

Item	Qty	Nomenclature	Part No.
5	A/R	Sealant	
4	2	Cable Ties	2CDH-3
3	A/R	Ducting	6ADH-2
2	1	Flange	6ADH-1
1	1	Shroud	6ADH

**McFarlane** McFarlane Aviation, Inc.  
696 East 1700 Road  
Baldwin City, Kansas 66006

Drawing: **VACUUM PUMP COOLING KIT**

Size: **A** Scale: **None** Drawn: **BWM** Sheet: **9** OF **9**

Drawing: **7146** REVISION **2**

CONFIDENTIAL: Proprietary information of McFarlane Aviation, Inc. Reproduction, dissemination, and disclosure is STRICTLY FORBIDDEN without the expressed written permission of McFarlane Aviation, Inc. All Rights Reserved. Copyright McFarlane Aviation, Inc. (unpublished)