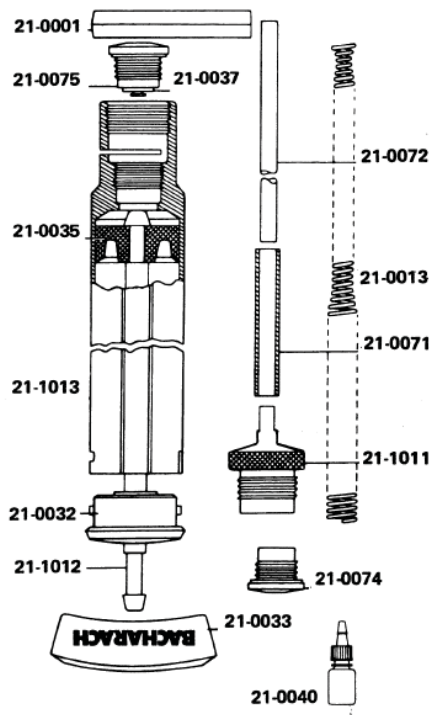


Parts List for **TRUE-SPOT®** Smoke Tester
(0021-7012)



ITEM	NUMBER REQUIRED	CODE NUMBER
Clip	1	0021-0001
Sampling Tube	1	0021-0072
Spring	1	0021-0013
Rubber Hose	1	0021-0071
Smoke Scale (not shown)		0021-0018
Filter Paper (not shown)		0021-0019
Check Valve Assembly (Includes 0021-0037)	1	0021-0075
(Valve Disc only)	1	0021-0037
Cylinder	1	0021-1013
Trap	1	0021-0074
Clamp Screw	1	0021-1011
Cylinder Cap	1	0021-0032
Handle	1	0021-0033
Rod	1	0021-1012
Cup	1	0021-0035
Pump Lubricant . (1/4 Fl. Oz.)	1	0021-0040
Wrench (not shown)		0021-0078

**INSTRUCTIONS
and
PARTS LIST
for
TRUE-SPOT®
Smoke Tester
(0021-7012)**

INSTRUCTION 0021-9012
Rev. 2 - June 2010

WARRANTY

1. Bacharach, Inc. warrants to buyer that at the time of delivery this product will be free from defects in material and manufacture, and will conform substantially to Bacharach's applicable specifications. Bacharach's liability and Buyer's remedy under this warranty are limited to the repair or replacement, at Bacharach's option, of this Product or parts thereof returned to Seller at the factory of manufacture and shown to Bacharach's reasonable satisfaction to have been defective; provided that written notice of the defect shall have been given by Buyer to Bacharach within one (1) year after the date of delivery of this product by Bacharach.

2. Bacharach warrants to Buyer that it will convey good title to this product. Bacharach's liability and Buyer's remedy under this warranty of title are limited to the removal of any title defects or, at the election of Bacharach, to the replacement of this Product or parts thereof that are defective in title.

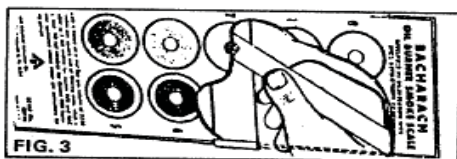
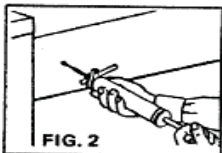
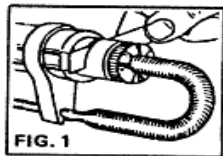
3. The warranty set forth in paragraph 1 does not apply to parts the Operating Instructions designate as having a limited shelf-life or as being expended in normal use.

4. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND ARE GIVEN AND ACCEPTED IN LIEU OF (i) ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE; AND (ii) ANY OBLIGATION, LIABILITY, RIGHT, CLAIM OR REMEDY IN CONTRACT OR TORT, WHETHER OR NOT ARISING FROM BACHARACH'S NEGLIGENCE, ACTUAL OR IMPLIED. The remedies of the Buyer shall be limited to those provided herein to the exclusion of any and all other remedies including, without limitation incidental or consequential damages. No agreement varying or extending the foregoing warranties, remedies or this limitation will be binding upon Bacharach unless in writing, signed by a duly authorized officer of Bacharach.

NOTE: The Smoke Scale, Filter Paper, Valve Disc, and Pump Lubricant are expendable items and are excluded from the terms of this warranty.

[Bacharach 21-7006 True Spot Combustion Efficiency Smoke Test Kit](#)
[Bacharach 21-7012 True Spot Combustion Efficiency Smoke Test Pump](#)

**OPERATING INSTRUCTIONS,
for Testing Oil Burners**



(1) Tear strip from perforated Filter Paper sheet (in SMOKE SCALE envelope); loosen Clamp Screw, insert end of paper strip in slot (Fig. 1) and tighten Clamp Screw; release Sampling Tube from rubber barrel Clip.

(2) Insert Sampling Tube at least 2 1/2 inches into flue through 9/32 inch diameter hole located between furnace/boiler flue outlet and draft regulator.

(3) Pull TRUE-SPOT Handle through TEN (10) full pump strokes (Fig. 2).

(4) Remove Sampling Tube from flue, loosen Clamp Screw and remove Filter Paper.

(5) Match color of smoke spot on Filter Paper strip to the closest spot on 10 spot OIL BURNER SMOKE SCALE (RR-776). In comparing color of smoke spot to chart, slide Filter Paper strip between back of SMOKE SCALE and white plastic slide, viewing smoke spot on Filter Paper through window in center of color spots on SMOKE SCALE with smoke spot backed by white plastic slide (Fig. 3).

(6) Take additional samples required by clamping Filter Paper strip in slot so previous spot is visible outside the slot.

**OBSERVE THESE SUGGESTIONS
FOR MAXIMUM ACCURACY**

(a) Although TRUE-SPOT (0021-7012) has been modified by addition of condensation Trap and Check Valve Assembly, it is still good practice to warm a cold TRUE-SPOT to room temperature before testing begins. This will retard moisture buildup in condensate traps.

(b) About every 10th sample, tap Sampling Tube to loosen soot or rust, tighten Clamp Screw without Filter Paper in slot and purge with several rapid pump strokes (room air).

(c) During sampling be sure to pull piston through 10 full strokes and hold for several seconds at end of each pull stroke.

On pull stroke, use a steady pull motion such that a full stroke is obtained in 3 or 4 seconds.

(d) Check TRUE-SPOT occasionally for leakage (SEE MAINTENANCE INSTRUCTIONS).

(e) For maximum accuracy, hold SMOKE SCALE at arm's length from eyes when comparing smoke spot on Filter Paper.

(f) Keep SMOKE SCALE clean and store in envelope provided when not in use.

MAINTENANCE INSTRUCTIONS

General

1. Wetting of Filter Paper

(a) TRUE-SPOT (0021-7012) virtually eliminates Filter Paper wetting by trapping condensed moisture before it can contact Filter Paper. A combination trap and check valve recessed in the pump's cylinder head retards condensed moisture on the Cylinder from reaching Filter Paper on exhaust strokes. The Trap threaded to

MAINTENANCE, cont'd.

the Clamp Screw holds condensed moisture which would normally wet Filter Paper on intake stroke. When Traps are filled with excess condensate as indicated by Filter Paper wetting, Traps should be removed for cleaning. Remove both Traps with the wrench provided.

(b) Traps should be shaken and/or blown out. The Valve Disc may be removed to facilitate this operation when cleaning Check Valve Assembly. When replacing Valve Disc, make sure stepped side of Disc faces inward.

(c) All surfaces adjoining Traps and Filter Paper should be dried with a clean cloth, or reassemble and tighten Clamp Screw without Filter Paper in slot and pull pump Handle through 10 or 15 full pump strokes (room air).

2. Leakage

To check TRUE-SPOT for leakage on Pump Cylinder side of Filter Paper, clamp piece of hard cardboard securely in slot. Pull Handle out about one inch and release. TRUE-SPOT Handle should return to approximately original position. Failure to do so indicates TRUE-SPOT leak caused by rubber Cup or loose Check Valve Assembly.

3. If TRUE-SPOT Leaks

(a) To examine rubber Cup for damage, turn Cylinder Cap counterclockwise and pull plunger out of Cylinder. Plunger should be rotated slowly at end of stroke to prevent possible damage to rubber Cup due to burrs on Cylinder Cap retainer slots. If Cup shows sufficient wear or damage to cause leakage, replace as described under PARTS REPLACEMENT.

(b) If Cup shows only slight wear, relubrication as described in Section 6 will stop leakage.

(c) To examine Rubber Hose connecting pump to metal Sampling Tube, first tighten Clamp Screw securely; then turn coiled guard Spring clockwise off connection at pump. Replace defective hose with Bacharach part no. 0021-0071.

4. Parts Replacement

The complete TRUE-SPOT Assembly can be dismantled for cleaning or parts replacement with the exception of the Handle (0021-0033) and Cup (0021-0035). Removal of either of these two parts from the Rod for any reason except replacement is not advised. Damage to the rubber parts will occur as a result of forced removal.

If Handle or Cup must be replaced, cut the rubber part in need of replacement away from Rod. Install replacement by pressing tapered end of rod through hole

in rubber piece until retaining shoulder is engaged. MAKE CERTAIN CUP OR HANDLE IS ORIENTED ON ROD CORRECTLY AND CYLINDER CAP IS IN PLACE BEFORE FINAL ASSEMBLY.

5. Cleaning TRUE-SPOT

TRUE-SPOT should always receive a complete cleaning prior to renewal of lubrication (see Section 6), but individual parts should be cleaned as required.

To thoroughly clean TRUE-SPOT, instrument should be completely torn down. Do not remove Handle or Cup except under conditions outlined in Section 4. An approved degreasing safety solvent may be used to clean old lubricant from Cup and Cylinder bore.

WARNING: Always take precautions and follow manufacturer's directions when using solvent. To clean Cylinder, saturate a swab with solvent and work into bore until free of encrusted lubricant.

Remove Valve Disc (0021-0037) from Check Valve Assembly. Clean and make certain ports are clear. When replacing Valve Disc, make sure stepped side of Disc faces inward.

Condensed flue gas which has formed a deposit on the Rod should be removed by scraping or sanding with emery cloth. This will prevent Cylinder Cap wear which results from Rod working against hole in Cylinder Cap.

6. Relubricating TRUE-SPOT

Tendency for TRUE-SPOT to "pull hard" at a sampling speed of 3 to 4 seconds per stroke with Filter Paper in place is usually due to lack of lubrication. Clean TRUE-SPOT thoroughly as described above before lubricating.

Bacharach Pump Lubricant (0021-0040) has been selected for superior lubricating qualities, viscosity, chemical inertness, and long life. Substitutes are not advised.

Best means of applying is to spread enough lubricant around the outside of the Cup so that when Cup is wrapped with one layer of muslin cloth, lubricant is squeezed through fabric weave. Any thin, lint-free fabric including muslin is satisfactory.

Insert lubricated and fabric wrapped Cup into Cylinder bore and work back and forth until a thin film of lubricant remains on the bore. It will probably be necessary to apply more lubricant to the Cup, rewrap, and repeat the procedure several times before a satisfactory thin, even film remains. Do not apply too much lubricant, or seepage will result when TRUE-SPOT is stored.

After Cylinder bore is lubricated, work lubricant remaining on muslin cloth onto outer rim of Cup and reassemble TRUE-SPOT.

1.

2.

3.

4.