

# THE TANK TENDER

## THE ORIGINAL PRECISION TANK MEASURING SYSTEM

### TANK TENDER INSTALLATION

#### INSTRUMENT PANEL LOCATION:

locate the instrument panel out of the weather and where tank readings can be conveniently taken, ideally above tank levels. Consider that the 1/8" od nylon tubing runs from the back of each valve to each tank and tank calibration cards (gallons per inch calculations) may need to be adjacent. Panel dimensions are: 1 – 5 tanks at 6" x 4", cut out 5-1/16" x 3-1/16" and 1 – 10 tank models at 7" x 4" with cut out of 6-1/16" x 3-1/16". Mounting screws and calibration card supplied with system.

#### NYLON TUBING RUNS (NT):

1/8" od nylon tubing runs between instrument panel (from each valve to each tank) to tanks. Cannot be kinked or ruptured! Puncture will cause an air leak, kink will cause blocked pressure. Ideally, tubing should be run above tank level, as in the event tubing run is cut, syphon action can occur. Extreme temperature changes can brittle tubing, as can temps over 180 degrees. Nylon tubing is supplied with each system, which can be run in conduit if needed; or stainless steel can be used as well.

#### TUBING CONNECTORS (TC):

there are 1/8" brass/nickel plated tubing connectors on the end port of each valve and also on each (tank penetration fitting) TPF, these connect the nylon tubing runs between valves and TPF's. To connect nylon tubing into tubing connector, push tubing end till locked; to disconnect, depress outer collet, hold depressed and pull nylon tubing end out.

#### TANK PENETRATION FITTING (TPF):

TPF is installed into tank top, over the deepest part of the tank for the most accurate reading. #21 drill (5/32 hole) and 10/32 tap. Can coat drill/tap with beeswax to catch the metal filings. TPF comes with 30" straight (extruded) tube attached and tubing connector. Cut TPF tube off 1" above tank bottom. Tube end cannot touch tank bottom or side wall, as will block air /fluid passage. If very thin tank top, can epoxy a plate onto tank top and drill and tap into for TPF install.

#### ALTERNATE TPF INSTALLATIONS:

ideally into tank top, but if tank top entry is not possible, depending on inside tank access: TPF into tank side near top of tank, (requires access to inside tank), short piece of straight TPF tube 1", then an elbow union to drop another straight TPF tube to within 1" of tank bottom. Or, can install TPF into side near tank bottom, at least 1" above (with no tube inside tank, as are locating where TPF from tank top would be) then run flexible nylon tubing run straight up tank wall and attach (if lying down would create syphon action), loop tubing at tank top and then continue on to unit.

#### PURGE VALVE FOR WASTE TANKS:

flip toggle to purge position prior to taking a reading on a waste/black/grey water tank, this causes air to bypass gauge, thereby allowing a clearing of the TPF tube inside tank, pump till clear (no resistance), release valve button, flip toggle back to read and retake for reading. Always use caution when testing waste tanks, as issue is waste blocking TPF tube, all waste tanks vary, not predictable as diesel and water are. Do not pump gauge beyond end capacity.

#### TANK CALIBRATION:

tanks are of a wide variety of shapes and sizes, which effects how a gallons to inch calibration is done:

- 1) if square/rectangular: measure the width and length of the tank in 1" levels and calculate the number of cubic inches for each inch of tank height. There are 231 cubic inches per gallon, therefore the number of cubic inches divided by 231 will yield gallons per inch of tank height.
- 2) if any irregularity to tank shape, then either using a metered hose or with 2 or 5 gallon increments, fill then take an inch reading..... so forth till full to achieve that tanks gallons per inch calibration.

#### OPERATION CHECK OUT:

select the tank to be tested, push valve button in and hold, pump slowly (do not exceed end gauge capacity) 1 -2 strokes. Needle should rise slightly above the liquid level in the tanks and settle in seconds at the exact liquid level in the tank. If gauge needle goes over end of gauge capacity, (providing the gauge scale is appropriate to tank depths) then likely an air blockage, such as kink in the nylon tubing run. Should no pressure hold, may be a nylon tubing cut/puncture. No fluid should be lying in the nylon tubing run, as can cause erratic high readings. Short readings may be the TPF tube being cut too far above tank bottom. If fluid lying in nylon tubing run, disconnect run at both ends and use compressed air to force out. Takings reading with fill pipe full can cause this.

#### CAUTION:

**DO NOT TAKE READINGS WITH THE DECK FILL PIPE FULL**, as the extra head of liquid may cause the gauge needle to exceed the end capacity of the gauge, which done repeatedly, can damage the gauge (*ie. needle will not return to zero*). If full tank is close to end gauge capacity, do not test till at a reduced level of fluid.



**WARNING:**  
**DO NOT USE WITH GASOLINE.**



DRILLING INTO TANKS CONTAINING GASOLINE OR FLAMMABLE LIQUIDS CAN CAUSE SPARKS AND OR/HEAT SUFFICIENT TO CAUSE IGNITION OF TANK VAPORS

### WARRANTY

**WARRANTY:** Hart Systems Inc expressly warrants its product to be free of defects in materials and workmanship. The sole remedy for breach of this or any other warranty shall be repair or replacement of defective product or part limited to a period of one year from the date of shipment. Prompt notification is required. This warranty does NOT cover damages or defects caused by negligence of consumer or middleman, nor does it cover any damage caused in shipping. Items returned for warranty work must be shipped prepaid and insured.

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