

THE POWER IS IN THE PUMP!



INSTALLATION INSTRUCTIONS



AMERICAN TURBINE

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AMERICAN TURBINE

PANTHER ENERGIZER KIT



BEFORE



AFTER

AMERICAN TURBINE

PANTHER ENERGIZER KIT PUMP REMOVAL



BEFORE



AFTER

The American Turbine Panther Energizer Kit converts your antiquated Panther into a modern mixed flow jet. The kit will allow you to install many new after market pieces to enhance the efficiency and handling of your boat.



STEP 1

Disconnect battery lead
from battery.

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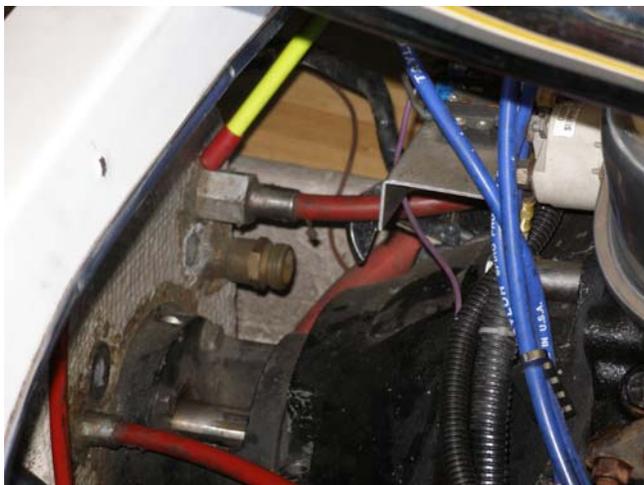


STEP 2

Remove oil level indicator from bearing cap.

STEP 3

Remove clevis pin that connects steering cable to steering extension.



STEP 4

Detach steering cable from steering tube by unthreading hex nut. Also disjoin water hose directly below the steering cable.

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PANTHER ENERGIZER KIT PUMP REMOVAL



STEP 5

Disjoin water hose. Make sure that all fittings left behind will clear holes in transom upon removal of suction.

STEP 6

Loosen and remove the yoke that secures the engine bell housing to the front of the pump.



At this point the engine should be slightly raised at the rear. This will remove the weight off the snout of the pump.

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STEP 7

Now remove five 1/2" bolts that fasten the jet unit to the boat.

At this point the jet is only held in with glue. It can be dislodged by applying slight pressure at the nozzle end of the jet. If the jet does not easily break free, make sure the unit is not fastened in any other place. Use floor jack to break the sealant face. Place the jack under the cavitation plate as you remove the jet.



STEP 8

As the jet is pulled away from the boat pull steering cable out of the steering tube.

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PANTHER ENERGIZER KIT PUMP REMOVAL

STEP 9

The reverse cable is connected to the linkage with a coupling nut. Unscrew the nut from the cable.



STEP 10

In most cases the cable is threaded into the suction. It can be removed by turning the entire jet counter clock wise and holding the cable.

If you are going to replace the cable, just saw it in half and save yourself a lot of time.

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PANTHER ENERGIZER KIT KIT INSTALLATION

AFTER YOU HAVE THE JET UNIT REMOVED FROM THE BOAT

1. Remove the tail piece (stator housing). Photo 1
2. Remove the impeller. Photo 2
3. Remove the bearing housing. Photo 3
4. Remove the mechanical seal (water seal). Photo 4
5. Remove the impeller shaft.
6. Remove the ceramic seat from the impeller shaft tube. Photo 5
7. Remove the lip seal (rear oil seal) from the drive housing. Photo 6
8. Remove the water tube. Photo 7
9. Remove the steering tube (nipple). Photo 1
10. Pre-clean the drive housing, look for cracks, excessive corrosion.
11. You may want to remove the cavitation plate to make it easier to paint but, be prepared to drill-out the flathead screws and replace them with new ones.
12. Drill out the top two holes shown in FIG.1 25/64" diameter.
13. Saw off the reverse pivot boss FIG. 2 - Photo 8
14. Clean and paint the drive housing.
15. Use a 3/8 NPT tap to chase the threaded hole where the reverse cable once came through FIG 1. Tap the hole deep enough to install the 5/8-18 threaded plug, use thread sealer.
16. Use 1/2 NPT tap to chase the water cooling hole and the steering cable hole FIG. 1
17. Install the 1/2 NPT hex pipe plug from the outside as shown FIG. 1, use thread sealer.
18. Install the 1/2 NPT x 5/8 hose barb from the inside as shown FIG.1, use thread sealer. Photo 9
19. Install the 3/8 NPT x 5/8" hose barb into the threaded end of the 1/2 NPT x 5/8 hose barb as shown in FIG.1. Photo 10
20. Install the suction seal into the drive housing as shown FIG.1 make sure you install it with the spring facing the impeller (away from the engine).
21. Test fit the suction piece adapter to the drive housing. Screw the (4) 3/8 studs into the adapter FIG.3 & 4. Install with Loc-Tite and make sure they don't protrude above the machined surface.
22. Place the suction piece adapter on the drive housing, line up the water cooling hole with the notch in the flange.
23. Insert all eight (8) 3/8-16 Socket head cap screws into flange holes to make sure you have enough bolt head clearance. If you need additional clearance, mark the spot with a sharpie marker, remove the suction piece adapter and then grind or file for proper clearance FIG.3. Test fit again.
24. Place a small bead of silicone seal on the flange of the drive housing (where the suction piece adapter flange comes in contact with the drive housing flange). FIG 4 - Photo 11
25. Install the suction piece adapter using the lock washers and nuts provided then torque to 25 ft/lbs FIG.4.
26. Fill the two holes in the drive housing with silicone seal FIG.3 - Photo 12

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PANTHER ENERGIZER KIT KIT INSTALLATION

27. Inject grease into the original bearing bore, fill the cavity about half full leaving the center open for the shaft to pass through. FIG. 5
28. Install the bearing housing with the grease zerk pointing up. Fill the area between the two seals in the bearing housing with grease. Make sure the o-ring is in the groove, torque the 3/8 socket bolts to 25 ft/lbs. FIG. 5
29. Wrap the threaded end of the pump shaft with black electrical tape (wrap the threads and the shoulder) to protect the seals during installation. PHOTO 13
30. Install the shaft assembly be careful not to damage the seals.
31. Install the bearing cap. Wipe a thin film of silicone seal on the face where it contacts the bearing housing. Torque the 5/16 socket head bolts to 20 ft/lbs. FIG. 6, PHOTO 14
32. Using a grease gun with the grease provided inject grease through the zerk until you see it coming through the bearing while rotating the shaft. Make sure you keep the bearing protected until you are ready to install the jet in the hull.
33. Install the impeller. Shim the impeller so that you have .030-.040 between the impeller and the wear-ring shoulder. PHOTOS 15 & 16, FIG 7 & 12
34. Install the impeller key, impeller, and nut then torque to 70 ft/lbs. Bolt the 2" x 18" flat bar to the end yoke to back up the impeller shaft. PHOTO 9, FIG 7
35. Temporarily install the bowl with four equal spaced bolts. Snug up the bolts, rotate the impeller shaft checking for tight spots or ticking noise. After you are satisfied there are no tight spots or noises then remove the bowl. FIG 8 Note: it is easier to install into the hull if you remove the bowl. You can hold the shaft and rotate it to line up the splines with the end yoke.
36. Install one end of the cooling hose on the hose barb (on the outside housing) secure with hose clamp. FIG 7

Installing the Jet Unit

Installing the steering kit

1. Using the paper template provided (Hole Template 1), tape the template to the hull using the dimensions provided. You will need a 1-1/2" hole saw, 1" hole saw and 3/8" drill bit. FIG 11
2. Coat the mating side of the steering bezel with silicone seal, install 5/16 hex bolts and torque to 20 ft/lbs FIG 10

DRIVELINE

Installing the end yoke

37. The end yoke (splined end of the drive line) must be replaced with the larger one provided. There are two types of Panther end yokes ones that attach the u-joint with u-bolts and the fixed ones. If you have the u-bolt style you simply unbolt the u-joint and install the one provided, torque the nuts to 22 ft/lbs and use loc-tite. PHOTO 18, 19, 20, & 21
38. If you have the fixed end yoke you must unbolt the entire driveline and have the end yoke pressed off and the one provided pressed on.

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PANTHER ENERGIZER KIT KIT INSTALLATION

INSTALLING THE JET UNIT

39. Clean all the silicone off the hull where the jet unit mates.
40. It is recommended that you install two ½-13 by about 2-1/2” long all-thread studs in the top two mounting holes of the drive housing; it helps to hold the jet up while you are engaging the driveline. FIG 10
41. Apply silicone sealant to the drive housing flange around bolt holes, fittings, and the two vertical sides of the water intake. FIG 9
42. Align the driveline by rotating the pump shaft then engage the shaft, install the three ½-13 bolts, remove the two studs replace them with the two cap screws torque all five of them to 30 ft/lbs. FIG 10
43. If you have a 3-point mount you must also attach the u-clamp and tighten.
44. Attach the water cooling hose (**IT IS HIGHLY RECOMMENDED THAT YOU REPLACE ALL ENGINE COOLING HOSES WITH HIGH-PRESSURE RATED HOSE 300 psi WORKING PRESSURE**).
45. Install the bowl; make sure to use the o-ring. FIG 8 Torque the bowl bolts to 25 ft/lbs.
46. Install the ¼ x 3” brass nipple into the bowl use thread sealer. PHOTO 22
47. Install the ¼ x 3/8 NPT adapter onto the nipple use thread sealer. PHOTO 23
48. Install the 5/8 hose barb into the adapter use thread sealer. PHOTO 23
49. Install other end of cooling hose and secure with hose clamp. PHOTO 24
50. Install the steering assembly; make sure to use the gasket. Torque the bolts to 20 ft/lbs. FIG 10
51. Install the clevis and steering extension to the tiller arm. Torque the locknut to 20 ft/lbs make sure the clevis swings freely. FIG 10
52. Install the steering cable into the steering tube, tighten the nut so that you cannot move the steering cable conduit (outer plastic covering) back and forth. FIG 11
53. Install the steering extension onto the steering cable fasten with the 3/8-24 bolt and locknut torque to 20 ft/lbs. FIG 11
54. Center the steering wheel, remove the four screws that bolt the retaining plate to the bezel. Screw the white plastic ball in or out until the steering nozzle is pointing straight back. Re-attach the retaining plate torque to 5 ft/lbs. FIG 11
55. **Steer full left then full right make sure you have full travel and that the steering does not lock up.**
56. Route the shift cable through the bezel. Screw one of the 5/8-18 nuts up on the cable Make a gentle “S” curve and go through the tiller arm, screw the other nut up on the cable. Screw the reverse pivot on the end of the cable, insert into lever, install cotter pin, and bend over legs. Tighten up cable nuts; tighten up the reverse cable packer. FIG 10
57. The shifter will have to be reversed i.e. you will have to 180* the inside lever so that when you pull on the shifter handle the jet will go into reverse (the reverse bucket will cover the nozzle).

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PANTHER ENERGIZER KIT DRIVE HOUSING

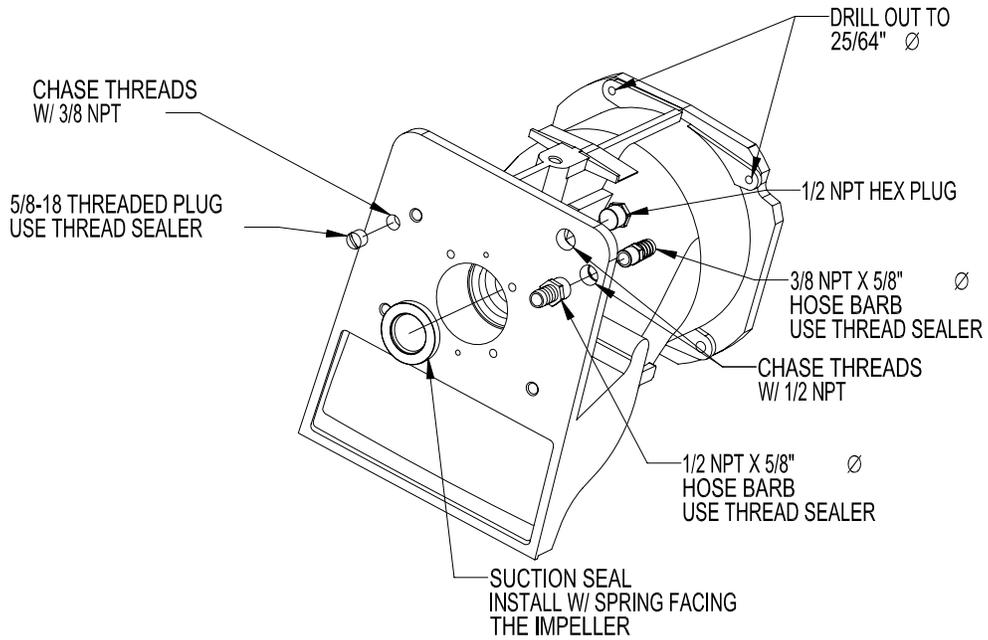


FIG 1

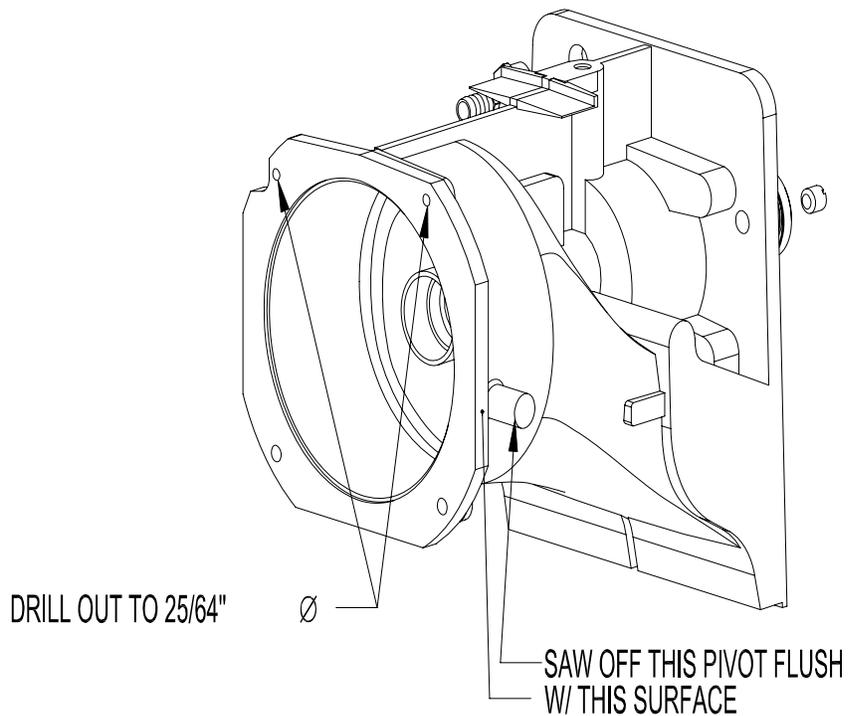


FIG 2

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PANTHER ENERGIZER KIT DRIVE HOUSING

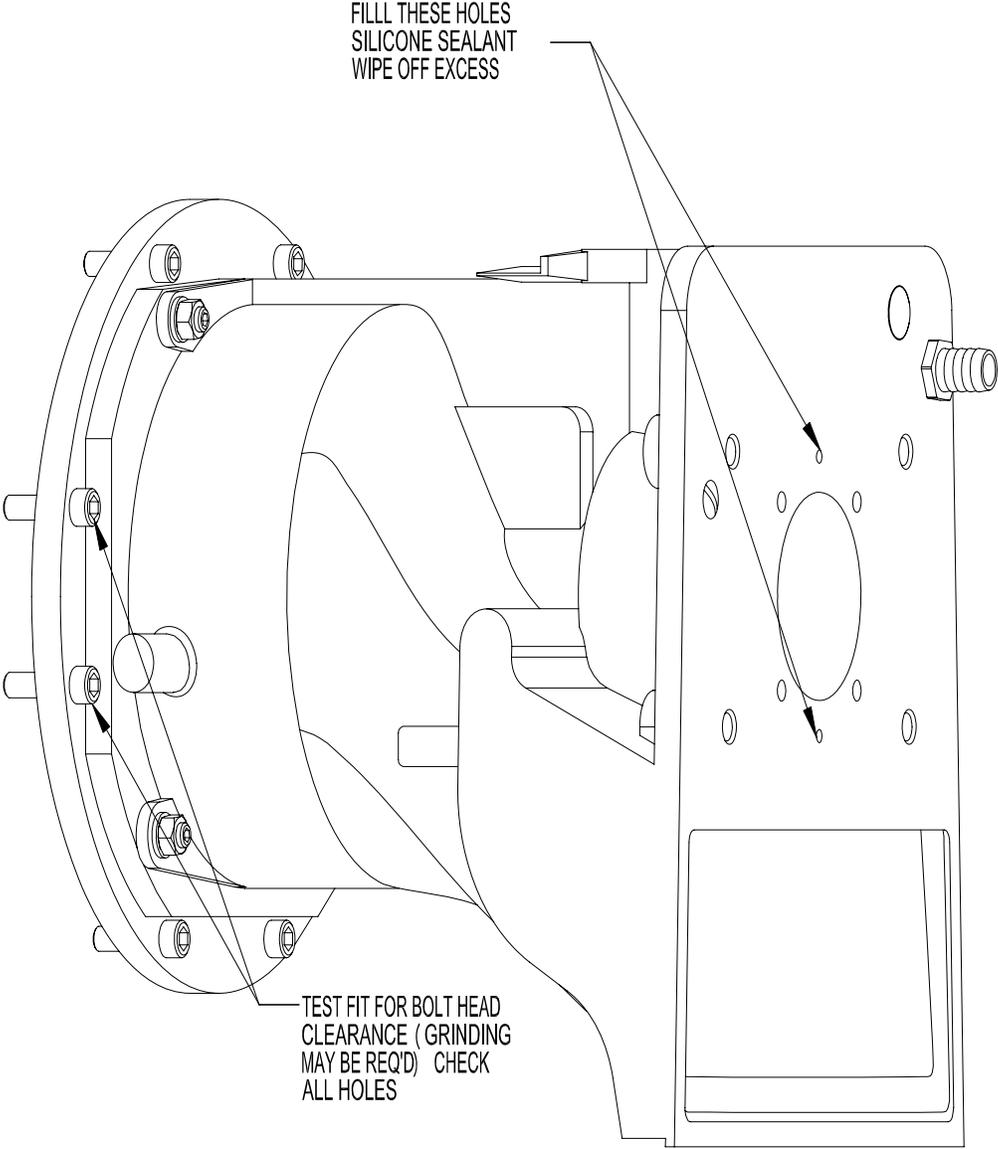


FIG 3

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PANTHER ENERGIZER KIT DRIVE HOUSING

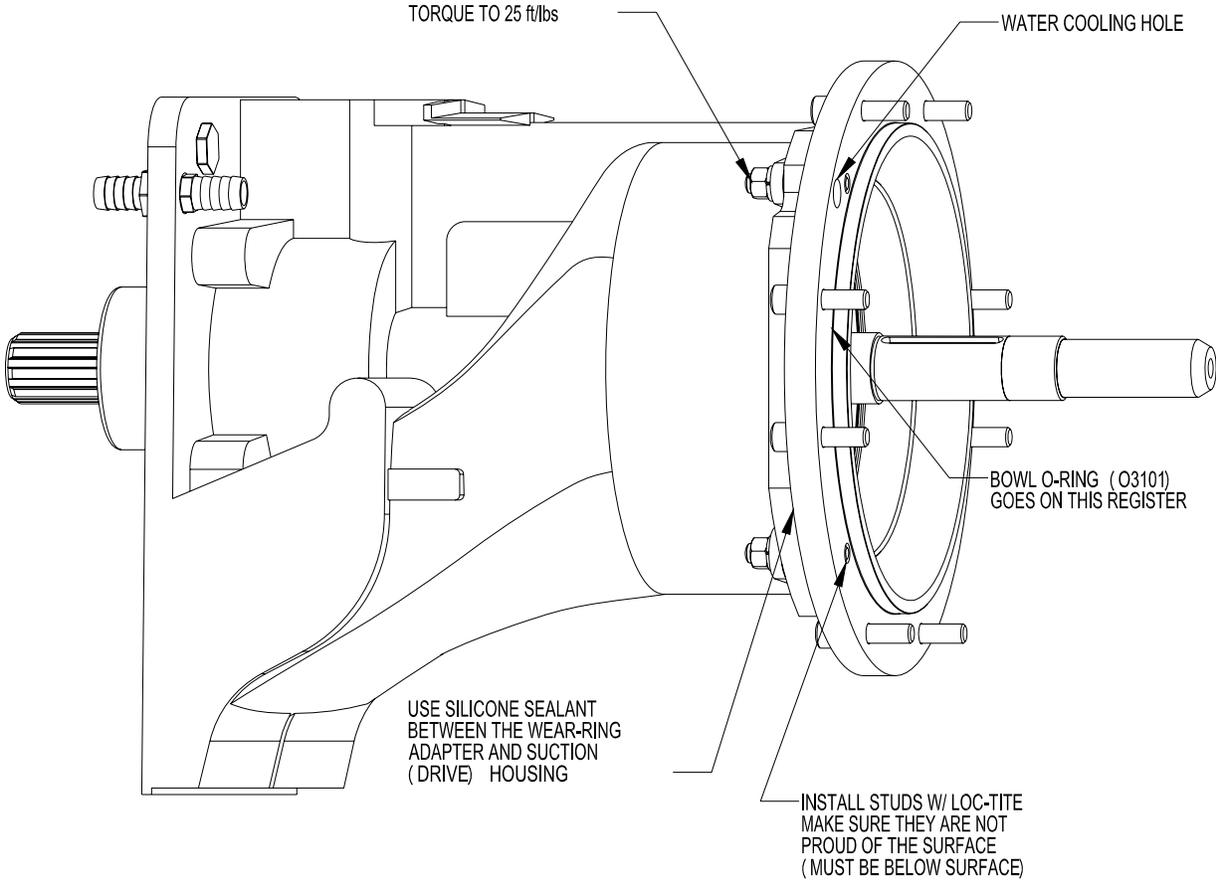
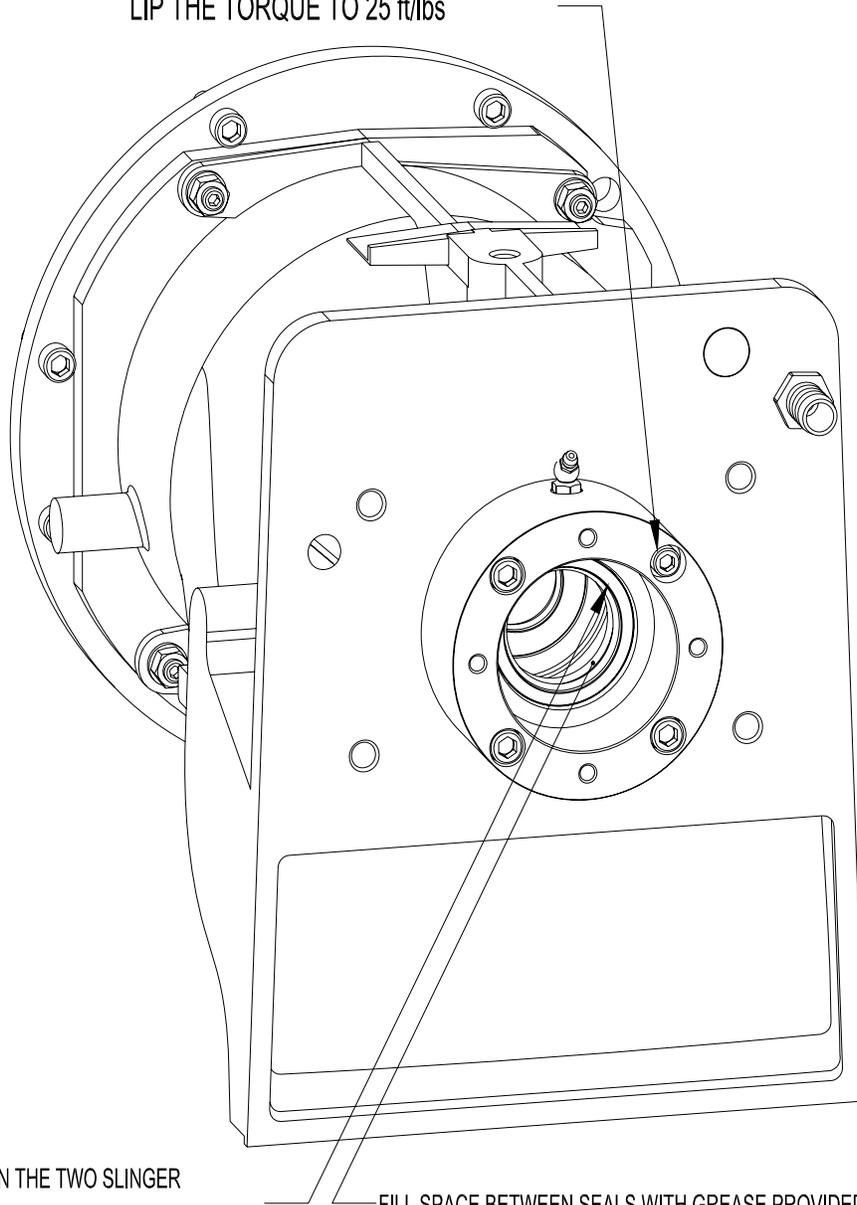


FIG 4

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PANTHER ENERGIZER KIT DRIVE HOUSING

INSTALL BEARING HOUSING AS SHOWN
MAKE SURE THE O-RING IS ON THE REAR
LIP THE TORQUE TO 25 ft/lbs



GREASE BETWEEN THE TWO SLINGER
RING SEALS

FILL SPACE BETWEEN SEALS WITH GREASE PROVIDED
FILL ABOUT HALF FULL LEAVING THE CENTER OPEN
FOR THE SHAFT TO PASS THROUGH

FIG 5

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PANTHER ENERGIZER KIT DRIVE HOUSING

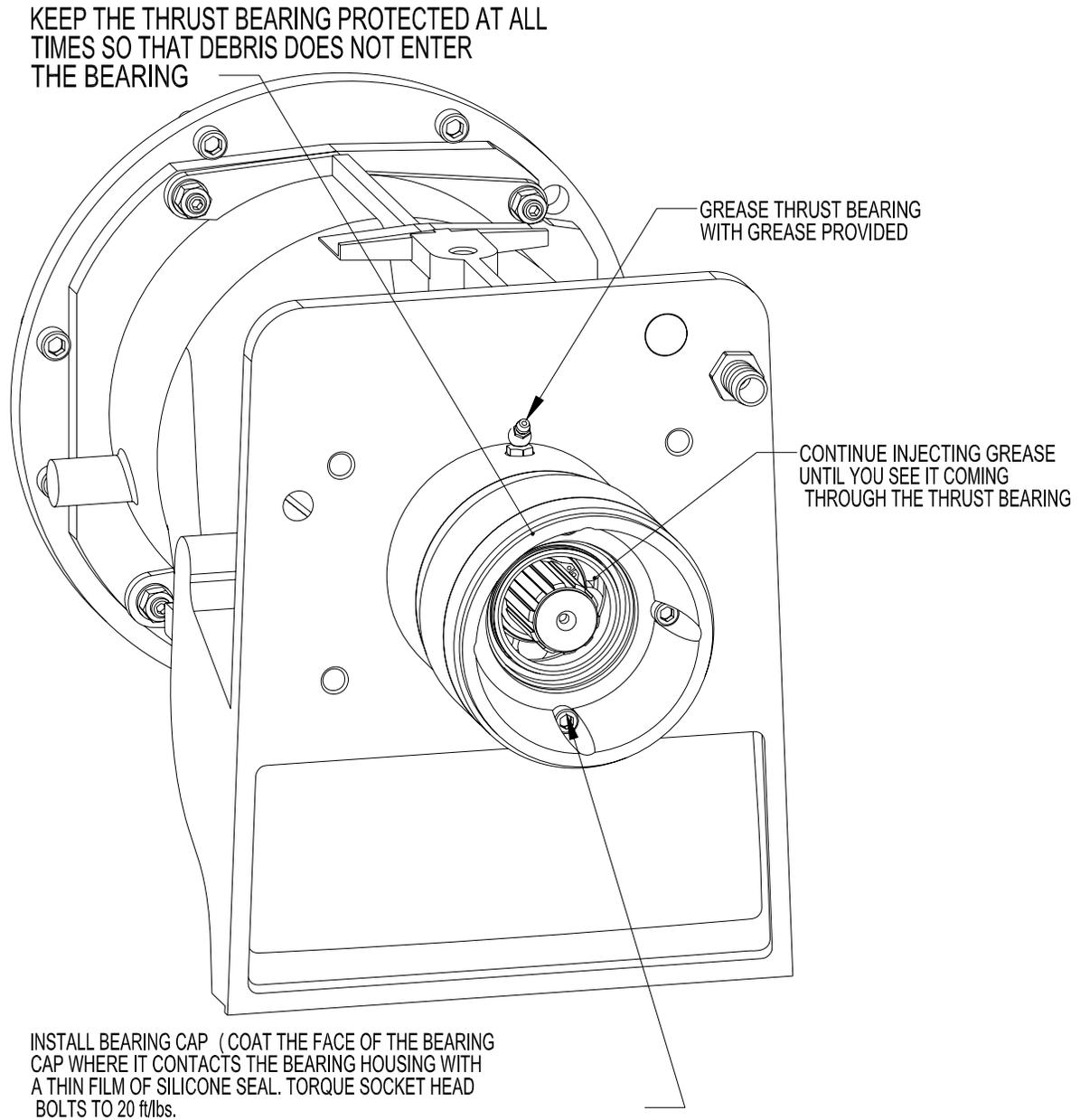


FIG 6

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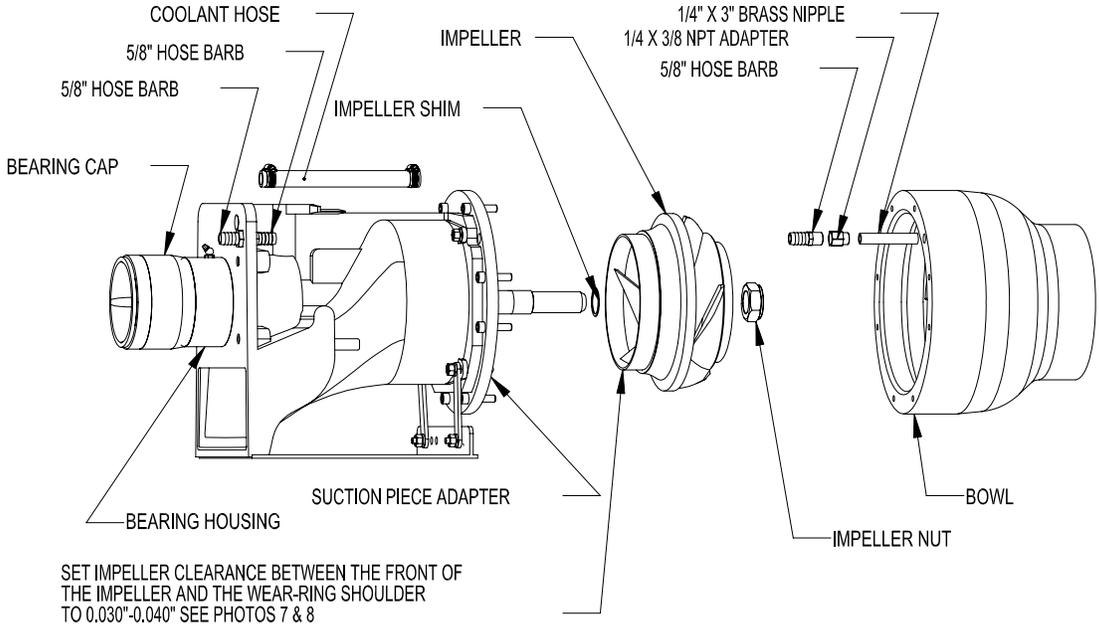


FIG 7

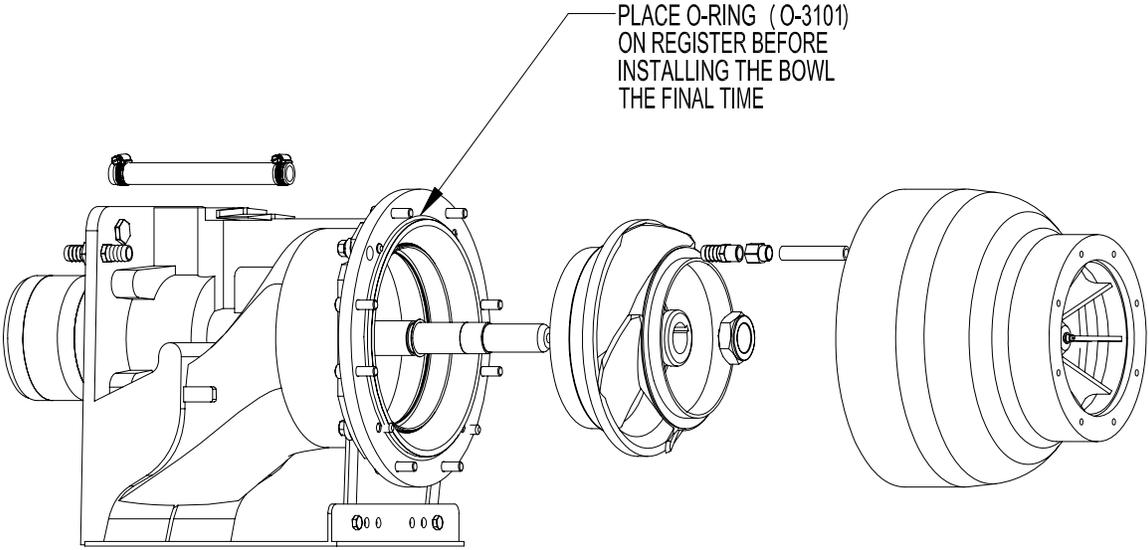


FIG 8

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PANTHER ENERGIZER KIT

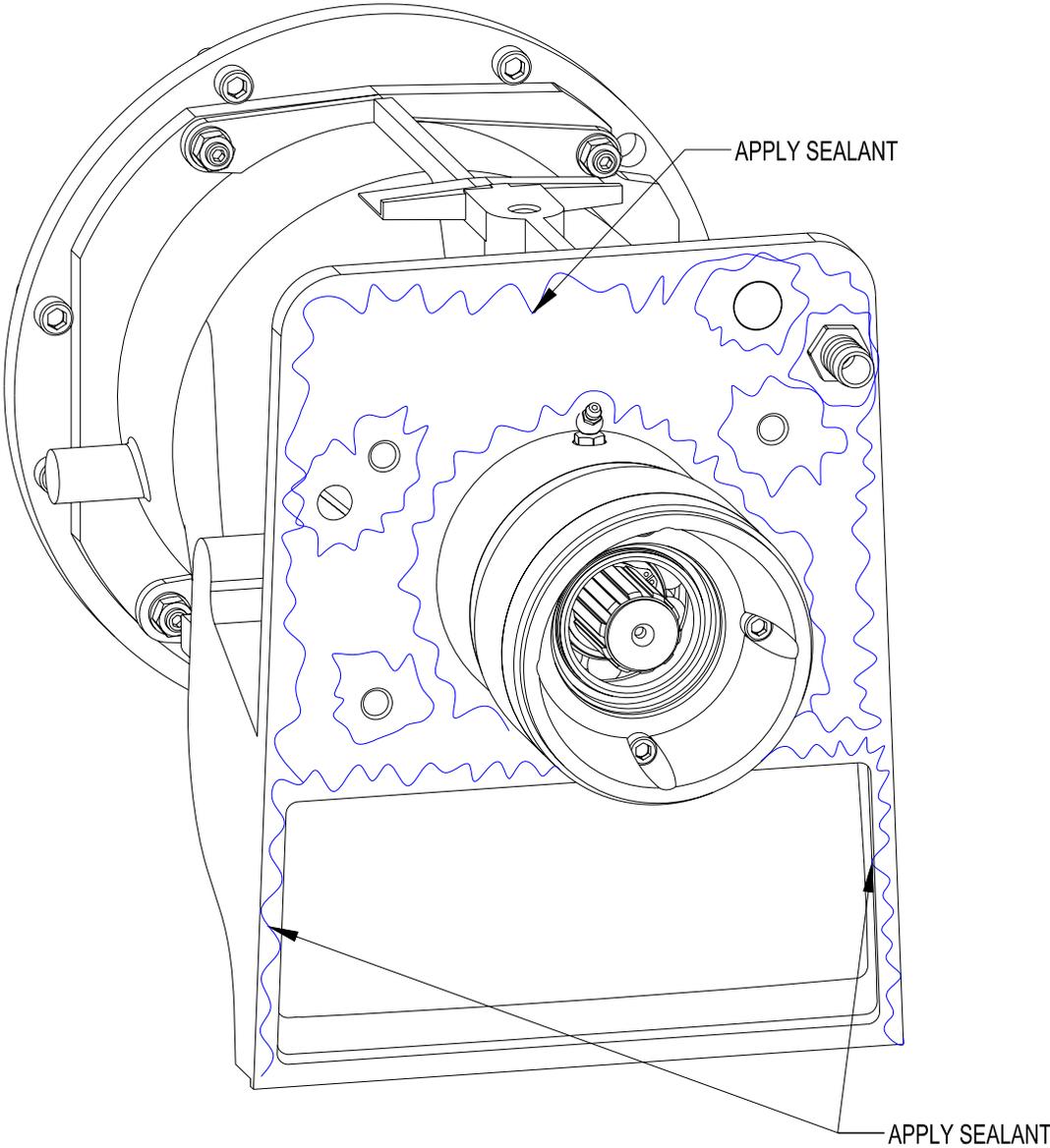


FIG 9

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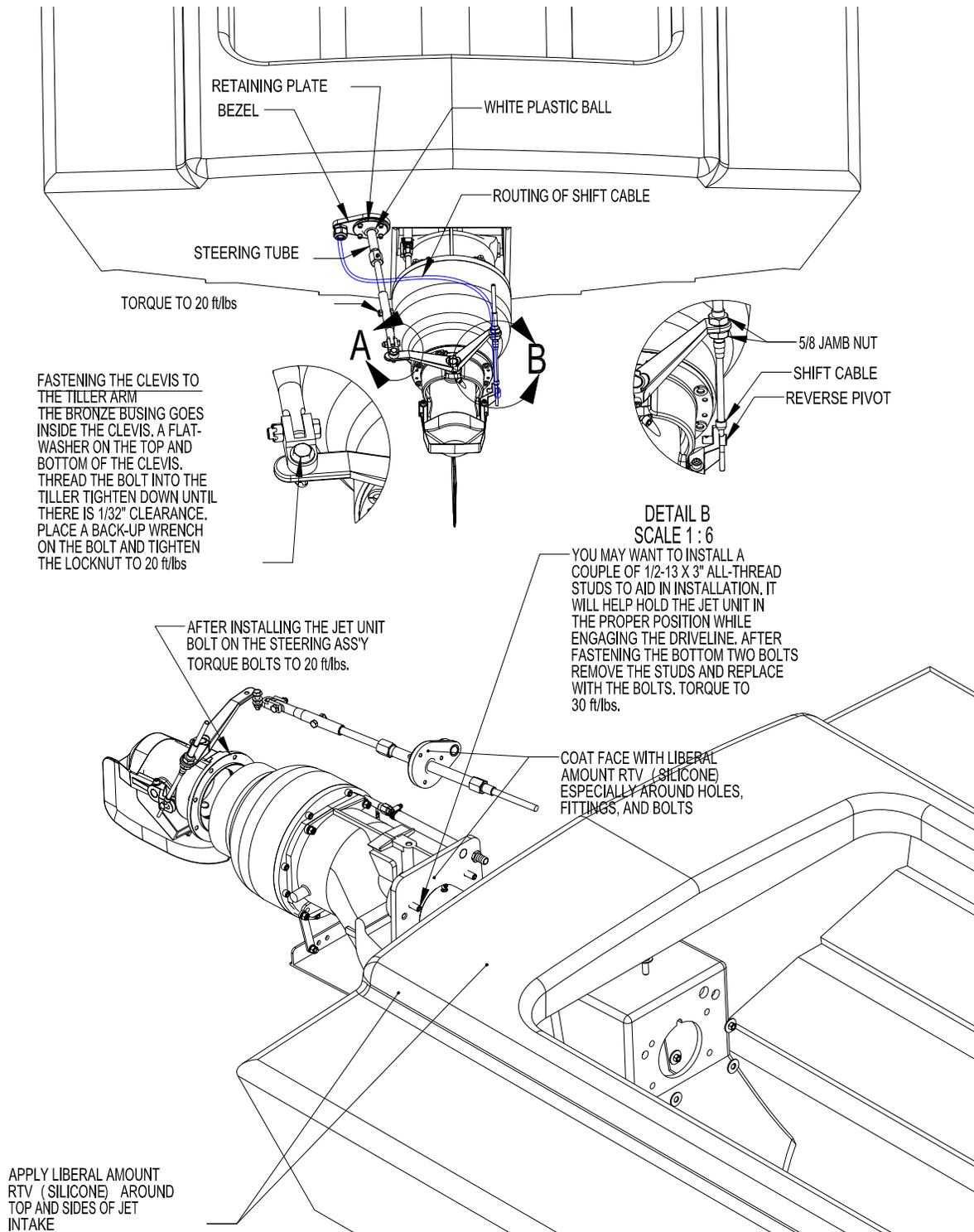
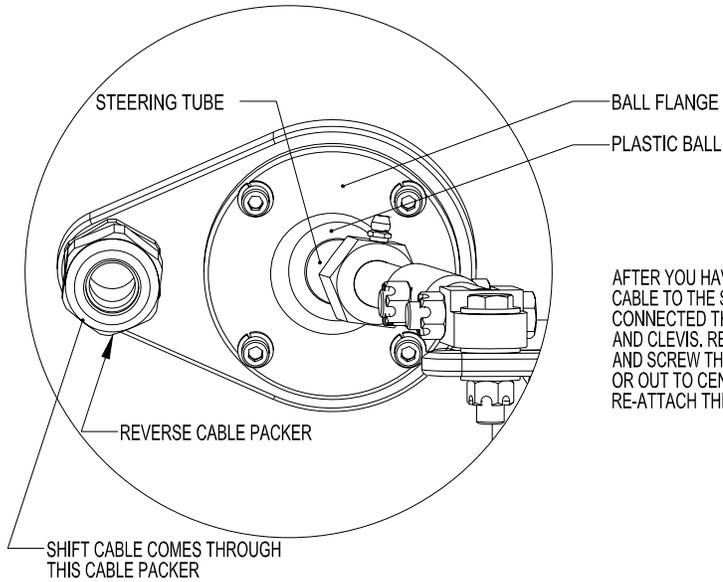


FIG 10

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PANTHER ENERGIZER KIT



AFTER YOU HAVE ATTACHED THE STEERING CABLE TO THE STEERING TUBE AND CONNECTED THE STEERING EXTENSING AND CLEVIS, REMOVE THE BALL FLANGE AND SCREW THE WHITE PLASTIC BALL IN OR OUT TO CENTER THE STEERING WHEEL. RE-ATTACH THE BALL FLANGE.

DETAIL A
SCALE 1:2

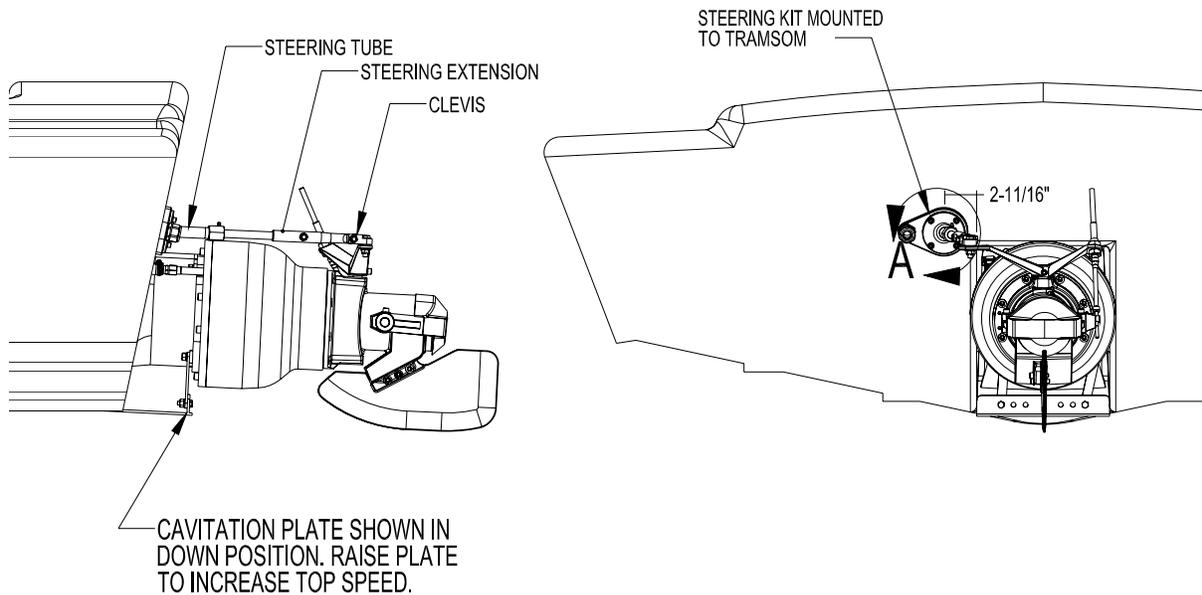


FIG 11

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PANTHER ENERGIZER KIT

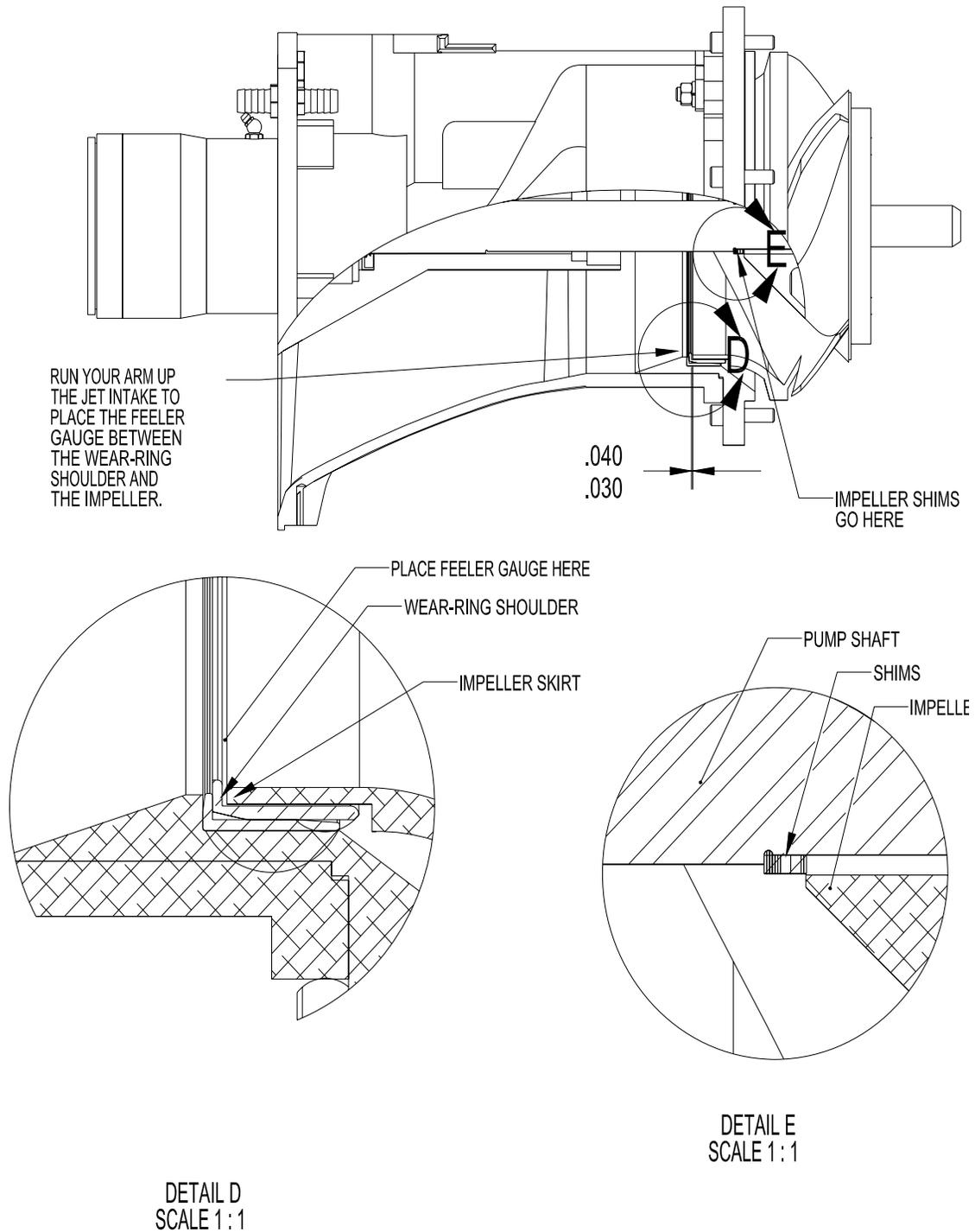


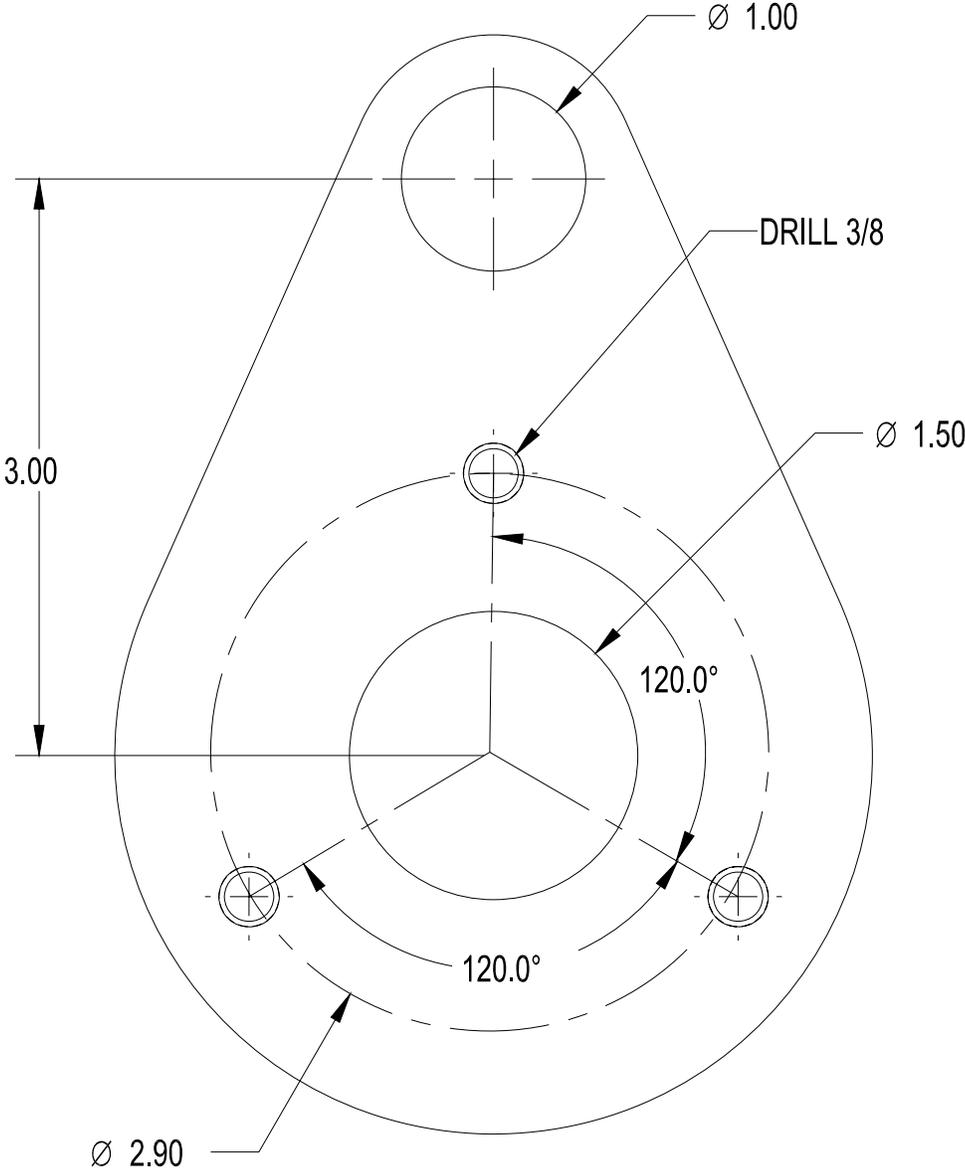
FIG 12

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PANTHER ENERGIZER KIT

WARNING

Measure to confirm your printer printed this template to the correct size.



HOLE TEMPLATE 1

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PANTHER ENERGIZER KIT

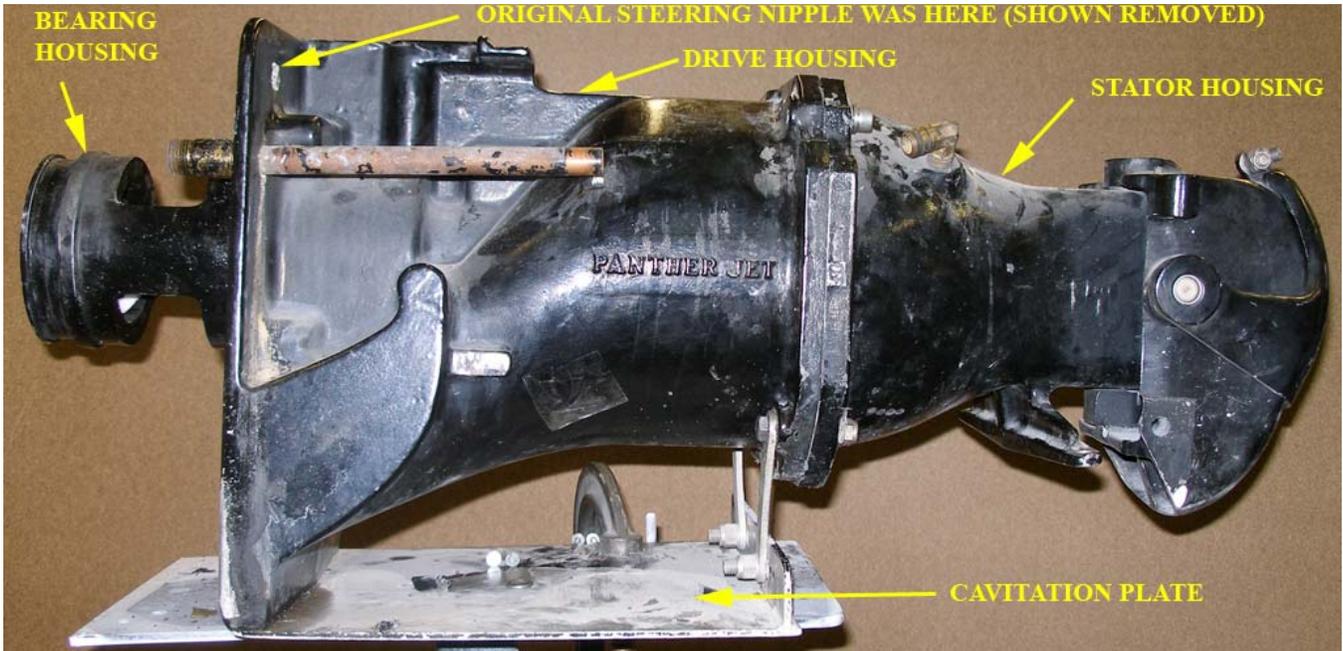


PHOTO 1

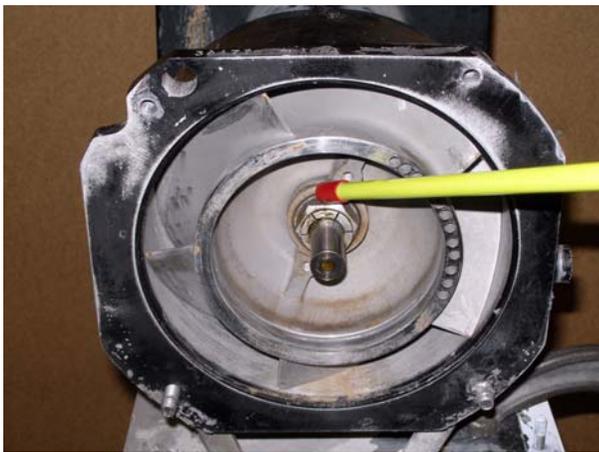


PHOTO 2

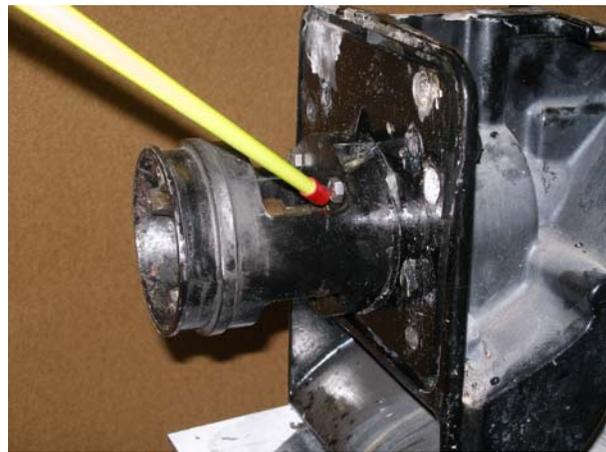


PHOTO 3

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PHOTO 4

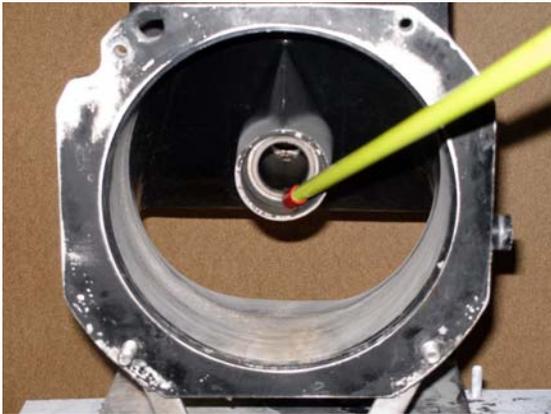


PHOTO 5

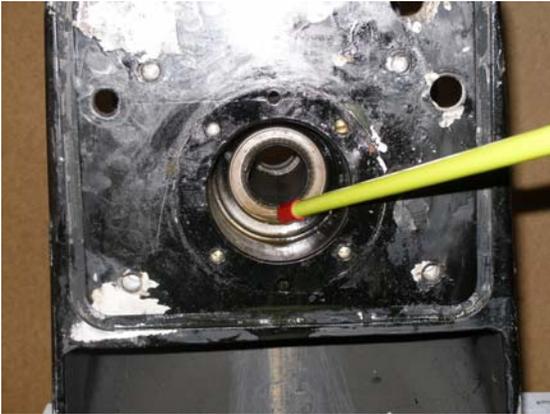


PHOTO 6

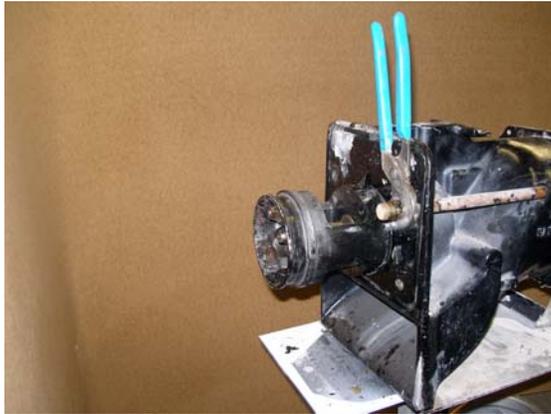


PHOTO 7



PHOTO 8

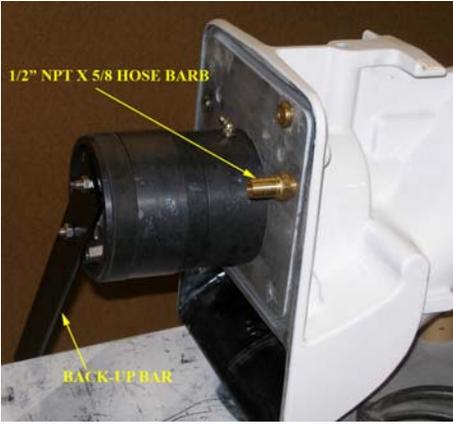


PHOTO 9

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PHOTO 10



PHOTO 11



PHOTO 12



PHOTO 13



PHOTO 14



PHOTO 15

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PANTHER ENERGIZER KIT

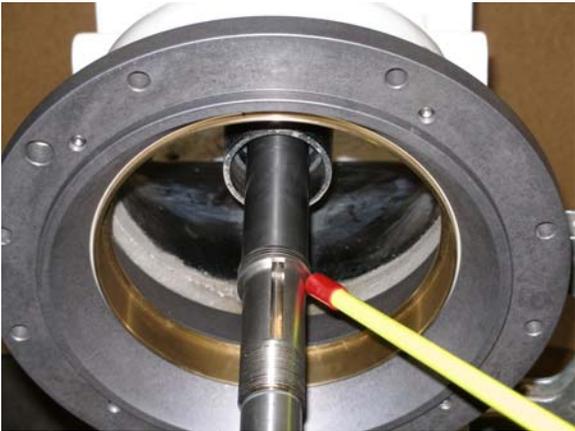


PHOTO 16



PHOTO 17



PHOTO 18



PHOTO 19



PHOTO 20



PHOTO 21

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PHOTO 22

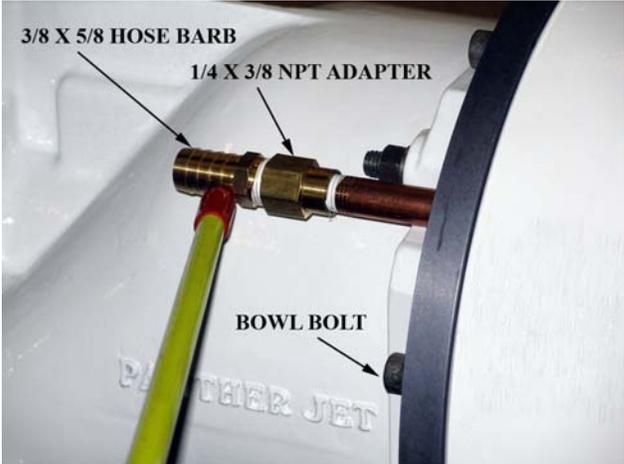


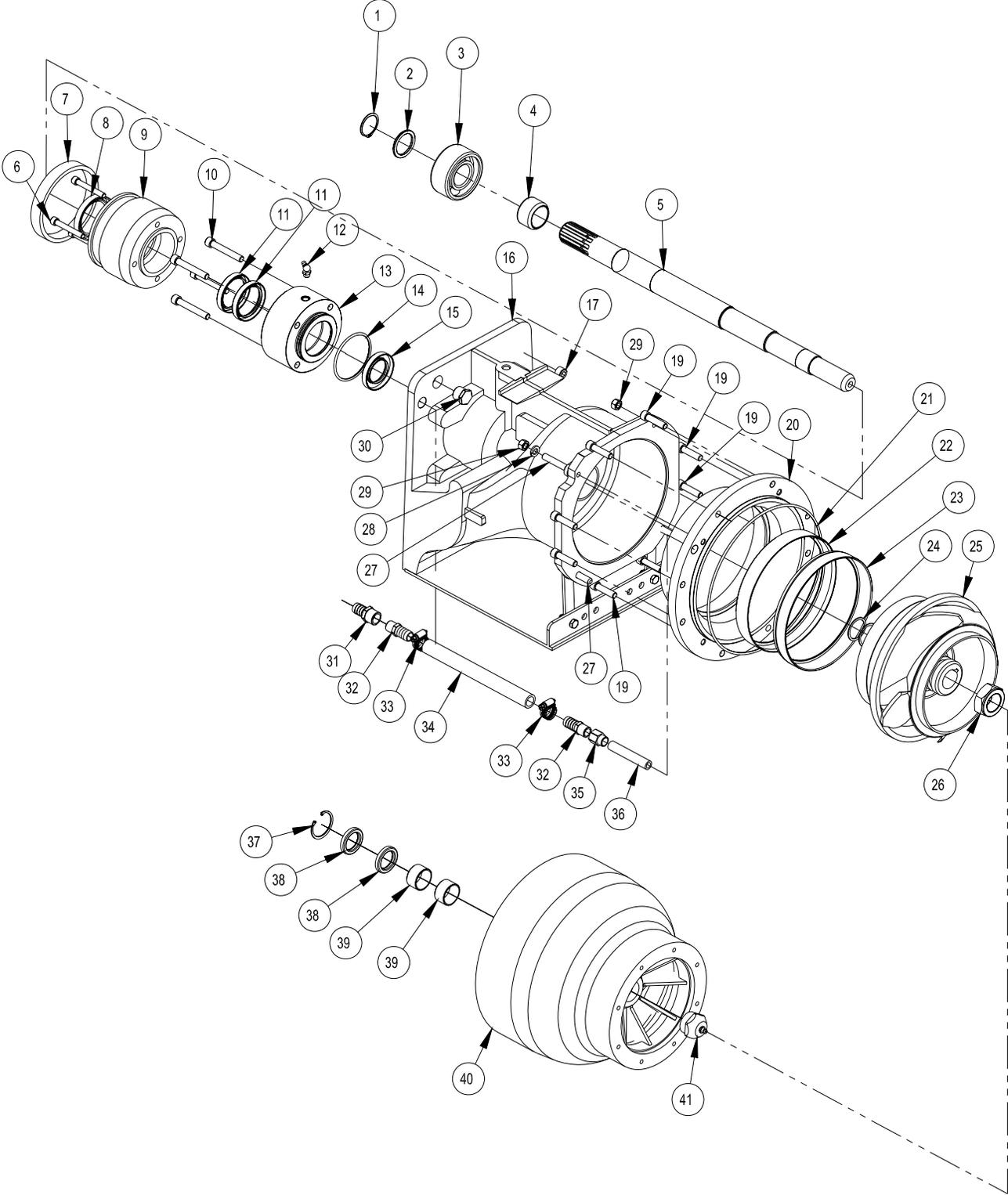
PHOTO 23



PHOTO 24

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PANTHER ENERGIZER KIT

LEGEND

SYM.	DESCRIPTION	QTY.	PART NO.	SYM.	DESCRIPTION	QTY.	PART NO.
1	SNAP RING	1	SH1507	22	WEAR RING LINER	1	WR6004
2	THRUST WASHER	1	SH2005	23	WEAR RING	1	WR5800
3	THRUST BEARING	1	B1007	24	IMPELLER SHIMS	1	SHK4007
4	SLINGER RING	1	SH2403	25	IMPELLER	1	IMA***
5	SHAFT	1	SH1107	26	IMPELLER NUT	1	SH3507
6	5/16-18 X 2-1/4 SHCS	4	F05 18 18 SH	27	3/8-16 X 2 SET SCREW	4	F06 16 16 SS
7	ENGINE MOUNT RING	1	SC4007	28	3/8 LOCKWASHER	4	F06 LW
8	BEARING CAP SEAL	1	SL1007	29	3/8-16 LOCK NUT	4	F06 16 HN
9	BEARING CAP	1	SC2209	30	BRASS HEX PLUG	1	SC6309
10	3/8-16 X 2-1/2 SHCS	4	F06 16 20 SH	31	HOSE BARB	1	SC6109
11	BEARING HOUSING SEAL	2	SL1603	32	BARBED CONNECTOR (3/8)	2	SC4507
12	45 DEG. GREASE FITTING	1	SC8801	33	HOSE CLAMP	2	M4501
13	BEARING HOUSING	1	SC2109	34	COOLING HOSE	1	SC6209
14	BEARING HOUSING O-RING	1	O3108	35	WATER ADPT FITTING	1	SC6208
15	SUCTION SEAL	1	SL1609	36	BRASS NIPPLE (1/4 X 3)	1	SC6108
16	SUCTION	1	N / A	37	BOWL SNAP RING	1	SC9201
17	5/8-18 X 3/4 SLOTTED SS	1	F10 18 06 SS	38	BOWL SEAL	2	SL2003
19	3/8-16 X 1-1/2 SHCS	8	F06 16 12 SH	39	BOWL BEARING	2	B1502
20	SUCTION PIECE ADAPTER	1	SC6009	40	BOWL	1	SC9501
21	BOWL O-RING	1	O3101	41	BOWL PLUG	1	SCA9001