

The Model 3646 is a portable, self-contained maintenance system designed for cleaning pressure gauges, transducers, and other "dead-end" instruments incorporating a Bourdon tube or similar sensing element. The Model 3646 system is also useful for maintaining vacuum gauges. The cleaning process is driven by an electrically powered pump unit, which is used to evacuate and fill the gauge sensing element with an environmentally friendly non-toxic solvent to flush away contaminants.

During operation, the gauge to be cleaned, a flask filled with cleaning solvent, and an empty flask for catching waste liquid are connected to the pump unit using the supplied Teflon hoses as shown above. The two selector valves on the front panel are moved in sequence to evacuate and fill the gauge sensing element, and to route used cleaning fluid into the waste flask.



# Model 3646 Portable Instrument Cleaning System

Global Provider of Test & Measurement Solutions



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To begin the cleaning process, air, and loose contaminants inside the sensing element are purged into the waste flask by moving Selector Valve A to the DRAIN position and Selector Valve B to the EVAC position. After the instrument has been purged, Selector Valve A is moved to the DRY position, connecting the vacuum pump directly to the gauge being cleaned. This increases the vacuum inside the sensing element to approximately 28 in-Hg.

When 28 in-Hg of vacuum has been reached inside the sensing element, Selector Valve B is moved to the FILL position, connecting the flask filled with fresh solvent to the gauge being cleaned. The solvent is forced rapidly into the evacuated sensing element by the atmospheric pressure inside the fill flask. Once the sensing element is filled with solvent, Selector Valve A is moved back to the DRAIN position, and Selector Valve B is moved to the EVAC position to purge the used cleaning solvent and any contaminants into the waste flask.

After the sensing element has been drained of fluid, Selector Valve B is returned to the DRY position to apply vacuum, causing any remaining solvent to flash-boil, driving any residual liquid from the

inside of the Bourdon tube. The action of the rapidly boiling liquid effectively scrubs the interior walls of the Bourdon tube.

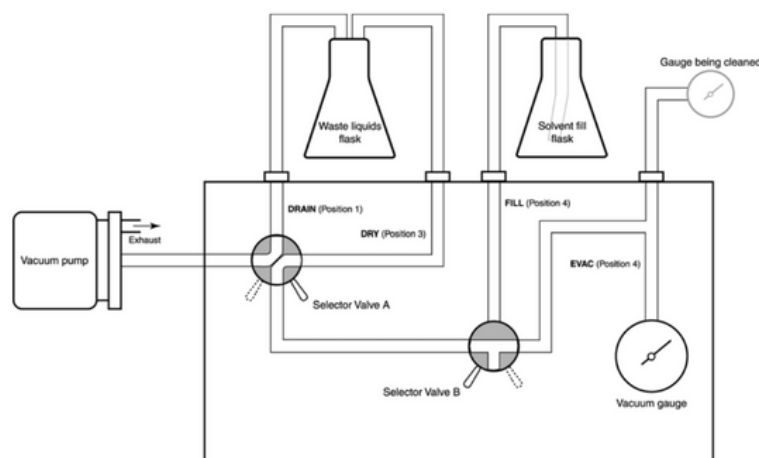
The cleaning cycle should be repeated four or five times to ensure that the sensing element has been flushed completely. A sampling bottle may be substituted for the waste flask during the last drain cycle, allowing the solvent to be visually inspected for the presence of dirt particles, hydrocarbons, and other contaminants.

After the sensing element has been thoroughly cleaned, Selector Valve A is moved to the DRY position and Selector Valve B is moved to the EVAC position to thoroughly dry the inside of the instrument.

The Model 3646 is housed in two compact and rugged drawn aluminum carrying cases for convenient transport and storage. The pump unit case incorporates an electrically powered two-stage piston-driven vacuum pump, a front panel mounted vacuum gauge and selector valves, and the interconnecting plumbing.

The accessory case includes the fill and waste fluid flasks, storage for the cleaning solvent, a quick-disconnect adapter kit compatible with commonly used pneumatic fittings and thread sizes, two sampling bottles, a tube of silicone grease, and several Teflon tube assemblies used for connecting the pump unit to the flasks and the gauge being cleaned.

Two configurations of the Model 3646 are available. KNC P/N3646-1-1 can be used with all pneumatic gauges, transducers, and other devices not intended for handling oxygen. KNC P/N3646-1-104 is designed specifically for maintaining oxygen gauges, including those used in breathing oxygen systems, and is assembled and tested under "oxygen clean" conditions. The contents of the two kits is otherwise identical.



### Characteristics

Cleaning solvent

Lubricant

Vacuum pump:

Electrical requirements

Power

Max. vacuum

Vacuum gauge range

Selector valves:

Valve A

Valve B

Ports:

Dry, Drain, and Gauge

Fill

Tube assemblies:

Fill flask tube assy.

Waste flask tube assy.

Gauge tube assy.

Cleaning solvent storage container

Waste and fill flasks

Sampling bottles (qty 2)

Case dimensions, Inches (WxHxD)

Weight:

Pump unit case

Accessory case

Color:

3646-1-1 Standard System

3646-1-104 Oxygen System

### Specifications

HFE-7100 solvent<sup>1</sup>

KNC P/N 3514-36-1 silicone grease lubricant<sup>2</sup>

115 VAC, 60 Hz, 10 Amps

1/6 HP

28.5 in-Hg

0 to 30 in-Hg

3 way, 2 position, Teflon plug

4 way, 2 position, Teflon plug

1/4" quick-disconnect, female

3/8" quick-disconnect, female

3/8" OD Teflon tubing with one 3/8" male quick-disconnect fitting

Two 1/4" OD Teflon tubes with two 1/4" male quick-disconnect fittings and Teflon stopper

1/4" OD Teflon tubing with 1/4" male quick-disconnect fittings at each end

1 gallon capability

1 quart capability

2 fluid ounce capacity

13 x 12.5 x 11.5

35 lbs

14 lbs dry

AGE Yellow (FED-STD-595, No. 13538)

Green (FED-STD-595, No. 14260)



<sup>1</sup>Product of 3M

<sup>2</sup>Caution: Do not use hydrocarbon-based lubricants with this equipment