



ABS & BRAKE PRESSURE TEST KIT 24PC

MODEL NO: **VS4514**

Thank you for purchasing a Sealey product. Manufactured to a high standard, this product will, if used according to these instructions, and properly maintained, give you years of trouble free performance.

IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.



Refer to
instructions



Wear eye
protection



Wear protective
gloves

1. SAFETY

- ❑ **WARNING!** Ensure Health and Safety, local authority and general workshop practice regulations are adhered to when using this unit. **IMPORTANT:** Refer to the vehicle manufacturer's service instructions to establish the correct procedure.
- ✓ Maintain this product in good working order and condition, take immediate action to repair or replace damaged parts.
- ✓ Use approved parts only. Unapproved parts may be dangerous and will invalidate the warranty.
- ❑ **WARNING!** Only use new brake fluid, used brake fluid or other fluids contaminate the system causing possible brake failure.
- ✗ **DO NOT** use to perform a task for which it is not designed.
- ✗ **DO NOT** allow untrained persons to use the unit.
- ✓ **DO NOT** use when tired or under the influence of drugs, alcohol or intoxicating medication.
- ❑ **WARNING! DO NOT** pollute the environment by allowing uncontrolled discharge of fluids.
- ✓ Keep children and unauthorised persons away from the work area.
- ✓ Keep work area clean and tidy and free from unrelated materials. Ensure the work area has adequate lighting.
- ✓ Ensure that a vehicle which has been jacked up and had its wheels removed, is adequately supported with axle stands.
- ❑ **WARNING! DO NOT** use with mineral brake fluids unless the machine is manufactured specifically for and dedicated to that purpose.
- ✓ Mineral and conventional fluids do not mix. Cross contamination, however small, between mineral and DOT 3/4/4.1/5 fluids will always result in brake failure.
- ✓ The vehicle is **NOT** to be driven with the ABS & Brake Pressure Gauge installed. This tool is for static testing only.
- ✗ **DO NOT** press on brake pedal with more than normal braking pressure. Exceeding maximum gauge psi pressure will damage gauges and voids warranty.
- ✓ Only after the accumulator is discharged can the adapter and the pressure gauge be safely installed or removed. Failure to heed this warning could result in personal injury to yourself, others or damage to the vehicle being worked on.
- ✓ Before disconnecting any lines, installing any adapters or performing any pressure checks or other work at the master cylinder, the accumulator must be discharged and the system de-pressurised. To discharge the accumulator, turn the ignition key to the off position; next pump the brake pedal for 25-35 times until it becomes rock hard, then pump the pedal an additional 5 times.
- ✓ Care must be used not to get any brake fluid on any portion of the vehicle. Never allow brake fluid to spill onto anything you care about as the caustic nature of the fluid will cause damage. Appropriate care should be observed at all times. Brake fluid can easily damage painted and other surfaces of the vehicle.
- ✓ Brake Fluid should be handled with care and caution. Always wear appropriate protective gear when using this equipment. Personal injury and vehicle damage could easily result by brake fluid contacting a person (such as getting brake fluid splashed or sprayed into your eyes) or by having brake fluid contact the painted surface of the vehicle. Use water to flush away DOT-3 or DOT-4 brake fluid.
- ✓ Always wear approved protective safety glasses when testing the pressure of brake systems. Should brake fluid get into the eye(s), flush the eye immediately with lots of water and consult your physician. Should irritation persist, see your physician immediately.

2. INTRODUCTION

Ideal for diagnosing hydraulic brake systems, including ABS and non-ABS setups. Accurate pressure monitoring enables measurement of pressure differences between the left and right or front and rear brakes. Includes dual 0–3500psi gauges for precise brake pressure readings. Suitable for testing brake pressure control valves, force regulators and pre-pressure valves. Supplied with 18 adapters covering metric and imperial thread types, including M10, M8, M7, M6 and UNF sizes, connection pipe, elbow, and angled connectors. Supplied in a storage case.

3. SPECIFICATION

Contents: Pressure Gauge, 0-3500psi x2, Pressure Adapter, M7-1.0 Adaptor, M8-1.25 Adaptor, M10-1.0 Adaptor, M10-1.5 Adaptor, 3/8-24 Adaptor, 1/4-28 Adaptor, 7/16-24 Adaptor, 7/16-20 Adaptor, 5/16-24 Adaptor, 45° Swivel Fitting, 90° Swivel Fitting, Teves Adapter.

Maximum Pressure:3500psi

4. CONTENTS



No.	Part No.	Description
1	VS4514-01	Pressure Gauge, 0-3500 psi
2	VS4514-02	Pressure adapter
3	VS4514-03	M10x1.0 Adaptor
4	VS4514-04	M10x1.5 Adaptor
5	VS4514-05	M7x1.0 Adaptor
6	VS4514-06	M8x1.25 Adaptor
7	VS4514-07	3/8-24 Adaptor
8	VS4514-08	1/4-28 Adaptor
9	VS4514-09	7/16-24 Adaptor
10	VS4514-10	7/16-20 Adaptor
11	VS4514-11	5/16-24 Adaptor
12	VS4514-12	45° Swivel Fitting
13	VS4514-13	45° Swivel Fitting
14	VS4514-14	Teves Adapter
15	VS4514-BMC	Blow Mould Case

5. PREPARATION

- 5.1. **NOTES:** Some vehicles have their rear ride height proportioning valve adjustments made with the weight of the vehicle off the tyres.
- 5.2. Pressure checks for the base system operation should be done with the weight of the vehicle on the tyres, unless Manufacturer's information states otherwise. This will simulate the actual pressure being applied to the rear wheels under actual vehicle operating conditions.
- The vehicle should be carrying its normal load.
- Disc brake systems should not have any residual pressure.
 - Rear brake pressures will normally be lower than front brake pressures.
 - Drum brake systems may have residual pressure after the brake pedal is released.
 - Rear pressures may be 60-80% of the front pressures.
- 5.3. With a firm force on the brake pedal, common hydraulic pressures at the wheels should be in the 700 to 1500 psi range. This will vary greatly depending on the vehicle and the exact amount of force on the brake pedal, but it should normally fall within this range.
- 5.4. No matter what the configuration of the system, front to rear or diagonal split, the hydraulic brake fluid pressure at both front wheels should be the same; likewise, the pressure at both rear wheels should be the same. 10% variance side to side is acceptable.
- 5.5. On vehicles with rear ride height proportioning valves, always check the rear pressure with the vehicle resting on its tyres and with a normal load in the vehicle. If checked with the tyres hanging, such as if you have the vehicle on a hoist, little if any rear brake pressure will be present.

6. OPERATION

- 6.1. Select the correct adapters that correspond to the caliper bleed screws.
- 6.2. **BLEEDING & CONNECTING THE GAUGES**
- 6.2.1. The pressure gauges hook up to the front and rear wheel calipers and/or wheel cylinders by removing the bleeder valves and installing the matching adapter, then the gauge.
- 6.2.2. Remove a front and rear bleeder valve and compare the bleeder valve screw threads with the adapter threads. Match the threads of the bleeder valve with the threads on the end of the adapter that screws into the caliper or wheel cylinder. (One end of each adapter is the same common thread pitch to fit the gauge & hose assembly fitting.)
- 6.2.3. Attach the hose from the gauge assembly to the adapter just installed into the wheel cylinder or caliper. Tighten this connection.
- 6.2.4. Start the adapter into the caliper or wheel cylinder bleeder hole by hand and then tighten it with a wrench.
- 6.2.5. Bleed trapped air from the gauge and hose assembly.
- Hold the gauge upward and open the bleeder valve. An assistant needs to apply brake pedal pressure slowly and evenly. When brake fluid starts flowing from the bleeder valve, close the bleeder valve and have an assistant release the brake pedal slowly. The gauge line should now be bled.
- This will ensure that all the air is removed, enabling you to obtain accurate hydraulic fluid pressure readings.
- 6.2.6. Air may be bled from the gauge and hose assembly by using a vacuum bleeder.
- Back open the bleeder valve on the gauge hose and attach the vacuum bleeder suction end to the bleeder valve. Hold the gauge in as vertical a position as possible with the bleeder valve pointing slightly upward while bleeding the air from the hose.

- 6.2.7. Attach the second gauge in the same manner.
☐ **WARNING!** These tools are for static testing only.
 * **DO NOT** press on brake pedal with more than normal braking pressure. Exceeding maximum gauge psi pressure will damage gauges and void warranty.
- 6.3. **BRAKE TESTS**
- 6.3.1. **RESIDUAL BRAKE PRESSURE**
 If any pressure remains on a disc brake system when other pedal is released (or if the pressure drops slowly), there is a problem that will cause rapid wear and/or overheating of the pads, calipers, and discs.
 Having gauges connected is far more accurate than having an assistant spinning the tyre by hand, because a small amount of residual pressure (drag) can easily be overcome by the leverage of the wheel/tyre assembly.
 On disc brake systems, when the pedal is applied there should be pressure on the gauges. When the pedal is released, there should not be any pressure shown on the gauge.
- 6.3.2. **AIR IN THE SYSTEM - MASTER CYLINDER INTERNAL SEAL LEAKS**
 To obtain an accurate reading, a rise in pressure and operation of the master cylinder must be gradual. Applying the brake pedal as in an emergency stop is not an accurate way to perform pressure checks.
 If there is air in the system or a master cylinder seal is leaking, side to side pulls will be detected with a pair of pressure gauges. The gauge readings, when the pedal is depressed, will show a rapid rise on one side with a low rise on the other side.
 The side with the low rise may have air in the system or a leaking master cylinder seal. When pushing on the brake pedal to apply pressure to the closed hydraulic system, you should do so with slow easy motion of the brake pedal.
- 6.3.3. **UNEVEN PAD WEAR OR BRAKE PULL TO ONE SIDE**
 If you have uneven pad wear side to side or a brake pull, hook up the pressure gauges to both front calipers.
 Check the brake pressure at both gauges while an assistant depresses the brake pedal.
 If the brake pressures are the same at both wheels, there may be a mechanical condition causing the problem.
- 6.3.4. **TESTING REAR LOAD SENSING VALVES**
☐ **WARNING!** A workshop manual must be obtained and the procedures followed to set the ride of height proportioning valve for each specific vehicle. These instructions do give an overview and basic insight into this necessary procedures.
 The following generalized instructions will give you guidelines for the proper use of brake pressure gauges for setting rear ride height proportioning valves.

 The vehicle is to be on a flat surface with a specific load, and a driver in the vehicle.
 Instructions then call for pressure gauges to be connected to front and rear wheels.

 Depending upon the specific design of the valve, whether it is a rear brake proportioning only or a dual sensing or bypassing type of valve, perform various pressure checks according to Manufacturer's procedures.
 Certain vehicles use rear brake pressure control valves.
 Manufacturer's repair manuals for these vehicles call for various specific and detailed procedures to be followed, for the adjustments of these valves when they are adjustable, and give the tests to determine serviceability and operation of this valve when they are used but are not adjustable.
 On the valves that are rear pressure sensing only, the rear brake pressure control depends upon the vehicle height.
 On these vehicles, generally the instruction state to depress the brake pedal slowly establish a certain front pressure and check the rear pressure. If you wish to determine if the switching of the valve is correct or not, you could perform a simple check of the valve, and then raise the rear of the vehicle and check pressure and then load the rear of the vehicle and check pressure.
 The relationship of the rear brake pressure to the front pressure should be noticeably different under the two different conditions.
 On vehicles which use the dual sensing or bypassing rear brake proportioning valve, instructions typically are as follows:
- 6.3.5. Apply force to the brake pedal in a slow and controlled manner until you have a front brake pressure as stated in the vehicle's OE manual. This pressure will most likely be in the 780-1100 PSI range. At that pressure you should have a rear brake pressure which is approximately 55-75% of the front.
- 6.3.6. Premature or very rapid front disc brake pad wear can be a result of a wrongly rear ride height proportioning valve.
 High pedal effort problems, rear wheel lock-up under slippery road driving or other weather conditions and aggressive side pull from rear brakes are all indications of possible rear load sensing valve maladjustment or malfunctions.
 Without pressure gauges, the cause of these conditions is virtually impossible to identify from a hydraulic pressure standpoint.
- 6.3.6.1. Continue to increase pressure on the brake pedal in a slow controlled manner and watch for the pressure on both the front and rear to rise. When the front hydraulic pressure reaches approximately 1300-1700 psi, the rear brake pressure should have increased to approximately 80- 85% of the front.
 The pressures specified above should be confirmed for each vehicle by a Manufacturer manual to determine the specific pressures that should exist on the vehicle being tested.
- 6.3.7. The ABS & Brake Pressure gauge set, used with the correct included adapters, will enable you to determine the operation of the various rear brake pressure control valves. This can assist you in diagnosing rapid front pad wear, rear wheel lock-up problems and other brake conditions that would not be able to be determined without the use of effective pressure gauges.
- 6.4. **ANTI LOCK BRAKING SYSTEM TESTING**
 Anti-lock Brake Systems (ABS) are divided into two categories: integral systems and non-integral systems.
INTEGRAL ABS SYSTEM: is a self-contained unit that houses the needed electrical and mechanical components that provide the control and power assist to the brakes. An integral system does not use the conventional master cylinder and vacuum booster, but replaces it with a unified hydraulic unit. Before doing any testing or servicing on an integral ABS system, the unit must be depressurised for safety as the unit is a high pressure system.
NON-INTEGRAL ABS SYSTEM: is a low-pressure system that utilizes the existing master cylinder and vacuum booster. It uses additional specific electronic devices that are built into the existing conventional brake system to perform the anti-lock functions.

6.4.1. TESTING INTEGRAL ABS SYSTEMS

Pressure checking integral ABS master cylinders is done to determine pump and accumulator pressure. On all ABS integral master cylinders the “boost” for the power assist is obtained from the pump and the accumulator.

Specific Manufacturer instructions are given in the ABS and OE manuals for these pressure checks.

Master cylinder outlet port pressure and the amount of pedal effort required to obtain the pressure will vary greatly if the accumulator and pump are not in proper working order. Also, on some integral ABS systems the rear brake pressure cannot be checked except at the wheel because the rear brake pressure is supplied only from the pressure stored in the accumulator.

For these reasons, integral ABS master cylinders should only be tested according to Manufacturer procedures.

These procedures do not cover checking outlet pressure from the ports of the master cylinder. Checking outlet port pressure without following the prescribed Manufacturer diagnostic procedures could easily lead to an incorrect diagnosis of a problem.

Also, because of the high pressure of the fluid stored in the accumulator, safety is a concern. If you want to know the outlet pressure of the master cylinder, check it at the wheels after following the Manufacturer procedure for verifying correct accumulator and pump pressure.

- ❑ **WARNING!** Before performing any pressure checks at the master cylinder the accumulator must be discharged.

To discharge the accumulator, turn the ignition key to the off position. Pump pump the brake pedal 25-35 times until it becomes rock hard, then pump the pedal an additional 5 times. Only after the accumulator is discharged can the adapter and the pressure gauge be safely installed or removed.

6.4.2. This kit can be used to test the following systems following Manufacturer's procedures:

DELCO III System Integral ABS master cylinder pressure checks

TEVES II Integral ABS master cylinder pressure checks

Bendix 10 Pressure Port Testing

Bendix 9 ABS Pressure Testing

Bosch 3 Integral ABS Pressure Testing



ENVIRONMENT PROTECTION

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.



Note: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

Important: No Liability is accepted for incorrect use of this product.

Warranty: Guarantee is 12 months from purchase date, proof of which is required for any claim.

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