

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. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.**

## 1. SAFETY INSTRUCTIONS

### 1.1 GENERAL SAFETY

- WARNING!** Ensure Health & Safety, local authority, and general workshop practice regulations are adhered to when using this equipment.
- ✓ Maintain the gauge in good condition (use an authorised service agent).
- ✓ Replace or repair damaged parts. Use genuine parts only. Non-authorised parts may be dangerous and will invalidate the warranty.
- ✓ Locate gauge in a suitable working area, keep area clean and tidy and free from unrelated materials.
- WARNING!** Use gauge on level and solid ground.
- ✓ Keep the gauge clean to ensure accurate performance.
- x **DO NOT** use outside in damp or wet weather conditions.
- x **DO NOT** allow untrained persons to operate the gauge.
- x **DO NOT** leave the gauge unattended.
- WARNING!** When setting front end alignment on commercial vehicles never make adjustments to drop arms or interconnecting links. Doing so could result in serious tyre, wheel and steering problems.
- ✓ Any alignment changes deemed necessary as a result of using this equipment must be made strictly in accordance with the vehicle manufacturer's recommendations.

### 1.2 LASER SAFETY

The GA50 utilises a Class II laser that emits low levels of visible radiation (i.e. wavelengths between 400 and 700 nanometres) which are safe for the skin but not inherently safe for the eyes. The Class II emission limit is set at the maximum level for which eye protection is normally afforded by natural aversion responses to bright light. Accidental eye exposure is therefore normally safe, although the natural aversion response can be overridden by deliberately staring into the beam, and can also be influenced by the use of alcohol or drugs.

- WARNING!** Do not look or stare into the laser beam as permanent eye damage could result.
- x **DO NOT** direct the laser beam at any person's (or animal's) eyes as eye damage could result. If the beam is obstructed by a person during use, release the contact switch immediately.
- x **DO NOT** use the equipment while under the influence of alcohol, drugs or whilst on medication.
- ✓ Be aware that reflections of the laser beam from mirrors or other shiny surfaces can be as hazardous as direct eye exposure.



## 2. INTRODUCTION & SPECIFICATION

The GA50 laser wheel alignment gauge precisely measures the angle between pairs of wheels on a vehicle to give toe-in and toe-out readings. It is intended for use with cars and commercial vehicles and is particularly suitable for vehicles with low ground clearance or extended front ends. It is an essential tool for all vehicle workshops, tyre fitting bays, race/rally car preparation areas, technical schools and training establishments. The unit features an extra large mirror and laser target plate for maximum visibility beneath vehicles and easy to read scales with conversion from degrees to millimetres or inches. The GA50 has a minimal footprint which allows it to fit onto ramps and lifts. The unit can be calibrated on site without the need for specialist equipment and is battery powered needing only two long life AA batteries.

**Wheel rim capacities :** 8" - 24" rim diameter.

**Measuring range :** +/- 2deg.

**Laser beam height :** Under 50mm.

**Laser :** Class II , 1.0 milliwat, Wavelength 650nm.

**Battery :** 2 x type AA 1.4 volts.

**Estimated battery life :** 6 - 12 months, dependant on use.

**Switch :** Momentary operator pressure ( Power off when not depressed )

## 3. ASSEMBLY & CALIBRATION

**WARNING!** Do not switch on the laser unit when detached from the main gauge. When correctly assembled to the gauge the laser should only be switched on when the two sides of the gauge are correctly positioned in relation to each other either for calibration purposes or for wheel alignment use.

**3.1. ASSEMBLY.** Your gauge has been supplied in pack flat form for quick and easy assembly.

- 3.1.1 Take each ready assembled side frame in turn and loosen the thumb screw on the balance leg. Slide the leg away from the alignment peg in the main tube and turn the leg through 90° so that it faces in the same direction as the indents on the main arms. Slide the leg back onto the alignment peg and tighten the thumbscrew.
  - 3.1.2 Place the two frames opposite each other with each extended bar portion positioned to the right hand side. The frame nearest to you is the one to which the laser unit should be attached.
  - 3.1.3 Place the laser unit onto the tube and slide it to the left until it stops against the end of the tube. Tighten the thumb screw on the back of the unit to secure it to the main bar. The thumb screw may be used later to adjust the tilt of the laser unit
  - 3.1.4 Slip the mirror unit onto the main bar of the other frame and tighten the thumb screw to secure it. ( Use the built in spirit level to ensure that the mirror is vertical )
  - 3.1.5 Attach a contact bar to each of the upright arms. Firstly loosen the thumb screw on the contact bar holder and place it on the upright arm. Slide the square portion of a contact bar through one side of the holder, into an indent and through the other side of the holder. Tighten the thumbscrew to secure.
  - 3.1.6 Each contact bar may be fitted either to the left or the right of its respective support arm and may be reversed to use the long or short contact arm. This is to allow the gauge to handle all tyres on 8" to 24" diameter rims and to allow close contact when required e.g. when in use on a vehicle lift.
- 3.2. CALIBRATION.** The gauge will be calibrated each time it is used as part of the process of checking wheel alignment. Calibration will be done with the two halves of the gauge facing each other with the contact bars touching. For further details refer to the operating instructions which follow.

## 4. OPERATING THE GAUGE - CARS & VANS

**NOTE: CARS & VANS.** Prior to use check vehicle manufacturers recommendations relating to loading. Check that tyre pressures are correct.

- 4.1 Ensure that the vehicle is on a smooth level surface with the wheels pointing straight ahead. ( Do not back the vehicle into position.)
- 4.2 Position the laser unit against the offside front wheel ( see fig.1 ) and adjust the height of the contact bars by fixing them in which ever of the five preset positions is closest to a horizontal line through the centre of the wheel. At the same time adjust the side to side positioning of the contact bars so that they touch the sidewall of the tyre either side of the rim. Position the tips of the contact bars to touch the centre of the sidewalls at the greatest point of curvature. Avoid any ribs or raised lettering on the tyre side wall.
- 4.3 The contact bars of the mirror unit should now be set up to the same height and width as the laser unit. To do this remove the laser unit from its position on the tyre and place it in front of the mirror unit to make the necessary adjustments.
- 4.4 When the contact bar arrangements on both units match, proceed to calibrate the gauge. ( See calibration set - up in figure 2. )
- 4.5 Stand both units close together so that the tips of the contact bars are touching. The mirror unit (B) should be vertical. ( Check the built in spirit level and adjust accordingly ). If the laser beam is not visible on the target plate loosen the thumb screw and tilt the laser unit until the beam is visible on the target plate. (See fig.4)
- 4.6 Move the pointer arm (see fig.2-C ) until the laser beam is visible on the vertical centre line in between the two bold arrows.
- 4.7 The lens attached to the end of the pointer arm should now be positioned over the zero mark on the graduated scale plate. ( see fig.2-D ) If it is not, slacken the two wing nuts ( fig.4 ) and adjust the scale plate zero mark to co-incide with the indicator line on the lens. Retighten the wing nuts. The gauge is now ready for use in this particular situation. ( Should you proceed to use the gauge on a different vehicle requiring you to alter the contact bar settings you will need to recalibrate the gauge as just described.)
- 4.8 Now set up the two parts of the gauge as shown in fig.3 and hold down the laser switch to turn it on. ( The beam turns off again when the switch is released). Take hold of the pointer arm between the graduated scale and the circular calculator and move it until the laser beam is on the centre line of the target plate. The graduated scale will now show the amount of toe-in or toe-out in degrees and minutes. Each division of the scale represents 10 minutes.
- 4.9 To allow for possible lateral run out of wheels and tyres, move the vehicle forward until the wheels have rotated half a revolution ( $180^\circ$ ) and repeat the operation. If you obtain a different reading, average the two results.
- 4.10 The calculator (see fig.4 ) allows conversion of the angle obtained to a linear measurement in millimetres or fractions of an inch ( Linear toe-in or toe-out.) Set the large arrow on the top dial to the specified width on the bottom dial. The specified width may either be the nominal wheel diameter or a dimension equivalent to a diameter on the tyre sidewall e.g. mid - sidewall ( or in accordance with the measuring position figures in the appropriate workshop manual or handbook.) Read the linear toe reading from the bottom dial, opposite the angular toe reading from the top dial.
- 4.11 **Any alignment changes necessary must be made strictly in accordance with the vehicle manufacturer's recommendations.**

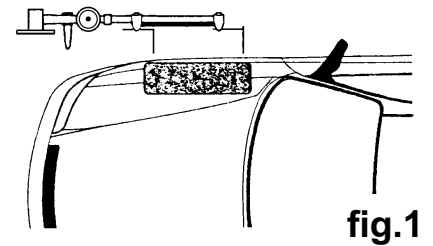


fig.1

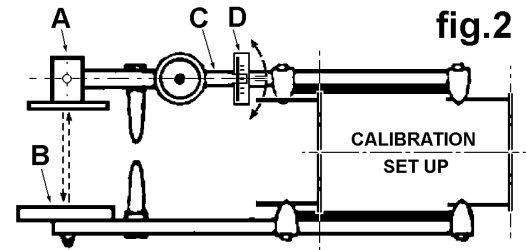


fig.2

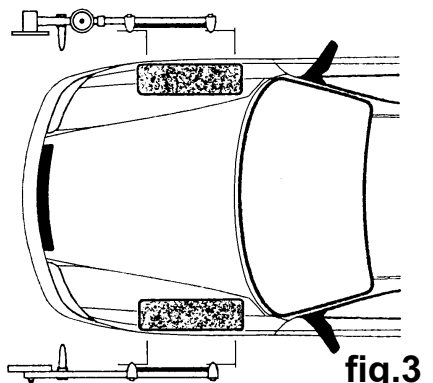


fig.3

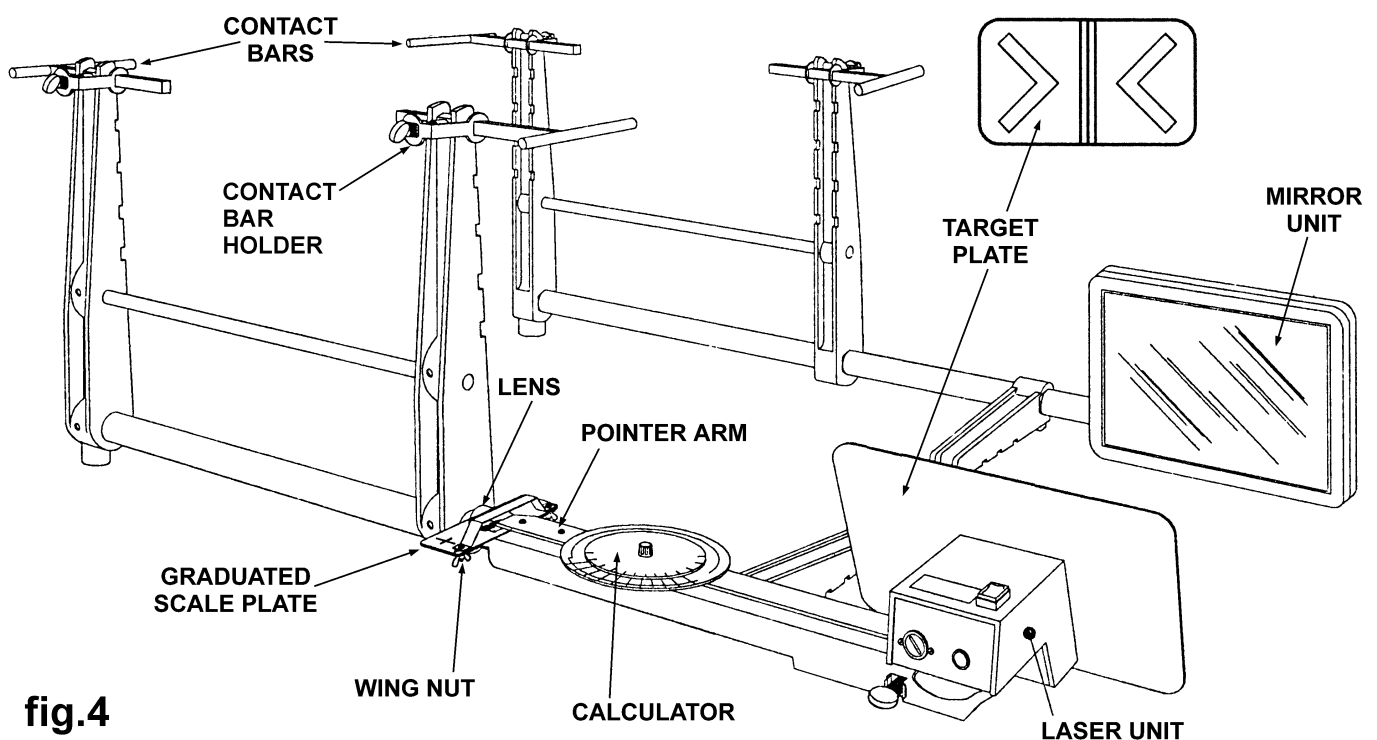


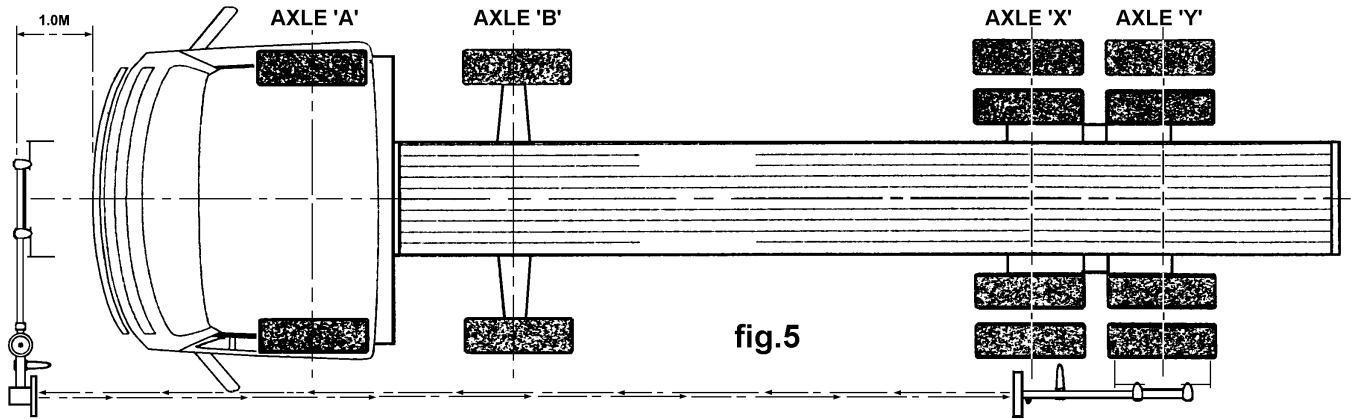
fig.4

## 5. OPERATING THE GAUGE - COMMERCIAL VEHICLES

**NOTE: COMMERCIAL VEHICLES.** The gauge is also designed to check wheel alignment on two, three or four axle vehicles. Before using the gauge, the vehicle manufacturers recommendations in respect of loading, tyre pressures e.t.c must be complied with. In the absence of definite instructions, it is normal practice to check commercial vehicles when fully laden and with all wheels parallel.

**When setting front end alignment, never make adjustments to drop arms or interconnecting links. Doing so could result in serious tyre, wheel and steering problems.**

- 5.1 **Single Steering Axle** : Procedure is the same as for cars and vans.
- 5.2 **Twin Steering Axles** : When checking wheel alignment on twin steering vehicles you will also need to use the GA50/PPL42 optional equipment package comprising larger mirror and frame.



- 5.2.1 Check alignment of the two pairs of front axle wheels ( A & B in fig.5 ) in the same way as you would for cars including the calibration procedure. Adjust if required to the manufacturers recommendations or set to parallel.
- 5.2.2 Replace normal mirror unit with the larger GA50/PPL42 mirror unit (see Section 5.2). Place this unit against the last axle ( Y in fig.5 ) with the mirror orientated towards the front of the vehicle.
- 5.2.3 Stand the laser unit on a level floor approximately 1metre ahead of the front bumper with the target plate facing the mirror. This is the set up shown in fig.5. With the pointer at zero, move the laser unit until the beam is visible on the vertical centre line of the target plate.
- 5.2.4 Without moving the laser unit, transfer the mirror unit to the next axle ( X in fig.5 ) and check the reading. This should be identical to axle 'Y'. If not then the rear axles are not parallel and will require adjustment.
- 5.2.5 Position mirror unit at axle 'A' and check reading. If the original setting was parallel the laser beam should be central on the target plate. For a toe in setting, move the pointer until it shows half the amount of the recommended toe-in ( e.g. a 20' movement for a 40' toe-in ). The laser beam should now be central on the target plate. If not, gently turn the steering wheel, keeping the contact bars positioned on the rim or the tyre sidewall until the laser beam is central. Axle 'A' is now correctly aligned with the rear axles.
- 5.2.6 Move the mirror unit to axle 'B' and note the reading in comparison to axle 'A'.
- 5.2.8 If the reading is different the inter-axle adjuster will need adjustment, recheck from step 5.2.2 onwards.
- 5.2.7 To compensate for run-out in tyres and/or wheels roll the vehicle forward until the wheels have rotated half a revolution (180°). Repeat steps 5.2.2 to 5.2.6. Should the results vary, average the figures obtained. Adjust the connecting rods as necessary until the laser beam appears central.

## 6. MAINTENANCE

- 6.1 If laser beam becomes difficult to see on target remove circular hatch at rear of laser unit and replace batteries.

## 7. ACCESSORIES

- 7.1 The laser can be powered from a cigarette lighter socket using optional cable accessory GA50/PPLBL which plugs into the back of the laser unit.

### LASER WHEEL ALIGNMENT GAUGE

Model: GA50

EN 60825-1 Laser safety  
93/68/EEC CE Marking Directive

**Declaration of Conformity** We, the sole importer into the UK, declare that the product listed here is in conformity with the following standards and directives.



The construction file for this product is held by the Manufacturer and may be inspected, by a national authority, upon request to Jack Sealey Ltd.

Signed by Mark Sweetman

10th March 2004

For Jack Sealey Ltd. Sole importer into the UK of Sealey Professional Tools.

JHM Butt & Co Ltd

Station Yard Station Road Bawtry Doncaster South Yorkshire DN10 6QD

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Tel: 01302 710868 - Fax: 01302 719481

www.jhmbuttco.com - info@jhmbuttco.com