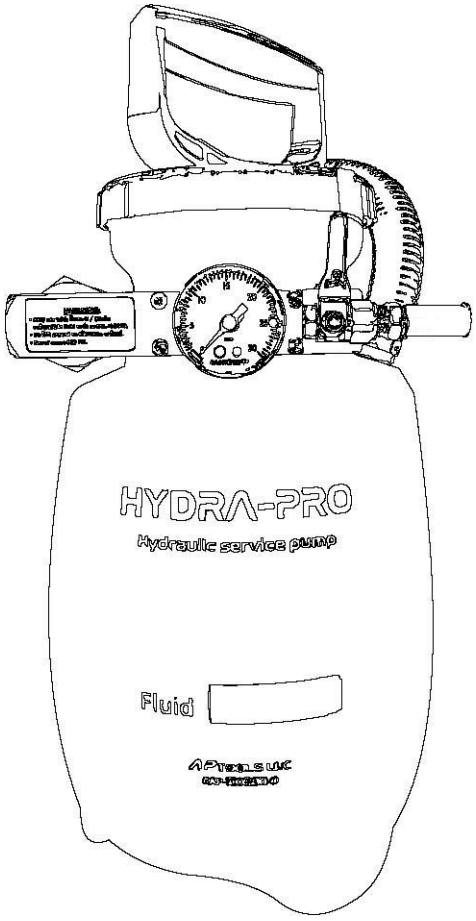
HYDRA-PRO™

Hydraulic service pump



Model # AP-XXX120-2
Servicing Unit

10/2/2020 – Rev 4

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1.0

WARNING

1. Never exceed 25 PSI during operation.
2. Do not leave exposed to the elements, heat sources, or direct sunlight for extended periods. Sun light has adverse effects on the integrity of the tank plastic and thermal expansion from heat may increase the pressure well beyond 25 PSI.
3. Do not interchange between mineral based fluid types and phosphate ester-based fluid types.
4. Use appropriate personal protective equipment (PPE).
5. To prevent ejected pump assembly and/or fluid from striking and injuring operator, never stand with face or body over top of tank when pumping or loosening pump.
6. Never power-up, pressurize under power, or operate an aircraft hydraulic system with this servicing pump connected. This can over-pressurize the service pump and cause it to explode.

2.0 Overview

This oil under air pressure tank is designed to be a light weight, efficient, and versatile fluid servicing unit. It eliminates any pressurization actuation during use and can be easily held with one hand. The operator controls the flow via a small valve and is free to observe fluid levels. Any need for an assistant to actuate a heavy pump on the ground is eliminated. This concept makes the operation as efficient, ergonomic, and time conserving as possible. Less bulk also means more stability on a work stand or ladder and promotes a safe work environment.

3.0 Features

- Light weight
- Inline cleanable filter (If installed)
- Pressure gauge
- Quick disconnect system for a variety of hose / fill port adaptor combinations. One pump can be adapted to more than one system
- Simplistic design

4.0 Specifications

- Filter options:
  a. 30 micron, generic, tank mounted and cleanable
  b. 2 micron nominal, MIL-I-45208 Approved, CSA B51 Certified
- Fluid compatibility (depending on configuration):
  a. MIL-PRF-5606/MIL-PRF-83282 (Mineral based hydraulic fluid)
  b. Skydrol (When configured)
- 25 PSI Maximum pressure
- Tank coupler meets MIL-C-4109
- 1 Gallon capacity
- Empty weight: 5lbs

5.0 Before first use

- Read this manual and all warnings in its entirety.
- Identify the fluid type and expiration date of the fluid to be used in the tank. We suggest marking with a black permanent marker on a self-adhesive write-on label or clear cellophane tape affixed onto the tank in the silver square for contrast.
- Flow a few cups of oil through the valve assembly and hose to flush any contaminants remaining from the assembly process and to purge any remaining air.

Use only the type of fluid for which this servicing unit has been designed. Other fluids will damage seals and the integrity of the unit.

6.0 Normal Operation

1) Remove the pump cartridge and insure there are no foreign objects / liquids in the top of the pump cartridge unit (reference figure 1).
2) Fill the tank with 1 gallon of appropriate fluid.
3) Snug tighten the pump cartridge by hand. **Do not over tighten, or the cartridge will flatten the sealing gasket away from the sealing surface and a leak will occur.**
4) Pump up to operating pressure of 20-25psi.
5) Connect hose to the service pump and purge the line of air by slowly operating the flow valve with the end of the hose discharging into a cup until only fluid comes out, then close flow valve.
6) Appropriately connect servicing hose to the reservoir to be serviced.
7) With tank upright, operate flow valve to service reservoir. **Do not** tilt the tank during this process. This is so that the internal straw does not cavitate and suck air into the system.
8) When servicing of the reservoir is completed, close flow valve, disconnect hose, attach dust cap onto coupler, and slowly unscrew pump cartridge to relieve air pressure from the tank.

7.0 Storage

Store unit in the following manner:

A. Unpressurized indoors, below 75°F, and away from sunlight.

B. In such a way as to prevent foreign objects / liquids from entering at the top of the pump cartridge (figure 1). When the pump rod is actuated to pressurize the tank, these contaminants can be sucked into the cartridge and pushed into the tank. While the filter will remove solids, it cannot distinguish between other liquids.

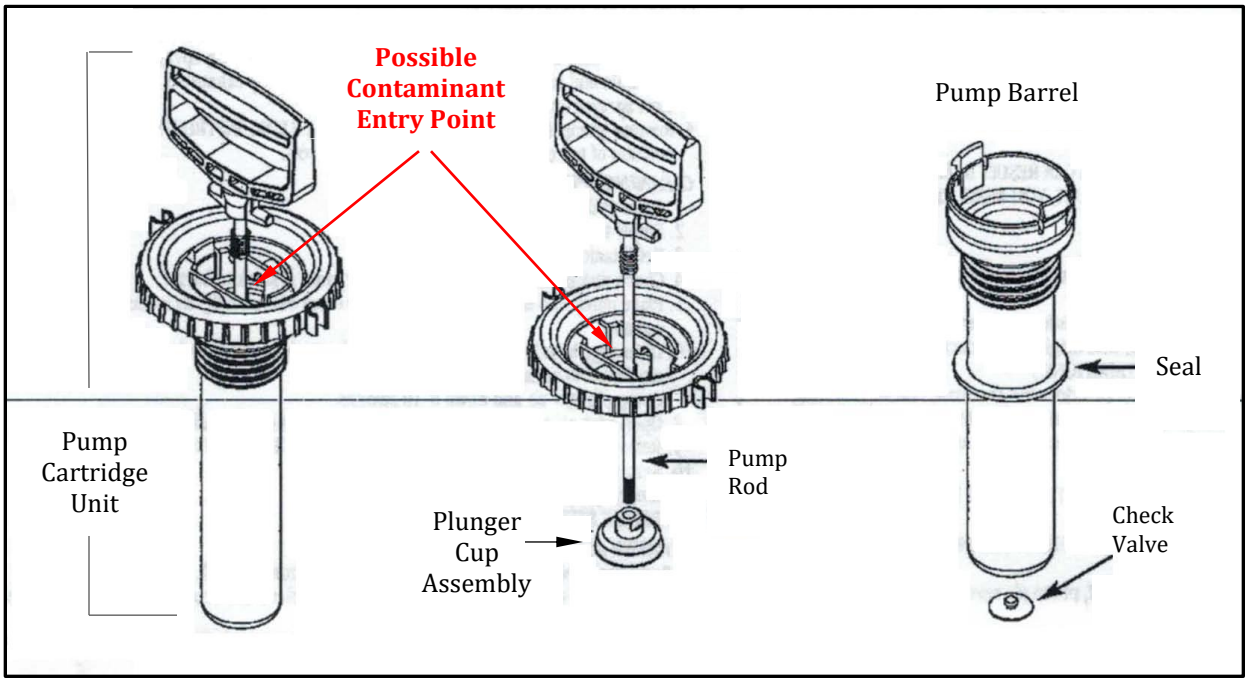
Possible
Contaminant
Entry Point
Pump Barrel
Seal
Pump
Cartridge
Unit
Pump
Rod
Plunger
Cup
Assembly
Check
Valve

Figure 1

8.0 Maintenance

8.1 Changing fluid types

Changing between mineral based fluid types and phosphate ester-based fluid types is **prohibited**. The two configurations of this pump are not compatible with each other. Only use the fluid for which the pump is designated.

8.2 Hose

The corrugated hose should be checked before each use and replaced on-condition. Any of the following discrepancies are cause for replacement of the hose:

1. Brittleness / cracking
2. Severe mechanical damage
3. Leaks / seeps
4. Bulges
5. Burns
6. Bubbling / melting of the outer corrugated protective cover
7. Use of incompatible fluid

8.3 Filter

The tank filter is a non-bypass design. Longer than normal service time and / or slower than normal flow is an indication of a filter that needs cleaning / replacement. This can be verified by timing the flow into a container. *For example*, a new 2 micron filter will fill a 500ml bottle in 10 seconds at operating pressure with a 5 psi pressure loss out of the pump outlet. If a significant reduction in flow is noted, perform the following cleaning procedure:

1. Use appropriate personal protective equipment.
2. Purge the oil from the tank and lines into a suitable container through the discharge nipple.
3. Remove the filter assembly from the system JIC supply line and MNPT fittings on the valve block
4. Cleaning 2 micron filter (welded stainless steel):
    a. Remove rough external dirt in a separate container by soaking the filter for thirty minutes in a high quality cleaning fluid.
    b. Blow through the element from **outlet to inlet** (reference arrow mark) with clean 20-30psi of compressed air or similar clean gas.
    c. Remove any remaining water particles by dipping the filter in isopropyl alcohol then allowing it to dry.

5. Cleaning 10 micron filter (anodized grey aluminum) is permissible 1 time through the following steps. A new filter P/N APEK9052 should be installed thereafter:
    a. Disassemble filter by unscrewing the two halves and removing the internal metal element and spring. This can be done by disconnecting the inlet JIC hose and leaving the discharge side installed on the MNPT fitting on the valve block. Using two wrenches, separate the filter halves with it on the pump without breaking the MNPT thread seal.
    b. Back flush the element with a cleaning solvent
    c. Remove and blow through the element from outlet to inlet with clean 20-30psi of compressed air or similar clean gas.
    d. Re-assemble following the steps in reverse order.
6. Re-install by following steps in reverse order in #3.
7. Pressurize the system and check for leaks.

NOTE:

Examples of commercially available cleaning fluids that may be used to clean the filter only are: isopropyl alcohol, acetone, and mineral spirits.

9.0 Troubleshooting

Reduced flow volume	**Check suction straw for contaminant obstruction. If none found, perform filter cleaning as per section 8.3**
Excessive hissing heard from pump cartridge under pressure	**Check integrity of pump barrel seal in figure 1. If found serviceable, lubricate both sides with hydraulic oil or assembly fluid.**
Fluid is expelled from pump barrel near handle	**Replace pump barrel check valve in figure 1.**
Actuation of pump handle fails to pressurize tank	**Check for air leaks, if none found, change plunger cup assembly in figure 1.**
Air is being discharged from the tank outlet	**Suction straw is cavitating. Tank is either almost empty and / or tank is not up-right during use.**

10.0 Available Options:

Fluid type (phosphate ester-based / mineral based), filtration size, and connections can be tailored to the customer. Inquire about custom configurations.

11.0 Service and Repair

We service what we sell, and all parts can be purchased and replaced by the end user. Current hourly rates apply for all shop work not under warranty, and we can quote on services requested.

12.0 Warranty

We will provide a warranty for a period of one year to the original owner against manufacturing defects. We will gladly make an attempt to honor warranty claims by providing repair parts or parts and services for repair at no charge. We may require the failed unit to be returned to us at the customer's expense for evaluation and / or warranty work at our discretion. We will cover economy return shipping cost back to the customer. Warranty will be considered null and void for the following: Use of fluid other than type approved, unapproved modifications are performed, cases of woeful neglect, use of non-oem parts, or damage due to improper use. This warranty will not cover normal wear and tear.

13.0 Disclaimer

In all instances, it shall be the end user's responsibility to ensure (where applicable) this unit meets any required specifications, suitability, or OEM equivalency for its intended purpose. AP Tools LLC, its owner, contractors, vendors, and affiliates assumes no liability for any material loss or bodily harm arising from the use / misuse of this product. AP Tools LLC will only warranty its manufactured products for workmanship and / or defects by us. By using this product, you agree to these terms.

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