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**MINI MONITOR  
INSTRUCTIONS**

**Bulletin 101  
(5-12)**

## MINI MONITOR<sup>®</sup> KIT INSTRUCTIONS

**DEVELOPED SPECIFICALLY FOR AIRCRAFT FUEL SAMPLING  
WITH STANDARD FIELD MONITORS — PER ASTM METHODS D-  
2276 AND D-3830**

THE SAMPLING CONNECTION	See Section 1
ASSEMBLING THE MINIMONITOR KIT	See Section 2
THE FLUSHING PROCEDURE	See Section 3
CONTAMINATION TEST PROCEDURE	See Section 4
AFTER-TEST PROCEDURE - SAFETY	See Section 5
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DISCUSSION	See Section 7



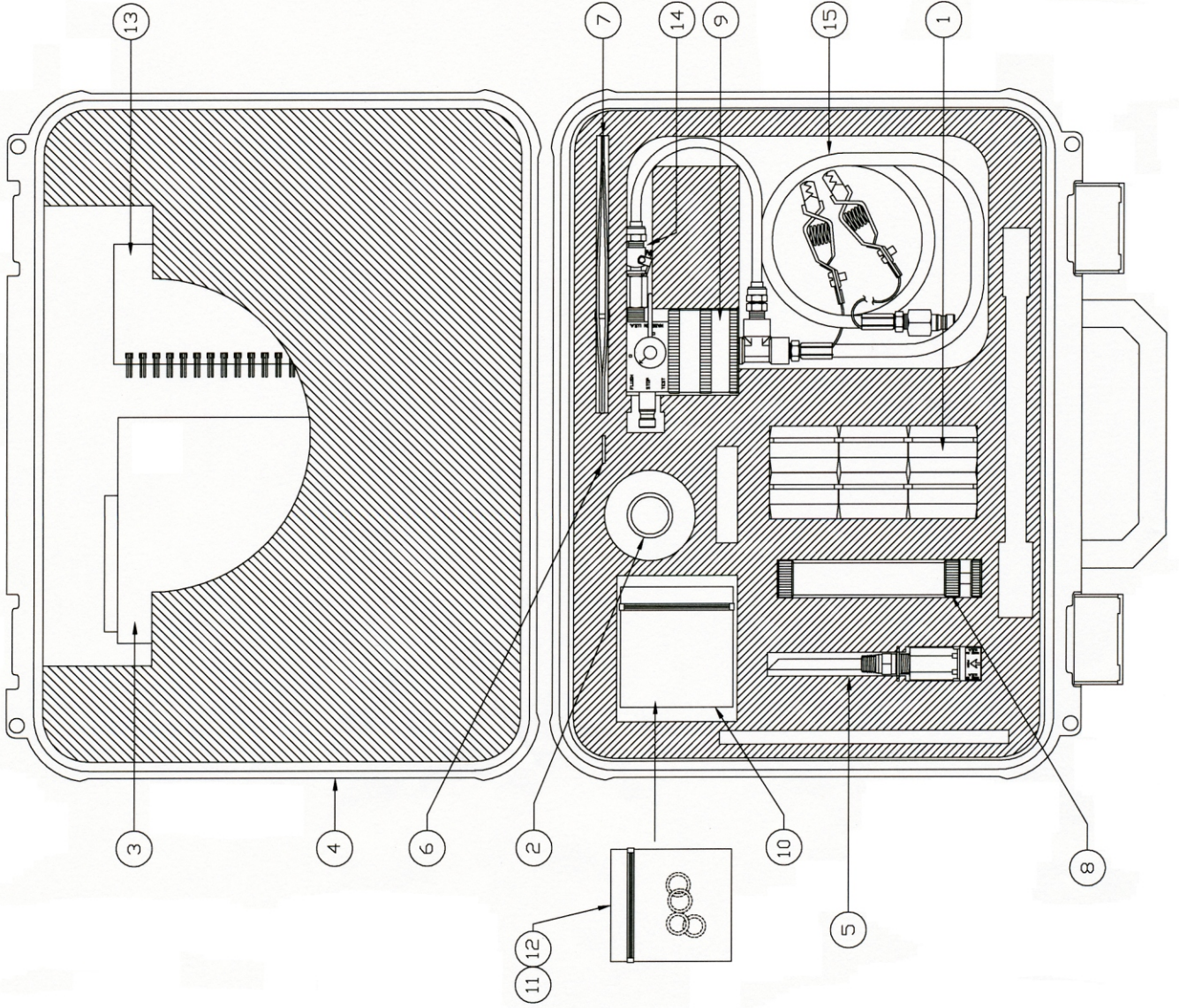
RELATED LITERATURE - write to us requesting copies.

Aircraft Fuel Sampling Equipment (Bulletin 3) describes sampling kits for permanent installation.

Jet Test QD Coupler (Bulletin 14) - a miniature quick disconnect suitable for permanent installation on fueling nozzles. Use for performing contamination tests, Aqua-Glo tests and for checking fuel pressure.

Aqua-Glo Series V Water Detector Kit (Bulletin 86) - A highly accurate, fast test for water in aviation fuels -- measures from 1 to 60 ppm.

Teflon Pipe Thread Sealant Tape (Bulletin 71) - To seal Sample Connection pipe threads.



ITEM	DESCRIPTION	PART No.	QTY.
1	PLASTIC MONITORS	GTP-8116	6
2	TEFLON PIPE SEALANT TAPE	GTP-813	1
3	INSTRUCTION BOOKLET	BULLETIN 76	1
4	CASE	GTP-9466	1
5	SAMPLING KIT WITH PROBE	GTP-KIT #5	1
6	MONITOR OPENING DEVICE	GTP-9182	1
7	TWEezer	GTP-2099	1
8	SYRINGE	GTP-165	1
9	MINI-MONITOR HOUSING W/ FLUSHING VALVE	GTP-172H	1
10	MINI BAGS	GTP-1267-15	1
11	D-RING	GTP-2200-006V	2
12	O-RING	GTP-2200-012V	2
13	COLOR RATING BOOK	GTP-1074-1	1
14	BY-PASS QUICK DISCONNECT ASSEMBLY	GTP-1250	1
15	BONDING AND GROUNDING HOSE	GTP-1110	1

## MINI MONITOR KIT PART NUMBER GTP-172

\* Before operation, inspect all components. Replace the bypass hose (GTP1250) if it shows signs of wear or deterioration. If you observe a leak during operation, repair or replace the leaking hose, seal or plastic monitor. Do **NOT** seal the large thread between the housing and the bottom cap. If you have a leak in this area, it is caused by either a bad "o" ring inside, a worn out plastic monitor or the screws that secure the housing to the valve are loose.

## **1. THE SAMPLING CONNECTION**

The most frequent cause of poor test results is an incorrect sampling connection.

We recommend permanently installed stainless steel connections as described in our Bulletin No. 3.

Keep in mind that any branch connection in a piping system is a perfect DIRT TRAP and in the case of a sampling connection, no flow takes place, except when a contamination test is run. THEREFORE, the internal flow passages must be small in diameter so that a reasonably high velocity will take place while flushing. Metal surfaces must be corrosion resistant so that no rust will be generated in sampling connection.

If a permanently installed sampling connection is not present where a test is to be run, use the parts from the MiniMonitor Kit:

- A. Install the probe (5) in a convenient pipe fitting with the FLOW arrow (stamped on one hex flat) pointing in direction of pipeline flow. Use Teflon pipe thread sealant tape (2). Wrap one layer around thread, without covering the first threads. Pull harder and it tears apart at the end of one wrap. Then screw threaded joint together.
- B. After installation, flush the new sampling connection to thoroughly flush all fittings.

## **2. ASSEMBLING THE MINIMONITOR® KIT**

- A. Disconnect the bypass quick disconnect hose assembly at the top of the flushing head.
- B. Open the monitor housing (9) by unscrewing the bottom cap.
- C. Remove colored plastic plugs from the plastic monitor (1) and install it on bottom cap of the Minimonitor housing. An o-ring in the bottom cap seals around the small hub of plastic monitor. **BE SURE THE SPOKED or gridded SIDE OF THE PLASTIC MONITOR IS TOWARD THE BOTTOM CAP.**
- D. Screw the bottom cap on the monitor housing (9) but be certain that the small o-ring is in position around the short tube in the monitor housing.
- E. Now connect the bypass quick disconnect assembly (14).

## **3. THE FLUSHING PROCEDURE**

Although the sampling connection was flushed in Step B of Section 1, it is necessary to flush the ports in the monitor housing while the piping system is pressurized.

- A. Turn the selector valve handle so the arrow points to STOP.
- B. Place the end of Bonding and Grounding Hose (15) in a container such as a metal pail.
- C. Attach the clip on the Bonding and Grounding Hose to the pail.

**D.** Connect the MiniMonitor to the quick disconnect coupler which is connected to the probe (5).

**NOTE:** Connection to the sampling coupler can be made without risk of spraying fuel by following this procedure:

- 1.** Slide the collar of the coupler all the way as far as it will go toward its threaded end. Remember that the collar does not open the internal valve.
  - 2.** Insert the connecting nipple in the open port of the coupler as far as it will go without depressing the internal valve, but continue to hold the collar.
  - 3.** Then quickly press the nipple straight in with a force of about 25 lbs. and pull the collar back to its original position. This 25 lb. force causes the internal valve to open.
  - 4.** A dry disconnection can be made simply by depressing the collar while pulling outward on the nipple.
- E.** Attach the grounding clip from the inlet end of the Hose (15) to the pipe fitting where the sample is being taken. Slowly turn the valve to the FLUSH position and allow a minimum of one gallon to pass through.

#### **4. CONTAMINATION TEST PROCEDURE**

- A.** Turn the valve to TEST position to allow fuel to pass through the membrane in the plastic monitor. Various specifications require different amounts of fuel to pass through the membrane. We recommend 3 gallons but if a different volume is used, it must always be the same amount if results are to be comparable.
- B.** Turn the valve to the STOP position, release the quick disconnect and follow procedure recommended in Section 5.

#### **5. AFTER-TEST PROCEDURE - SAFETY**

When the MiniMonitor is disconnected, DO NOT remove the bottom cap for 5 minutes to allow static charges to dissipate. At least one major oil company has adopted this practice on a world-wide basis. Accidents are extremely rare, but we know of at least 3 fires caused by arcing when the two halves of a monitor housing have been separated.

- A.** When the plastic monitor has been removed from the housing, place it with the spoked or gridded side toward the tubular fitting on the side of syringe (8). Press it firmly in place, being certain that the syringe handle is first pressed all the way in.
- B.** Pull outward on syringe handle one time only to extract fuel from plastic monitor. Remove the plastic monitor and push the handle in again to expel fuel into a safe container.
- C.** Additional extractions can be made if desired, but the plastic monitor must be removed each time to expel fuel.
- D.** Replace the colored plastic plugs.

## 6. EVALUATION OF TEST RESULTS

The evaluation of results should be in accordance with one of the procedures in ASTM D2276/IP 216 and D3830.

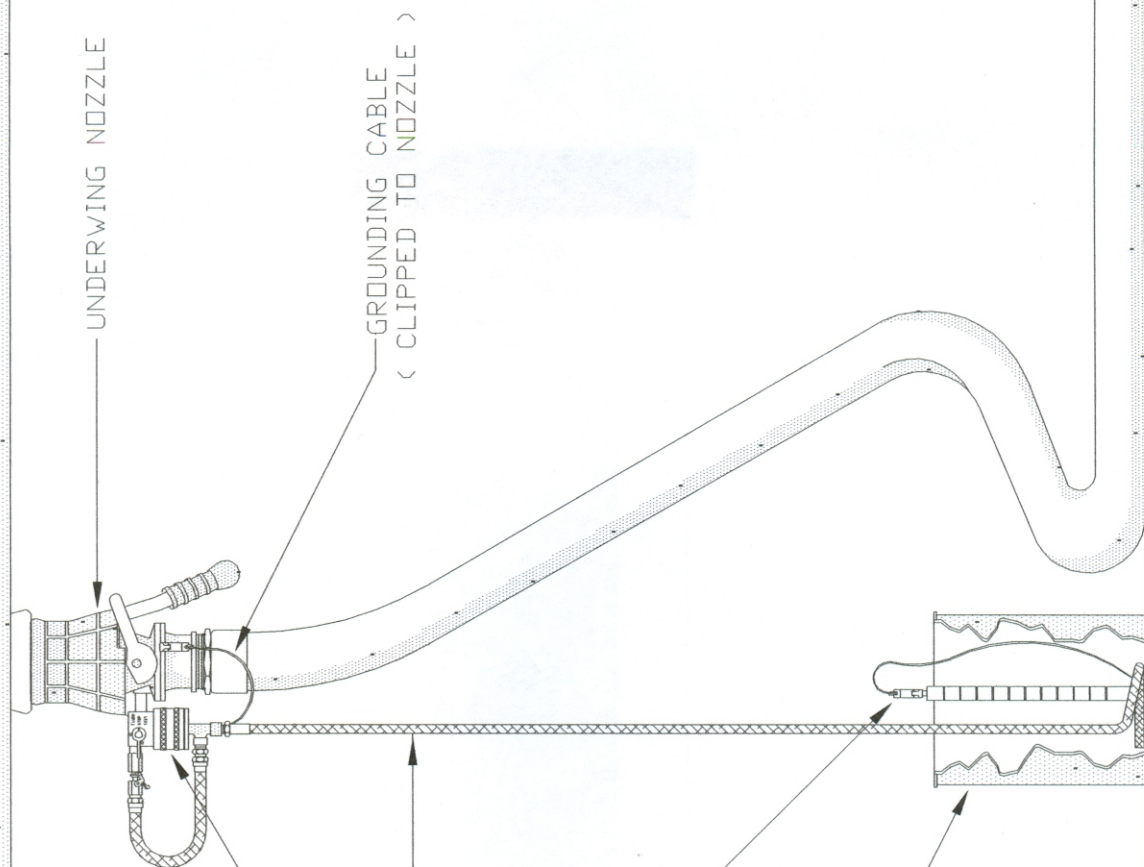
- A. If the color method is to be used, open plastic monitor by inserting and twisting a coin in the groove on the QD. Compare the color of the thin membrane with the ASTM color standard chart. Report color rating, volume throughput and state whether evaluated wet or dry. A dry rating is preferred.
- B. If a gravimetric determination is to be made, the membrane must be pre-weighed on a laboratory balance and then weighed again after the test in strict accordance with ASTM procedures.
- C. If matched weight plastic monitors are used, there will be 2 membranes of equal weight in the plastic monitor. Pre-weighing is unnecessary. A laboratory simply weighs both membranes after the test and reports contamination as the difference in weight between the top and bottom membranes. ASTM procedures must be followed.

## DISCUSSION

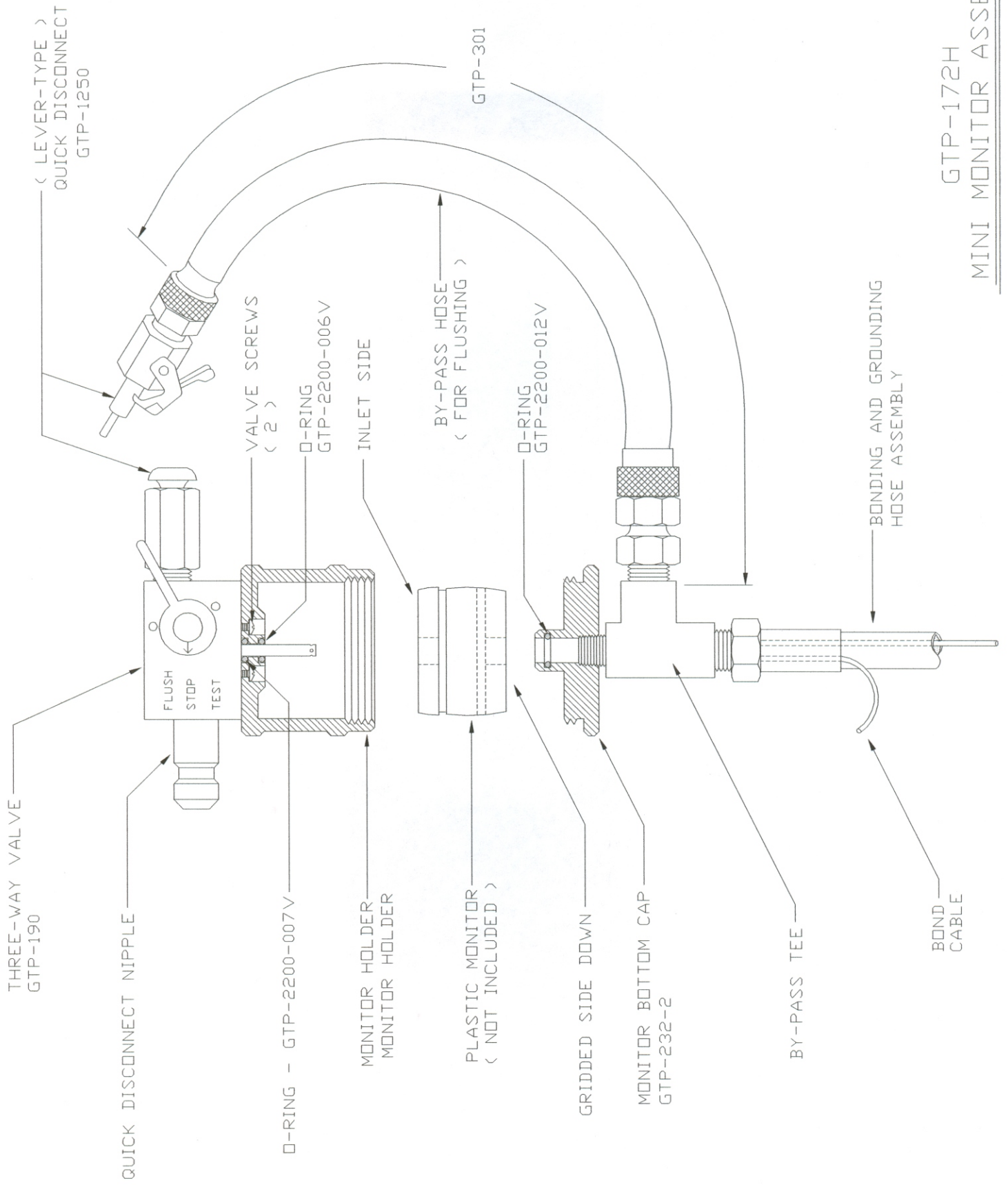
- A. Before replacing components of the MiniMonitor Kit in the carrying case, force all fuel out of the syringe by operating it through several strokes. Residual fuel can be removed from the hose by slinging it in an open area.
- B. For best results, maintain constant flow in the piping system being tested. Never move upstream valves during a test.
- C. If system pressure is very low, the test can be speeded up by partially closing a valve downstream of the sample point.
- D. The standard test membrane for testing kerosene fuels has a pore size of 0.8 microns.  
\*If you order GTP-1983, you will receive a package of 100 membranes and 100 support pads.  
\*If you order GTP-1985, you will receive a box of 48 preloaded plastic monitors ready to use.
- E. The ASTM Method D3830 can be purchased from us by specifying our catalog No. GTP-3043.
- F. The color chart for Method D3830 can be obtained from us by specifying our GTP-1074-1. This is now included in the kit.
- G. Replacement components for the MiniMonitor Kit can be ordered from us:

DESCRIPTION	MODEL NO.
MiniMonitor Kit, complete, with flushing valve	GTP-172
Monitor Housing only - with flushing valve	GTP-172H
Syringe (used to evacuate plastic monitor after test)	GTP-165
Sampling Probe	GTP-144
Quick Disconnect coupler	GTP-992-4F
Bonding and Grounding Hose	GTP-1110
Bypass Hose	GTP-1250
Bypass Tee with check valve	GTP-302C
Bypass Quick Disconnect	GTP-1250
Mini Bags (500 per pack)	GTP-1267
Tweezers	GTP-2099
Dust Cap	GTP-150
Carrying Case	GTP-303
Instructions	BULL. 101

TYPICAL TEST EQUIPMENT SET UP  
FOR SAMPLING DURING  
FUELING OPERATION



SAMPLING BUCKET MODEL NUMBER	GRADUATION
MODEL - 2518-2	.5, 1, 1.5 AND 2 GALLONS
MODEL - 2518-3	1, 2 AND 3 GALLONS
MODEL - 2518-5	1, 2, 3, 4 AND 5 GALLONS
MODEL - 2518-10L	3/4 GAL., 5 LITRES, 10 LITRES
MODEL - 2518-14L	4, 9 AND 14 LITRES



GTP-172H  
 MINI MONITOR ASSEMBLY

FIELD MONITOR ASSEMBLY

