



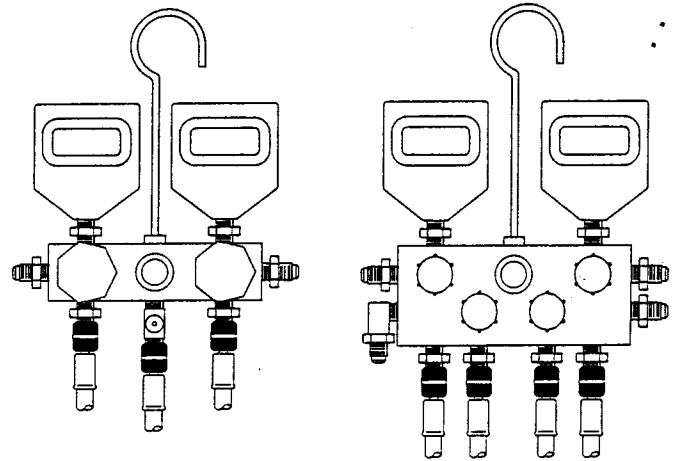
TIF Instruments, Inc.
 9101 NW 7th Avenue
 Miami, FL 33150
 Phone (305) 757-8811
 FAX (305) 757-1028

Repair Location:
 TIF Service Center
 3360 NW 110th Street
 Miami, FL 33167



DIGITAL MANIFOLD GAUGE SET

OWNER'S MANUAL



Covers Gauge Set Models:
 TIF9590D, TIF9600D and all metric versions of
 each

PM105 5/93 Printed in U.S.A.

TABLE OF CONTENTS

Introduction	2
Features	3
Parts and Controls	4
2-Way Gauge Set	4
4-Way Gauge Set	5
Manifold & Hose Parts	6
Gauge Calibration	7
Gauge Operation	8
Precautions	9
Warnings	10
Operating Instructions	11
Pressure Readings	11
Evacuation and Recharge	13
Unit Maintenance	16
Replacement Part Information	18
Specifications	19
Warranty and Repair Information	21

INTRODUCTION

Congratulations on your decision to purchase a new TIF Digital Manifold Gauge Set. Your gauge set has been carefully designed and manufactured to meet the highest attainable quality standards.

The gauge sets covered by this manual may be used on systems containing CFC, HCFC or HFC refrigerants. However, care must be used to avoid mixing of incompatible refrigerants and/or lubricants. Please refer to the "PRECAUTIONS" section on page 9 of this manual for clarification.

For best results please read this manual carefully before attempting to operate the unit. Should you experience any difficulty or require technical assistance please call our TIF Customer Service Hotline at 1-800-327-5060.

FEATURES

- High & Low Side Digital Gauges for clear, concise pressure (vacuum) readings.
- Optical Sight Glass allows visual contact with refrigerant.
- Piston-type valve network keeps "O" rings from rotating and eventually leaking.
- Easy to use color coded valve handles.
- Hoses are equipped with anti-blowback fittings to prevent refrigerant loss and comply with current regulations.
- Hanging hook and holes for easy wall mounting.

Additional TIF9590D Features:

- Durable, 2-way, extruded aluminum manifold block.
- Comes with three, color coded, environmentally safe "Sure-Seal" barrier refrigerant hoses.

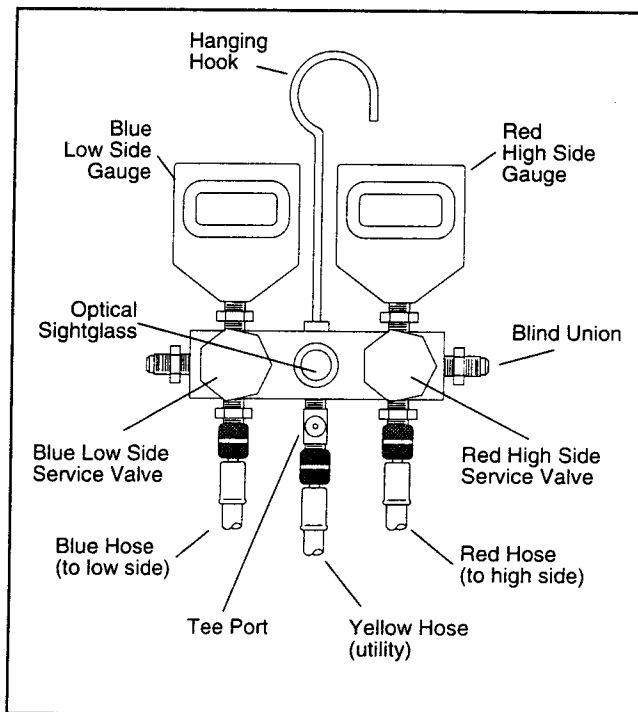
Additional TIF9600D Features:

- Durable, 4-Way, extruded aluminum manifold block.
- Comes with three, color coded, environmentally safe "Sure-Seal" barrier refrigerant hoses and one evacuation hose.

2

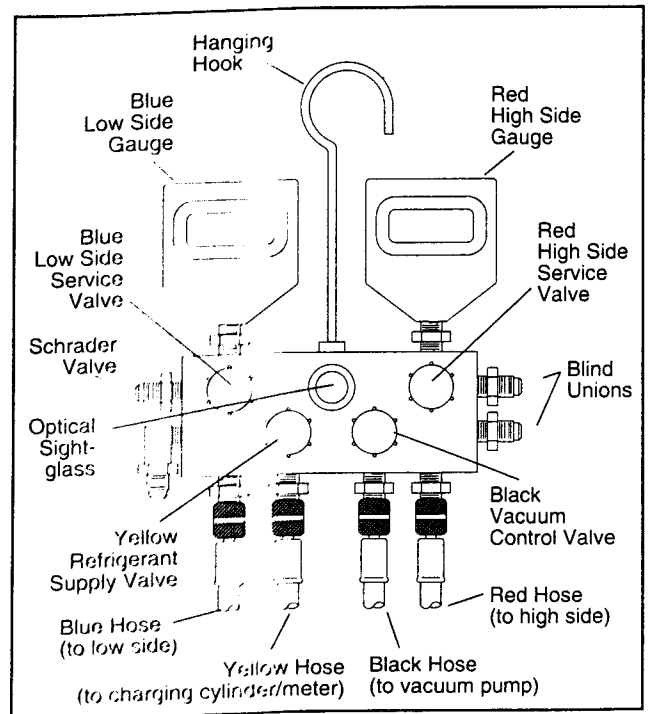
3

2-WAY GAUGE SET



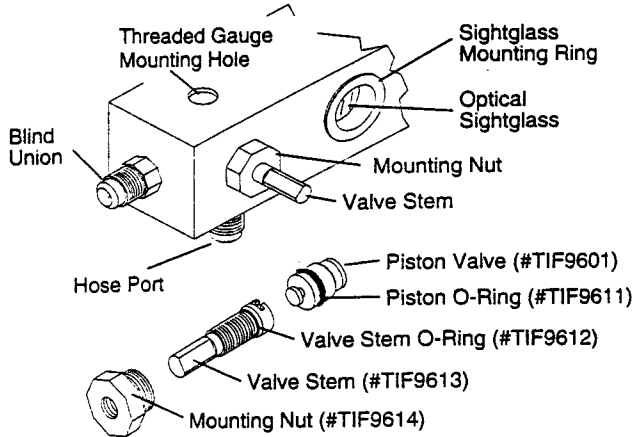
4

4-WAY GAUGE SET

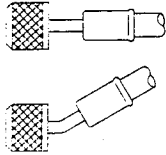


5

MANIFOLD & HOSE PARTS



A shut-off valve (anti-blowback) is supplied on all Red, Blue and Yellow refrigerant hoses. This valve will open automatically when connected and close automatically when disconnected to prevent any loss of refrigerant. Your set is equipped with one of the two types of valves shown. Both types comply with all applicable Federal EPA, State DOE, SAE and UL requirements and/or standards.

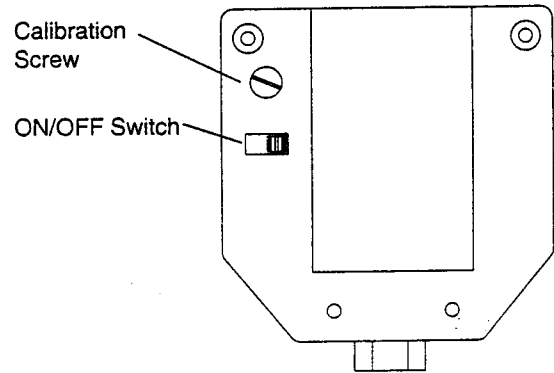


GAUGE CALIBRATION

All manifold gauges discussed in this manual are calibratable. To re-calibrate the gauge, switch on (pg. 8) and slowly turn the calibration screw with a small screwdriver until display reads zero.

The calibration screw is located on the back of the gauge as indicated in the diagram.

NOTE: Because the Low Side Gauge reads to a tenth of a PSI, it is difficult (although not impossible) to zero. A light touch and practice will facilitate this.



GAUGE OPERATION

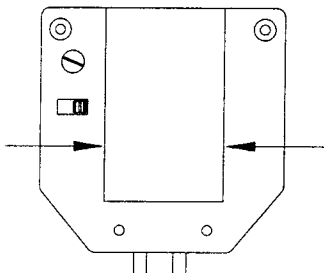
Battery Installation

Each gauge is powered by its own 9V battery.

To Install or Replace Battery

NOTE: The battery needs to be replaced when "LB" appears on the display.

1. Squeeze the sides of the battery cover, as indicated by the arrows in the diagram, and pull away.
2. Connect new and/or tested battery to connector.
3. Place battery into cover and replace cover onto the back of the gauge.



Operation

- To switch gauge on, move power switch to the "ON" position.
- To switch gauge off, move power switch to the "OFF" position.

PRECAUTIONS

- The 9590D and 9600D model Gauge Sets may be used with CFC, HCFC or HFC based refrigerants. However make certain that the same gauge is NOT used with incompatible lubricants.
- Proposed ternary blends, intended as drop-in replacements for CFC refrigerants, are compatible for use with this manifold set.
- Because different refrigerant systems may be serviced by the same manifold, always follow the operating instructions closely and completely in order to avoid cross mixing of refrigerants.
- Contact the system manufacturer or refrigerant supplier if any questions of compatibility come up.
- Cross mixing of incompatible lubricants/refrigerants will void the warranty and may well permanently damage this tool and those tools/systems to which it is connected.
- Neither manifold covered in this manual is designed for use on Automotive R134a A/C systems.

NOTE: If you have questions please call our toll free hotline at 1-800-327-5060 for technical assistance.

WARNINGS

The manifold gauge sets covered by this manual are intended for use **ONLY** by professionals who are properly trained and certified in air conditioning and refrigeration procedures.

Environmental Regulations

The 1990 amendments to the United States Clean Air Act mandate that all personnel who service refrigerant systems must be properly trained and certified (many states have even stricter requirements which should be understood and followed by those residents). Fines are in force for violations and compliance is now being monitored by the U.S. EPA.

Effective July 1, 1992 it became illegal to knowingly vent most refrigerants into the atmosphere. Defeating the shut off valves on the hoses may be in violation of federal law.

Safety Procedures

Always wear protective eyewear when servicing pressurized refrigerant systems.

Charging Guidelines

TIF Instruments recommends **ONLY** low side (suction) vapor charging; such is the only method described in this manual. Always monitor pressure readings while charging so that manufacturer's specs are not exceeded.

OPERATING INSTRUCTIONS

Pressure Readings

For diagnostic purposes it is often necessary to connect a manifold gauge set to an A/C or refrigeration system in order to take pressure readings.

Set Up

Before using your new manifold gauge set it is necessary to remove the air and moisture from the hoses by either evacuation, or by purging them with refrigerant into, or through, a recovery machine. This should be done **after** connecting hoses to gauge set (steps 1 and 2 below).

1. Connect hoses to manifold gauge set as shown in the appropriate diagram.
2-Way: See the diagram on page 4.
4-Way: See the diagram on page 5.
2. Switch on the gauges (see pg. 8) and make certain that gauges are calibrated to "zero" before use (see pg.7 for complete instructions).
3. Clean system service ports prior to connection, to ensure tight seals and prevent contamination.

Connection To System

1. Make certain that **ALL** valves are closed.
2. **2-Way:** Connect the free end of the Blue hose to the low side service port of the system and the free end of the Red hose to the high side service port of the system. It may be necessary to use adapters (not included). Store the yellow hose by loosely attaching to the Tee branch port.

OPERATING INSTRUCTIONS

4-Way: Connect Blue Hose to the low side service port and Red hose to the high side service port. Store the Black and Yellow hoses by loosely attaching them to the blind ports on either side of the manifold block. Do not tighten fittings onto ports.

3. Start system and observe pressure readings.*

DO NOT OPEN MANIFOLD VALVES.

4. Compare readings with manufacturer's specifications.
5. Upon completion of diagnosis, switch off system.
6. Disconnect Blue and Red hoses. Keep in mind that the shut-off valves will prevent refrigerant from being released into the atmosphere; refrigerant will remain in hoses and pressure will remain on the gauges.

NOTE: Some minimal discharge during connection and disconnection is inevitable and should not be cause for concern.

7. It is recommended that the used refrigerant which remains in the manifold be recovered with an approved recovery unit before storage.
8. Before storing manifold, connect hoses to blind ports to keep the hoses secure and the fittings clean. **Do Not tighten hoses onto these ports.**

* Please see Specifications Section, pg. 19, for overrange indications.

OPERATING INSTRUCTIONS

Evacuation And Recharge

NOTE: Only evacuate an empty or new system. **DO NOT** run used refrigerant through the manifold or vacuum pump.

1. **2-Way:** Connect Blue hose to low side service port, Red hose to high side service port and Yellow hose to a vacuum pump. If desired, an auxiliary vacuum gauge may be connected to the branch of the tee.
4-Way: Connect Blue hose to low side service port, Red hose to high side service fitting, Yellow hose to the refrigerant cylinder or charging meter and Black hose to vacuum pump. If desired an auxiliary vacuum gauge may be connected to the upper left side port (the one with the schrader valve).

CAUTION: Make certain refrigerant cylinder valve remains closed, or that charging meter remains off.

2. Open **ALL** manifold valves.
3. Switch on vacuum pump and evacuate system.
4. When evacuation is complete close **ALL** manifold valves and switch off vacuum pump.
5. Perform vacuum leak check by watching low side gauge for several minutes to see if needle rises off 30 inches/Hg.

a. If a rise **DOES NOT** occur; evacuation is complete.

OPERATING INSTRUCTIONS

- b. If a rise occurs, even as minute as one or two graduations, moisture remains in the system and evacuation should continue. Open **ALL** valves and repeat steps 3-5 until the needle no longer rises.
- c. If a rise continues toward zero; a leak is present. Find and repair the leak and then repeat procedure from the beginning.

NOTE: If using an auxiliary vacuum gauge, use it rather than the low side gauge for leak checking. Upon completion of leak checking make sure to remove vacuum gauge from manifold.

6. When evacuation is complete, as described in section 5a, above, charging may begin.
2-Way Only: Disconnect yellow hose from the pump and connect to refrigerant cylinder or charging meter.
7. Open refrigerant cylinder, and if applicable, start the charging meter.

CAUTION: Only low side vapor charging is recommended and described in this manual. Always weigh the amount of refrigerant to be charged into the system by using a charging meter or similar device.

8. **2-Way:** Slowly open Blue valve to begin refrigerant flow into system.
4-Way: Open Yellow valve, then slowly open Blue valve to begin refrigerant flow into system.

OPERATING INSTRUCTIONS

9. If necessary, use a heater blanket or start system when possible to develop the pressure differential needed to charge full amount.

CAUTION: Always watch pressure gauges to ensure that readings stay within the system manufacturer's recommended specifications.

10. When charging is complete; close **ALL** manifold valves. If applicable, disconnect heater blanket and/or switch off system.
11. Close refrigerant cylinder valve and/or switch off the charging meter.
12. Disconnect hoses from system and accessories; the shut-off valves on the Blue, Red and Yellow hoses will prevent refrigerant, contained in hoses, from being released into the atmosphere.
13. It is recommended that the remaining refrigerant in the manifold set be recovered with an approved recovery unit.
14. Upon completion, store manifold for future use by loosely attaching the free end of the hoses to the blind ports (and branch of "Tee" on 2-way) to prevent dirt and/or moisture from entering the hoses and/or fittings.

UNIT MAINTENANCE

Your manifold gauge set requires very little routine maintenance apart from battery replacement (see pg 8). If used and stored carefully this unit will provide you with many years of reliable quality service.

- Avoid extreme mechanical shock to the gauges.
 - Always store your manifold set with the hoses attached loosely to the blind ports to prevent dirt or moisture from entering hoses and fittings.
 - Check hoses for wear, cracks or cuts and replace on an as needed basis. See replacement part information.
 - As with all valves it may be necessary to eventually replace the "O" rings and/or valve seats; which will wear out due to regular use. When this occurs please proceed as per the replacement instructions below (see manifold and manifold parts diagram on page 6 for clarification).
1. Open valve fully and remove knobs by firmly pulling up and off.
 2. Loosen mounting nut by turning counter-clockwise with an open ended wrench.
 3. Remove mounting nut and valve stem assembly.
 4. Examine the "O" rings and valve seat for wear and replace as necessary.
 5. Keep valve assembly lightly back-seated when reinstalling to prevent damage to seat.

UNIT MAINTENANCE

NOTE: For best results use a small amount of silicone type lubricant when replacing "O" rings and/or seals.

- Occasionally it may be necessary to replace one of the gauges due to breakage or malfunction. When this occurs please proceed as instructed below.
 1. Firmly hold manifold block in a flat jawed vise or another similar fashion.
 2. Place an open ended wrench on the gauge stem nut and turn counter-clockwise to remove. Unscrew and lift off manifold.
 3. Remove manifold from vise and carefully clean out the pipe threads and hole. Make certain that no residual thread sealant remains.
 4. Prepare threads of replacement gauge by coating with tape dope or similar sealant.
 5. Carefully screw gauge into manifold by hand, rotating in a clockwise direction. When gauge is finger tight, place wrench on hex and tighten until gauge is facing the front of manifold block.
- If a hose becomes damaged it should be replaced immediately. Please remember that only hoses with shut-off valves should be used. Refer to pg. 18 for replacement parts.

If additional help or information is required please call our toll free hot-line at 1-800-327-5060 for assistance.

REPLACEMENT PARTS

Standard Equipment

Your manifold gauge set comes equipped with a set of color coded "environmentally safe" barrier hoses.

To purchase replacement parts please contact your local TIF distributor. To ensure that you obtain the correct parts it is best to refer to the part number when placing your order.

Replacement Parts

Model	Part Description	Part #
Both	High Side Gauge	TIF9685
Both	Low Side Gauge	TIF9675
Both	72" R12 Hose (UL Approved for R12 ONLY)	TIF9372R,Y,B
Both	72" Barrier Hose (UL Approved for R12, R22, R500, R502 and R134a)	TIF4372R,Y,B
9600D	72" Evacuation Hose	TIF9572BL*
9590D	Valve Handles	TIF9509R,B
9600D	Valve Handles	TIF9608R,Y,B,BL*
Both	Hanging Hook	TIF9513
Both	Piston Repair Kit (includes 9601, 9611, 9612, 9613)	TIF9620

* B = Blue, BL = Black

SPECIFICATIONS

DISPLAY RANGES:

Scale	psi*	bar*	kPa*	kg/cm ² *
Pressure Range	LO	LO	LO	LO
	0-99.9	0-9.99	0-999	0-9.99
	HI	HI	HI	HI
Resolution	LO	LO	LO	LO
	0.1psi; HI	.01bar HI	1kPa HI	.01kg/cm ² HI
	1psi	0.1bar	10kPa	0.1kg/cm ²
Vacuum Range	0-29.9 in/hg	0 to -1.01 bar	0 to -1.01 bar	0 to -1.01 bar
Maximum Overrange	LO & HI 750psi	LO & HI 50.0bar	LO & HI 5000kPa	LO & HI 52.0kg/cm ²

* If no scale is marked on the outside of the carton, your gauges are calibrated in PSI, otherwise refer to the scale indicated on the carton.

Low Side Overrange

If pressure exceeds the range specified above, the Low side gauge will display a small zero on the extreme right-hand side and begin reading from zero again;



see figure: Displaying 133.2 PSI. Displaying 10.50 Bar

SPECIFICATIONS

Gauge Accuracy: +/- 2% of reading
NOTE: Failure to zero gauge will affect accuracy.

Valve Seat: Teflon

Hose Length: Varies with model 36, 60 or 72 inches.

Hose Working/Burst Pressure: See marking on hose

Hose Permeation Rate: Meets all applicable standards as of January 1, 1993.

Shut-Off Fitting: Automatically operated "anti-blowback" mechanical valve; meets SAE J639 and J2196 and complies with all applicable regulations.

Color Coding: Red = High Side
 Blue = Low Side
 Yellow = Utility (Charge)
 Black = Vacuum

Manifold Dimensions w/Gauges: 2-way: 7"W x 6.5"H x 3"D
 4-way: 7"W x 7"H x 3"D

Weight w/o Hoses: 9590D = 1lb 15oz.

WARRANTY & REPAIR

Limited Warranty and Repair/Exchange Policy

This instrument has been designed and manufactured to provide unlimited service. Should the unit be inoperative, after performing the recommended maintenance, a no-charge repair or replacement will be made to the original purchaser if the claim is made within one year from the date of purchase. This warranty applies to all repairable instruments that have not been tampered with or damaged through improper use.

This warranty does not cover any materials that wear out during normal operation of the instrument.

Use of this gauge set with any noncompatible lubricants or refrigerants will result in cross contamination and will void the warranty.

Returning Your Unit For Repair

Before returning your gauge set for repair please make sure that you have carefully reviewed the operating instructions and are using the gauge set as intended. If you need technical assistance please call our toll free number; 1-800-327-5060.

If the instrument still fails to work properly send the unit to the repair facility address on the back cover of this manual. Repaired or replaced tools will carry an additional 90 day warranty.

MANIFOLD GAUGE SETS, HOSES, G

TIF offers a full range of gauge sets; 2-Way and 4-Way, Dry or Glycerine filled, for CFC/HCFC or HFC applications, HVACR or Automotive. Manifold Gauge sets are offered in Imperial scales with temperature scales in °F. Metric versions and °C scales are available on all models; a model number suffix denotes the scale as follows: -MB, Bar; -KC, Kg/cm²; -KP, Kilo Pascals.

CFC/HCFC Gauge Sets

Designed for use with older refrigerants like R12, R22 and R502. These models include temperature conversion scales for those 3 refrigerants:

- TIF9500- 2 Way, Dry Gauges
- TIF9575- 2 Way, Glycerine Gauges
- TIF9580- 2 Way, 80mm Glycerine Gauges
- TIF9600- 4 Way, Glycerine Gauges

ALL GAUGE SETS FEATURE:

- ✓ Zero Adjustable Gauges
- ✓ Three Color Coded Hoses with shut off fittings
- ✓ Extruded Aluminum Manifold Block
- ✓ Color Coded Knobs
- ✓ High and Low Side gauges
- ✓ Brass fittings
- ✓ Hanging Hook
- ✓ Optical Sightglass for visual contact

HFC Gauge Sets

Designed for use with new generation refrigerants, these models include a Temperature conversion scale for R134a. "A" versions include 1/2" ACME fittings and Field Service Couplings for automotive R134a applications.

- TIF4500 - 2 Way Dry
- TIF4500A - 2 Way Dry Automotive
- TIF4580 - 2 Way 80mm Glycerine
- TIF4580A - 2 Way 80 mm Glycerine Automotive

Digital Gauges

TIF has designed these gauge sets with the latest state of the art technology. Their digital display means you can have quick, easy to read, and accurate readings. These gauges allow you to read both pressure and vacuum. The high side will allow you to measure from 0 to 500 psi, while the low side ranges from -30.0 in-Hg to 99.9 psi.

These gauge sets come in your choice of 2 way (TIF9590D) or 4 way (TIF9600D) versions, hoses included.

GAUGE SETS \$249.95 (2way)

\$329.95 (4way)

SUMMARY OF MODELS

Model	9500	9575	9580	9600	9590D	9600D	4500	4500A	4580	4580A
Dry Calibratable	X						X	X		
Glycerine Filled		X	X	X					X	X
Digital					X	X				
1/4" SAE Fittings	X	X	X	X	X	X	X		X	
1/2" ACME Fittings								X		X
80mm Gauges			X						X	X
2-Way	X	X	X		X		X	X	X	X
4-Way				X		X				
134a Compatible					X	X	X	X	X	X
Evacuation Hose				X		X				

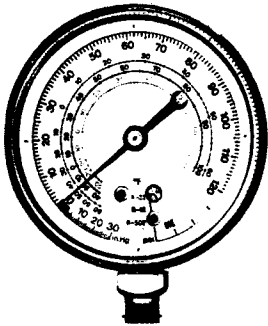
8 2way w/o hoses \$124.95

4way w/o hoses \$249.95

GAUGES AND COMBINATION KITS

REPLACEMENT ANALOG GAUGES

Choices, that is what you want and that is what TIF gives you. We have designed all of our gauges to be used on any existing manifolds you may have. They are also interchangeable, thus you can have a digital gauge on one side and a glycerine filled on the other side. This means you don't have to spend a fortune today to receive tomorrow's gauges. Of course TIF gauges are also available in Metric Scales- Bar, KPa, or Kg/cm².

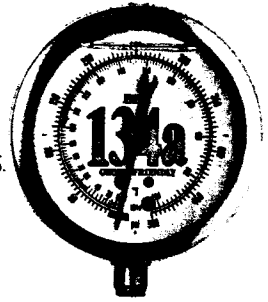


DRY GAUGES

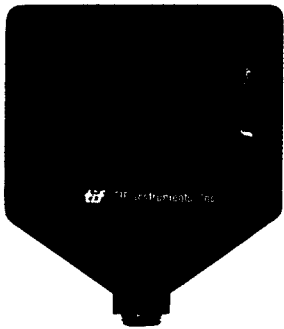
These economical gauges are zero adjustable to ensure long term accuracy. The combination low side gauge displays both vacuum and pressure readings (up to 250psi) while the high side gauge reads from 0-500psi. Color coded.

GLYCERINE FILLED GAUGES

Designed to eliminate all vibrations and provide accurate pressure readings by dampening needle flutter, these are deluxe gauges. Zero adjustable and available in both 63mm and 80mm diameters. R134a compatible versions available.



REPLACEMENT DIGITAL GAUGES



State of the art technology with superb accuracy. Individually powered by 9V batteries, these gauges provide outstanding resolution. Low Side reads 0.1 psi. High side reads up to 500 psi with 1 psi resolution.

CE

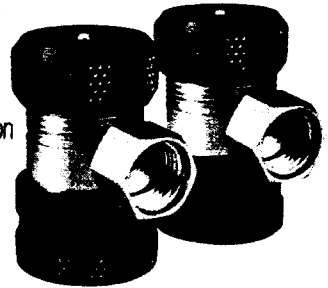


Why trust your hose needs to anyone else when only TIF offers you "Sure Seal" refrigerant hoses. These hoses are color coded (red, blue or yellow) and are available in four different lengths (36", 48", 60" and 72"). UL recognized for all refrigerants.

Refrigerant Hoses & R134a

Couplings

TIF's newest R134a Automotive Field Service Couplings are ultra-compact yet provide manual valve depression and automatic sealing upon disconnection.

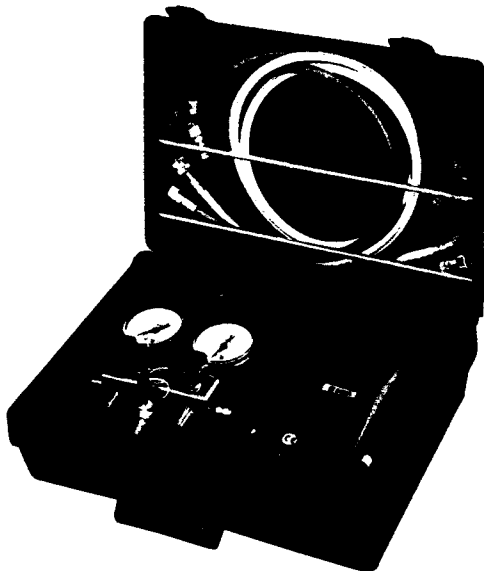


SINGLE GAUGE

89.95

COMBINATION KITS

These specially packaged combination kits give you a leak detector and manifold gauge set in an economical and convenient pairing. Comes complete with three color coded hoses, Field Service Couplings (Automotive versions only), owner's manual and carrying case.



TIF4500AK

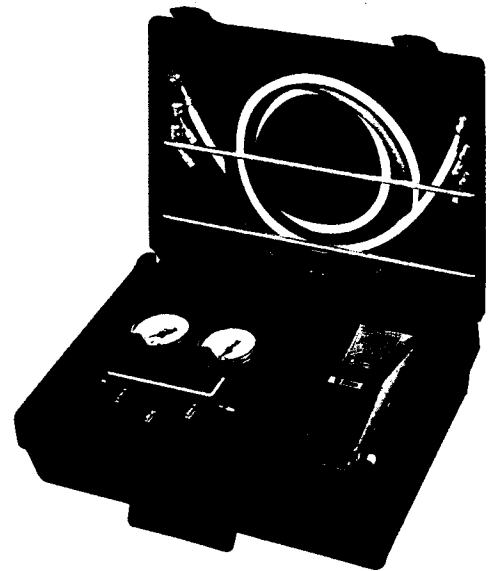
Includes TIF4500A and TIF5650A

TIF5750AK

Includes TIF4500A and TIF5750A

TIF5750K

Includes TIF4500 and TIF5750A



For a complete listing of gauge part numbers and replacement parts, please see our price sheet.

- SPECS -

MODEL NUMBER	5050A/5550A/ 5650A	5750A	5450	H10A	8800/8800A/ 8850	6500	6600	8100	
RANGE						40kHz ±5kHz	14-100kHz		
RESOLUTION									
ACCURACY								±0.5% CONTAMINATION	
OPERATING TEMPERATURE	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	
POWER SUPPLY		(2) 1.5V 'C' BATTERIES		115VAC/60HZ (230V/50HZ)	(2) 2.4V Ni-CAD BATTs	(1) 9V BATTERY	(1) 9V BATTERY	115VAC/60HZ (230V/50HZ)	
BATTERY LIFE (ALKALINE)		50 HOURS			4 HRS/CHARGE	40 HOURS	40 HOURS		
RESPONSE TIME		INSTANTANEOUS		INSTANTANEOUS	INSTANTANEOUS	INSTANTANEOUS	INSTANTANEOUS	30 SECONDS	
WARM UP TIME	5 TO 6 SECONDS		30 SECONDS	30 SECONDS	30 SECONDS	INSTANTANEOUS	INSTANTANEOUS	30 SECONDS	
RESET TIME		ONE SECOND				1 SECOND			
PROBE/CORD LENGTH	PROBE=14"(35CM) CORD=36"(91.4CM)			36"(91.4CM)	15"(38CM)		15"(38CM)		
DIMENSIONS	8" x 3" x 1.8" (20.3 x 7.6 x 4.6CM)			8 1/2" x 5" x 3 1/4" (21.6 x 13 x 8CM)		8" x 3" x 1.8" (20 x 7.6 x 5 CM)		15 1/2" x 11" x 4" (39 x 27 x 10CM)	
WEIGHT	20 OUNCES (560 GRAMS)			3.1LBS (1.4KG)	15 1/2 OZ. (434G)		14 OUNCES (392GR)	8 1/2 LBS. (4KG)	
MAXIMUM SENSITIVITY	0.5 OZ/YR FOR R12, R22 & R134A PER SAE J1627 CRITERIA								LESS THAN 2%
ULTIMATE SENSITIVITY	< 0.25oz./YR	LESS THAN 0.1 OUNCES PER YEAR			5-50PPM				CONTAMINATION

MODEL NUMBER	780	2500	2700	400DC	357EF1	360	330	1000DC	1000LED/ 1000LCD
RANGE(S) [VOLTS] [AMPS] [OHMS]	Low: 0-200RPM High: 0 TO 20,000RPM	5.5-19.9 VDC	0-199.9VDC 0.0-1200A DIODE TEST		0-130 UNITS	0-500 PSI	10 TO 5000 Hz	0-199.9VDC 0.0-1200A 0-1999 OHMS	1000 VAC 1000 AMPS 1K OHM*
RESOLUTION [VOLTS] [AMPS] [OHMS]	Low & High 1 RPM	0.1 VDC	0.01 0.1/1		1 UNIT	1 PSI	AS LOW AS 0.1 Hz	0.1/1 0.1/1 1	0.1/1 0.1/1 0.1/1
ACCURACY	±1% OF READING	±1 DIGIT	BATT: ±1%, ±3DG V/A: ±1%, ±1DG			±2% OF RDG	±2% OF RDG	V/A: ±1%, ±1DG OHM: ±1%, ±3D	±2% OF RDG. ±1 DIGIT
OPERATING TEMPERATURE	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)
POWER SUPPLY	(1) 9V BATTERY	BATTERY UNDER TEST	(4) 1.5V 'C' BATTERIES	BATTERY UNDER TEST	12VDC	(1) 9V BATT & 12 VDC	(1) 9V BATTERY	(1) 9V & (1) 1.5V 'AAA' BATTERY	(4) 1.5V 'AA' BATTERIES
BATTERY LIFE	> 100 HOURS		150 HOURS			> 100 HOURS	APPROX. 1YR	40 HOURS	40 HOURS
INPUT VOLTAGE (FREQUENCY)							5-230VAC/DC 0-5KHZ	0-200 DC	0 TO 1000 VAC 50/60HZ
INPUT CURRENT								0-1200 DCA	0 TO 1000 ACA
CLAMP/JAW CAPACITY			0.75"(1.9CM)					0.84"(2cm)	1/4" (3.2CM)
CORD LENGTH		18"(45.7CM)	18"(45.7CM)	6"(15CM)	24"(61CM)	24"(61CM)	36"(91.5CM)	24"(61CM)	24"(61CM)
DIMENSIONS	6 1/2" x 2 1/2" x 1.7" (16 1/2 x 6 x 4CM)	8 1/2" x 7" x 2" (22 x 18 x 5CM)	15 1/2" x 11" x 4" (39 x 27 x 10CM)	6 1/2" x 2" DIAM. (16 1/2 x 5 CM)	16" x 13" x 5" (40 x 33 x 13CM)	15 1/2" x 11" x 4" (39 x 27 x 10CM)	3 1/4" x 2 1/4" x 1 1/4" (8 x 6 x 3.2CM)	7 1/2" x 3" x 1 1/2" (19 x 7 1/2 x 4CM)	7 1/2" x 3" x 1 1/2" (19 x 7 1/2 x 4CM)
WEIGHT	8 1/2 OZ. (238G)	20 OZ. (560G)	5 LBS (2.25KG)	14 OZ. (392G)	8.4 LBS (3.8KG)	5.4 LBS (2.4KG)	4 OZ. (112G)	8 1/4 OZ. (231G)	14 OZ. (392G)

*LCD-800 OHM

MODEL NUMBER	4500/4580/9500/ 9575/9600	9590D/ 9600D
RANGE	Low: 29.9INHG TO 250 PSI High: 0-500 PSI	Low: 29.9INHG TO 99.9 PSI High: 0-500PSI
RESOLUTION	Low: 1 INHG 1 PSI High: 5 PSI	Low: 0.1 INHG 0.1 PSI High: 1 PSI
ACCURACY	±2% OF FULL RANGE (ANSI GRADE B)	±2% OF READING
OPERATING TEMPERATURE	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)
POWER SUPPLY		(2) 9V BATTERIES
BATTERY LIFE (ALKALINE)		> 100 HOURS
HOSE LENGTH	72 INCHES (1.8M)	
DIMENSIONS	7 1/2" x 6 1/2" x 1 1/2" (19 x 16 1/2 x 3.8CM)	
WEIGHT	2 1/2-3LBS. (1.13-1.35KG)	

MODEL NUMBER	200	240	250	660D
	RANGE RESOLUTION AND ACCURACY AT RIGHT			
INPUT	DCV	10 MEGOHMS	20 KOHMS/V	10 MEGOHMS
IMPEDANCE	ACV	4.5 MEGOHMS	9 KOHMS/V	4.5 MEGOHMS
OPERATING TEMPERATURE		32°-125°F (0°-52°C)	32°-125°F (0°-52°C)	32°-125°F (0°-52°C)
POWER SUPPLY		(1) 9V BATTERY	(1) 1.5V 'AA' BATTERY	(1) 9V BATTERY
BATTERY LIFE (ALKALINE)		APPROX. 1YR	40 HOURS	APPROX. 1YR
CLAMP/JAW CAPACITY				0.75"(1.9CM)
CORD LENGTH		24"(61CM)	24"(61CM)	6"(15CM)
DIMENSIONS		6 1/2" x 3 1/2" x 1" (16 1/2 x 9 x 3CM)	5" x 3.4" x 1.7" (12 1/2 x 9 x 4CM)	6 1/2" x 3 1/2" x 1" (16 1/2 x 9 x 3CM)
WEIGHT		8 OZ. (224G)	11 OZ. (308G)	8 OZ. (224G)