

# Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

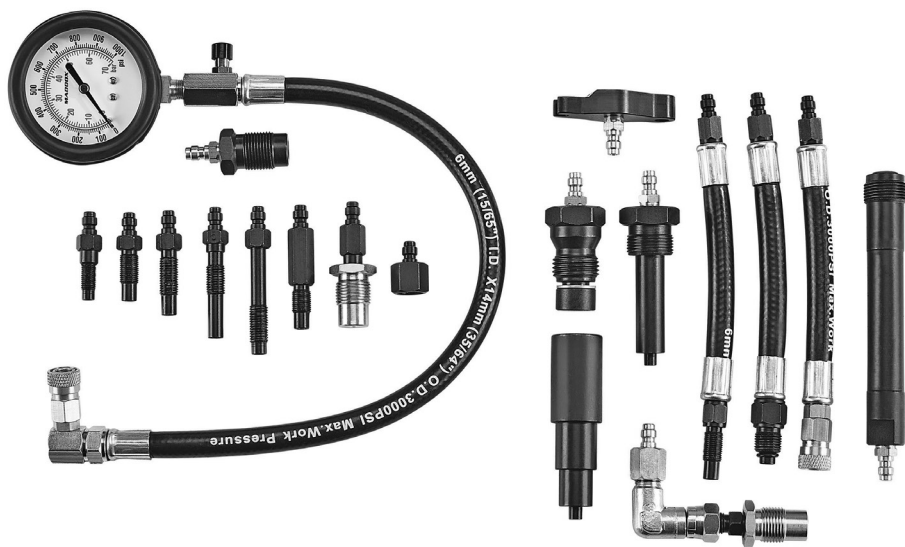
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# MADDOX®

SUPERIOR AUTOMOTIVE TOOLS

MH20-1

## Master Diesel Compression Test Kit



Visit our website at: <http://www.harborfreight.com>  
Email our technical support at: [productsupport@harborfreight.com](mailto:productsupport@harborfreight.com)

57588

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

### **⚠ WARNING**

Read this material before using this product.  
Failure to do so can result in serious injury.  
**SAVE THIS MANUAL.**

# Specifications

Pressure Scale	0–1000 PSI / 0–70 bar
Gauge Accuracy	± 2%
Air Release Type	Push Button
Gauge Hose Size	16-1/2" L

# Important Safety Information

## **⚠️WARNING**

**Read all safety warnings and instructions.** *Failure to follow the warnings and instructions may result in fire and/or serious injury.*

**Save all warnings and instructions for future reference.**

- 1. Stay alert, watch what you are doing and use common sense when using the Compression Test Kit.**  
**Do not use while you are tired or under the influence of drugs, alcohol or medication.**  
*A moment of inattention while testing may result in serious personal injury.*
- 2. Wear ANSI-approved safety goggles and heavy-duty work gloves during setup and use.**
- 3. Do not overreach. Keep proper footing and balance at all times.**
- 4. Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from hot or moving parts.**  
*Loose clothes, jewelry or long hair can be caught in moving parts.*
- 5. Use as intended only.**
- 6. Store the Compression Test Kit out of the reach of children and do not allow persons unfamiliar with the Test Kit or these instructions to operate it.**
- 7. Maintain the Compression Test Kit. Check for breakage of parts and any other condition that may affect operation. If damaged, have the Test Kit repaired before use.**
- 8. Have the Compression Test Kit serviced by a qualified repair person using only identical replacement parts.** *This will ensure that the safety of the tester is maintained.*
- 9.** Prior to using this product, read and understand all instructions and safety precautions as outlined in the vehicle manufacturer's manual and engine diagnostic/repair manuals.
- 10.** Maintain labels and nameplates on the Compression Test Kit. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
- 11.** Do not exceed 1000 PSI maximum pressure.
- 12.** Before testing, place the transmission in park (or neutral for a manual transmission) and set the emergency brake.

13. Use the Compression Test Kit only in well-ventilated areas. A running engine produces carbon monoxide. Carbon monoxide is a colorless, orderless, gas that, if inhaled, can cause serious injury or death.
14. Keep hands and fingers away from moving parts and hot parts of vehicle's engine.
15. This product is not a toy. Keep it out of reach of children.
16. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. Caution is necessary when near coil, spark plug cables, or distributor of running engine. Engine should be off during distributor adjustment.
17. The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.



**SAVE THESE INSTRUCTIONS.**

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# Operating Instructions



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this document including all text under subheadings therein before set up or use of this product.

## **⚠️WARNING**

**TO PREVENT SERIOUS INJURY AND/OR DEATH: Avoid carbon monoxide poisoning. Do not run an engine in an enclosed garage or other contained area.**

**TO PREVENT SERIOUS INJURY:**

- **Wear appropriate work clothes, heavy-duty work gloves and ANSI-approved safety goggles when working on a hot engine. Keep hands away from the fan and other moving parts and protect yourself from electrical shock or burns. Be aware that working on an automotive or truck engine is inherently dangerous, and suitable precautions must be taken.**
- **If you are not experienced in doing this type of diagnostic test, the work should be done by a qualified technician.**
- **Install/remove the Compression Tester only while the engine is stopped.**

**Note:** Good engine cylinder compression will be indicated with a high initial reading, and a progressive buildup to the final maximum reading. Poor engine cylinder compression will be indicated with a low initial reading and a much slower buildup to the final maximum reading. The compression readings for all of the engine cylinders should not vary by more than 10%.

1. Follow all instructions and safety precautions for compression testing outlined in the vehicle manufacturer's manual and engine diagnostic/repair manuals.

2. Check that the vehicle's battery is fully charged. Securely block the vehicle's tires, set the parking brake and the transmission to neutral or park.
3. Refer to the *Diesel Adapters Chart* on pages 6 and 7 to select the proper Adapter to be used for the specific vehicle you will test. After identifying the correct adapter, assemble it securely as shown on the *Parts List and Diagram* on page 10.
4. Prepare the engine for compression testing by starting the engine and allowing it to warm up to its normal operating temperature. Then, switch off the engine.
5. Once the engine has been turned off, disconnect the fuel shutdown solenoid (refer to the engine maintenance manual for location).
6. Remove all of the injectors or all of the glow plugs (depending on the connector used). They can be labeled to aid during reassembly. Unless instructed to do so by the engine manual, do not inject oil into the cylinders (a "wet" test); the oil may not compress properly and damage the engine.

7. Connect the Compression Tester to an engine cylinder. With the fuel pedal depressed completely, crank the engine for eight revolutions.  
**Do not continue to crank the engine;** the engine's starter may overheat, damaging itself.
8. After cranking the engine, record the reading on the Pressure Gauge.
9. Once the maximum reading has been recorded, release the Gauge pressure by depressing the Air Release Button.
10. **Use caution, the engine will be hot!** Remove the Compression Tester from the first cylinder.
11. Repeat steps 6-9 for the remaining cylinders.
12. Reconnect the fuel injection solenoid and reinstall all glow plugs/injectors.
13. When finished, clean, then store the Compression Test Kit in its case, indoors, out of children's reach.

## Maintenance and Servicing



Procedures not specifically explained in this manual must be performed only by a qualified technician.

### **⚠WARNING**

**TO PREVENT SERIOUS INJURY FROM TOOL FAILURE: Do not use damaged equipment. If abnormal noise, vibration, or leaking air occurs, have the problem corrected before further use.**

1. **BEFORE EACH USE**, inspect the general condition of the tool. Check for:
    - loose hardware
    - cracked, worn, or damaged Adapters
    - damaged Pressure Gauge and Hose
    - any other condition that may affect its safe operation.
  2. **AFTER EACH USE**, wipe external surfaces of the tool with clean cloth.
  3. Periodically check the threads for damage.
  4. Keep clean and free from dirt, grease and grit.
  5. Store tool in its Carrying Case when not in use.
- If a problem occurs, have the problem corrected before further use.  
**Do not use damaged equipment.**

<b>Diesel Adapters</b>			
<b>Manufacturer</b>	<b>Engine</b>	<b>Type</b>	<b>Adapter</b>
Audi	Early models	Injector	9
	(1979-1985) 5000 Quattro 2.0L	Glow Plug	12
	(1982-1983) 4000, 4000 Quattro 1.6L	Glow Plug	12
BMW	2.4L MFI Turbo	Glow Plug	12
Caterpillar	3022 (Newer)	Glow Plug	2
	3022, 3023, 3024, 3034	Glow Plug	4
	3046, 3054 (Newer)	Glow Plug	3
Chevette/Isuzu; Luv/Isuzu	1.8L, 2.2L	Glow Plug	5
Cummins	(Up to 2003) 5.9L ISB		13+19
	B Series 2.9L, 3.9L, 5.9L	Injector	18
Deutz	Most models	Glow Plug	12
Dodge/Cummins	(1989-1998) 5.9L	Injector	18
	(1998-2004) 5.9L ISB		13+19
Ford	6.7L Power Stroke Engines	Glow Plug	2
Ford/Mazda	(1984-1987) 2.0L; (1983-1984) 2.2L Escort, Lynx, Ranger, Tempo, Topaz	Glow Plug	4
Ford/Mitsubishi	(1985-1987) Ranger 2.3L	Glow Plug	4
Ford/Navistar	(Up to 1994) 6.9L and 7.3L	Glow Plug	3
	(1994-2004) 7.3L Turbo, Power Stroke Engines	Glow Plug	14
	6.0L and 6.4L Power Stroke Engines	Glow Plug	15
General Motors	(1978-1985) 4.3L V6, 4.3L V8, 5.7L V8	Glow Plug	3
	(1982-2002) 6.2L and 6.5L V8 True Diesel	Glow Plug	7
	(2001-2005) Duramax 6.6L Turbo Diesel	Glow Plug	5
	(2005-present) Duramax 6.6L Turbo Diesel	Glow Plug	6
Hummer H1	(1992-2004) Optimizer 6500 V8 Turbo and 6.2L V8	Glow Plug	7
Hummer H1–Alfa	(2005-2006) 6.6L Duramax	Glow Plug	6
Isuzu/Isuzu Truck	(1992-1998) 4HE1-TC; (1998-present) 6HK1-TC	Glow Plug	5
	(1998-present) 4HE1-TC;(Up to 1998) 6HK1-TC	Glow Plug	10 or 12
	1.8L, 2.2L I-Mark, Pick-Up, Trooper	Glow Plug	4
Jeep	(2005) Liberty 2.8L	Glow Plug	7
J.I. Case	2.9L, 3.9L, 5.9L	Injector	18
Kawasaki	Mule 3010 Diesel–Daihatsu Engine	Glow Plug	4
	Mule 3010 Diesel–Kubota Engine	Injector	8
Kubota	D650, D1100	Glow Plug	4
	D722, D1105, V1505, V2203	Glow Plug	2
	D902, D950	Injector	8
Lincoln Continental Mark VII	(1984-1985 Autos) 2.4L MFI Turbo	Glow Plug	12

<b>Diesel Adapters</b>			
<b>Manufacturer</b>	<b>Engine</b>	<b>Type</b>	<b>Adapter</b>
Land Rover	(1970s) Some models	Glow Plug	15
	(1995-Present) 300 TDI 2.5L, Discovery, Defender, Range Rover Classic	Glow Plug	14
Mazda	(1982-1984) B2200 2.2L; (1984-1985) 626 2.0L	Glow Plug	4
Mercedes-Benz	(1960-1980) Models	Glow Plug	10 or 12
	(1966-1987) Models	Injector	9
	(1978-1999) Models	Glow Plug	10 or 12
	(1987-2005) Models	Injector	17
	(2004-2005) E320 CDI	Glow Plug	3
Mitsubishi	2 and 3 cylinder engines	Glow Plug	4
Mitsubishi–Fuso	Medium	Glow Plug	4
Navistar/International	6.9L and 7.3L	Glow Plug	3
	6.0L VT365E, 6.4L MaxxForce 7	Glow Plug	15
	7.3L T444E	Glow Plug	14
Nissan	(1963-1971) Cedric 2.2L SD22	Glow Plug	4
	(1983-1887) Sentra 1.7L CD17	Glow Plug	3
Nissan/UD Truck	Medium	Glow Plug	4
Perkins	100, 200, 400, and 700 Series	Glow Plug	4
	1100 Series Engines	Glow Plug	14
Peugeot	Most Models	Glow Plug	12
Sprinter (Mercedes/ Freightliner/Dodge)	2.7L	Glow Plug	7
Toyota	1.8L	Glow Plug	5
	2.2L	Glow Plug	4
Universal Marine	M15, M20, M25, M25XP, M30	Injector	8
	Some Models	Injector	9
Volvo	Early Models	Injector	9
VW	(1970s) Rabbit; (1984) Jetta; (1992) Golf	Injector	9
	(1979-1981) Dasher; (1996) Eurovan; (1985-1996) Golf; (1984-1995) Jetta; (1992-1994) Passat; (1981-1984) Pick-Up; (1982-1985) Quantum; (1977-1984) Rabbit; (1982-1985) Vanagon	Glow Plug	10 or 12
	(1997-2005) Jetta, Jetta Wagon; (1997-2005) Golf; (1998-2005) New Beetle; (1996-1997) Passat; (2004-2005) Touareg	Glow Plug	3
Westerbeke	Marine Engines	Glow Plug	3
	Marine Engines	Glow Plug	4

## **PLEASE READ THE FOLLOWING CAREFULLY**

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THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS DOCUMENT AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

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**Record Serial Number Here:**

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**Note:** If product has no serial number, record month and year of purchase instead.

**Note:** Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts. Specify UPC 193175418500 when ordering parts.

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# Parts List and Diagram

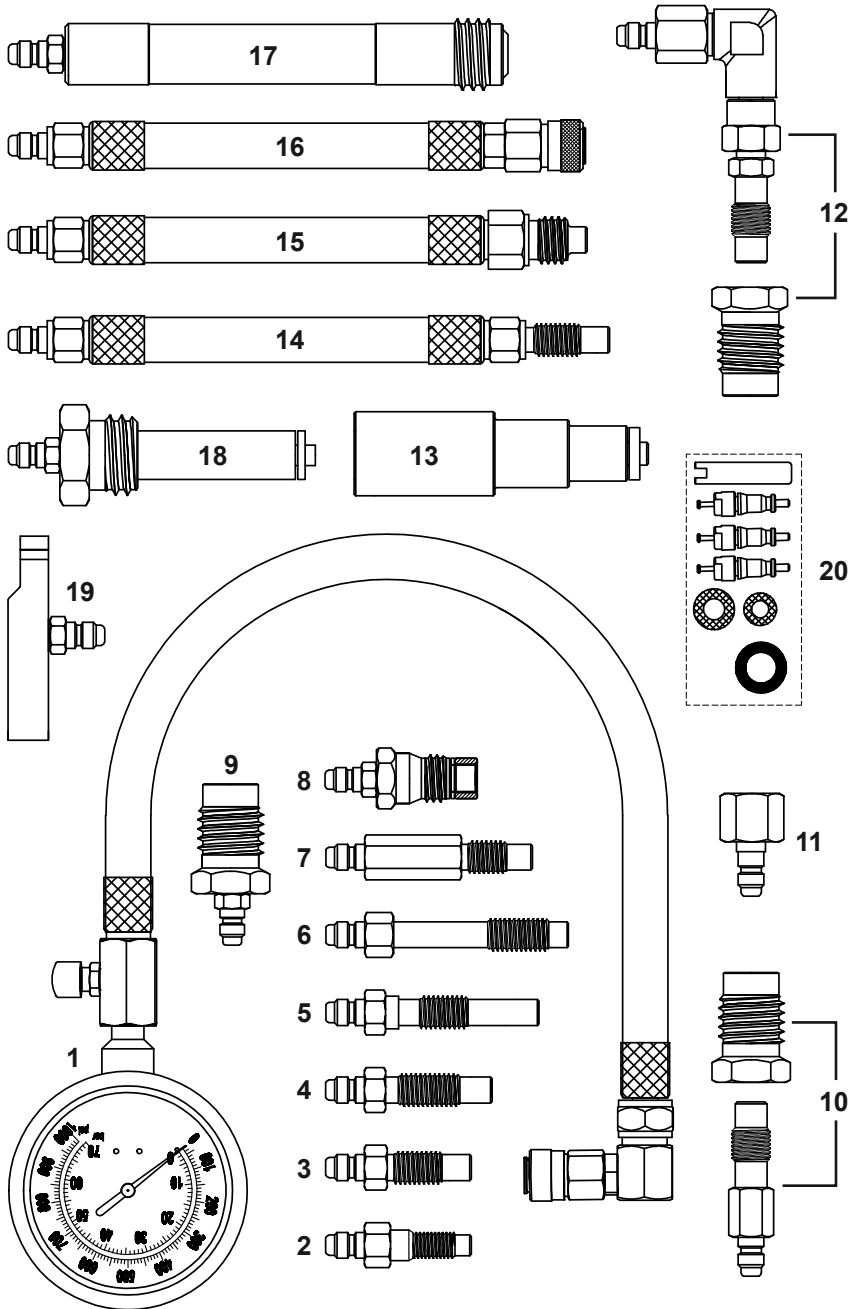
## Parts List

Part	Description	Qty
1	0 to 1000 psi Gauge Assembly	1
2	M8x1.0 Glow Plug Adapter	1
3	M10x1.0 Glow Plug Adapter	1
4	M10x1.25 Glow Plug Adapter	1
5	M10x1.25 Glow Plug Adapter	1
6	M10x1.25 Glow Plug Adapter	1
7	M10x1.0 Glow Plug Adapter	1
8	M24x2.0 Injector Adapter	1
9	M20x1.5 Injector Adapter	1
10	M12 x1.25 / M18x1.5 Glow Plug Adapter	1
11	Manometer Conversion Adapter	1
12	M12x1.25 / M18x1.5 Glow Plug Right Angle Adapter	1
13	Dodge® Cummins® 5.9L 24 Valve Adapter	1

Part	Description	Qty
14	M10x1.0 Ford® Power Stroke® / Navistar® 7.3L and VW® TDI 1.9® Diesel Engines (EEPV314C) Hose Assembly Glow Plug Adapter	1
15	M14x1.25 Ford® Power Stroke® 6.0 L & Navistar® / International 6.0L VT365E Hose Assembly Glow Plug Adapter	1
16	7" Extension Hose Adapter	1
17	M22x1.5 Injector Adapter	1
18	M24x1.5 Injector Adapter	1
19	Dodge® Cummins® 5.9L 24 Valve Adapter	1
20	Service Kit	1
21	Carrying Case (not shown)	1

Refer to Diesel Adapters chart to identify correct Adapter for specific brands.

# Diagram



## Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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