

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. ELECTRICAL SAFETY

WARNING! It is the responsibility of the owner and the operator to read, understand and comply with the following: You must check all electrical products, before use, to ensure that they are safe. You must inspect power cables, plugs, sockets and any other connectors for wear or damage. You must ensure that the risk of electric shock is minimised by the installation of appropriate safety devices. A Residual Current Circuit Breaker (RCCB) should be incorporated in the main distribution board. We also recommend that a Residual Current Device (RCD) is used. It is particularly important to use an RCD with portable products that are plugged into a supply which is not protected by an RCCB. If in any doubt consult a qualified electrician. You may obtain a Residual Current Device by contacting your Sealey dealer. You must also read and understand the following instructions concerning electrical safety.

- 1.1.1. The **Electricity at Work Act 1989** requires that all portable electrical appliances, if used on business premises, are tested by a qualified electrician, using a Portable Appliance Tester (PAT), at least once a year.
- 1.1.2. The **Health & Safety at Work Act 1974** makes owners of electrical appliances responsible for the safe condition of those appliances and the safety of the appliance operators. **If in any doubt about electrical safety, contact a qualified electrician.**
- 1.1.3. Ensure that the insulation on all cables and on the appliance is safe before connecting it to the power supply. See 1.1.1. and 1.1.2. and use a Portable Appliance Tester.
- 1.1.4. Ensure that cables are always protected against short circuit and overload.
- 1.1.5. Regularly inspect power supply cables and plugs for wear or damage and check all connections to ensure that none is loose.
- 1.1.6. **Important:** Ensure that the voltage marked on the appliance matches the power supply to be used and that the plug is fitted with the correct fuse - see fuse rating at right.
- 1.1.7. **DO NOT** pull or carry the appliance by the power cable.
- 1.1.8. **DO NOT** pull the plug from the socket by the cable.
- 1.1.9. **DO NOT** use worn or damaged cables, plugs or connectors. Immediately have any faulty item repaired or replaced by a qualified electrician. When a BS 1363/A UK 3 pin plug is damaged, cut the cable just above the plug and **dispose of the plug safely.**

Fit a new plug according to the following instructions (UK only).

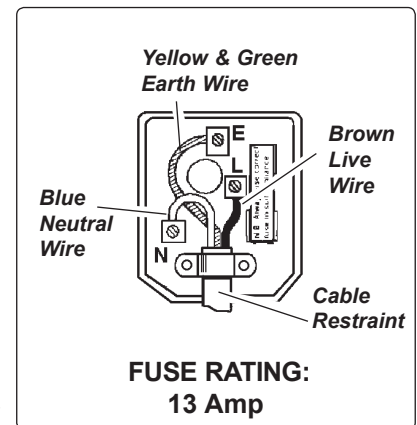
- a) Connect the **GREEN/YELLOW** earth wire to the earth terminal 'E'.
- b) Connect the **BROWN** live wire to the live terminal 'L'.
- c) Connect the **BLUE** neutral wire to the neutral terminal 'N'.
- d) **After wiring, check that there are no bare wires, that all wires have been correctly connected, that the cable outer insulation extends beyond the cable restraint and that the restraint is tight.**

Double insulated products, which are always marked with this symbol , are fitted with live (brown) and neutral (blue) wires only. To rewire, connect the wires as indicated above - **DO NOT** connect either wire to the earth terminal.

- 1.1.10. Products which require more than 13 amps are supplied without a plug. In this case you must contact a qualified electrician to ensure that a suitably rated supply is available. We recommend that you discuss the installation of an industrial round pin plug and socket with your electrician.
- 1.1.11. If an extension reel is used it should be fully unwound before connection. A reel with an RCD fitted is preferred since any appliance plugged into it will be protected. The cable core section is important and should be at least 1.5mm², but to be absolutely sure that the capacity of the reel is suitable for this product and for others which may be used in the other output sockets, we recommend the use of 2.5mm² section cable.

1.2. GENERAL SAFETY

- WARNING!** Ensure Health & Safety, local authority, and general workshop practice regulations are adhered to when using this equipment.
- Maintain the wheel aligner 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 wheel aligner in a suitable working area, keep area clean and tidy and free from unrelated materials.
- WARNING!** Use aligner on vehicles that are parked on level and solid ground.
- Keep the gauge clean to ensure accurate performance.
- DO NOT** use outside in damp or wet weather conditions.
- DO NOT** allow untrained persons to operate the aligner.
- DO NOT** leave the aligner 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.
- WARNING!** The warnings, cautions and instructions contained within this document cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.
- Any alignment changes deemed necessary as a result of using this equipment must be made strictly in accordance with the vehicle manufacturer's recommendations.



1.3. LASER SAFETY

GA60 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

Fast, simple and accurate alignment of both front and rear wheels. Optimises vehicle performance and set up, after installation or modification of steering or suspension components. Simple and fast to use, it is ideal for the busy professional workshop and has a fast return on investment – potentially adding value to every steering or suspension job. This fully portable kit is also ideal for track-day set up for the enthusiast. Works on practically all cars and light commercials, with rim diameters between 320mm and 540mm. Supplied with steering wheel clamp, wheel turn plates and wall mounted storage rack with integral laser recharging station. Call your local dealer for a demonstration.

GA60 shown fitted to optional GA60WK wheel unit

3. ASSEMBLY

The GA60 kit consists of:

1 x Wall Mounted Cabinet	2 x Laser Measuring Heads
2 x Alignment Assemblies	2 x Dished Turning Plates
1 x Steering Wheel Clamp	8 x Rechargeable Ni-Cad AA Batteries (4 in each unit)

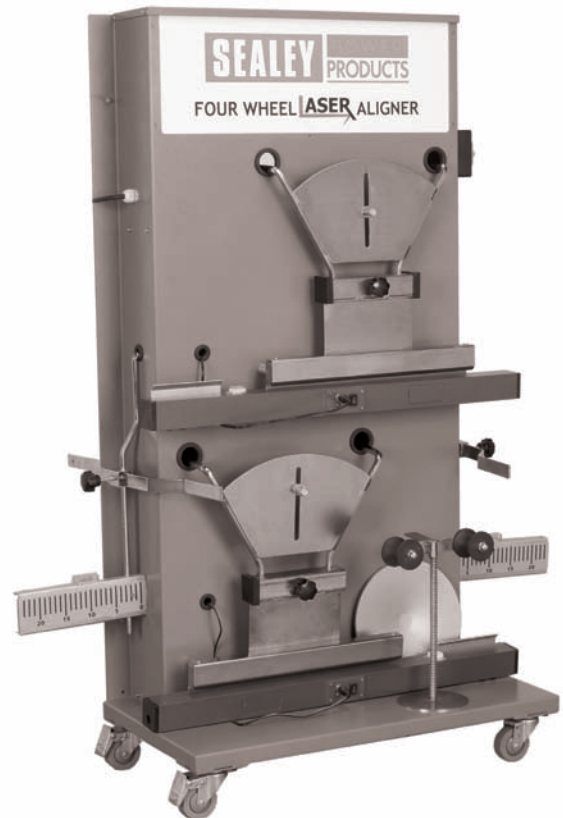
3.1. ASSEMBLY

The main unit is designed to be wall mounted. Select a suitable position, ensuring that it is near to an electrical socket. Using the back plate as a template, mark the positions for four holes to be drilled. Drill the holes to a suitable size and depth and using suitably strong fixings, bolt the unit and back plate to the wall, two people will be needed to manoeuvre the unit into place due to its weight. Position the various assemblies onto the main unit and plug the two leads into the two laser alignment tools. Plug the unit into an electrical socket and switch on the mains power switch. Switch the two laser alignment tool switches to position II and the recharging lights will illuminate. It is recommended that the batteries are charged for at least 4 hours before using for the first time.

Note: the charging lights will illuminate even though the main unit is switched off, they are there to show that the units are in charging mode.

3.2. GA60WK - Optional Wheel Unit

To make GA60 fully portable, GA60WK fits to the base of the main unit. To assemble, fit the four castor wheels to the underside of the tray, securing with four bolts on each wheel unit. With the help of another person, carefully tip the GA60 unit over and lay it on the floor. Fit the base to it, securing it with four screws. Stand the unit back onto its wheels.



4. OPERATION

Prior to use, check that the tyre pressures are correct and if wheel covers are fitted, remove them. Ensure that the vehicle is on a smooth level surface with the wheels pointing straight ahead, Do not back the vehicle into position, but drive straight ahead into position. Ideally vehicle should be on a ramp or lift for easier access to the track rods, if adjustment is necessary.

4.1. FRONT WHEEL ALIGNMENT

Wheel alignment is the amount that the rear wheels is out of alignment to the front wheels. If the rear wheels are not aligned, the vehicle may be steered from the rear, which will result in what is known as 'crabbing'. When a problem similar to the one shown in fig.1 occurs, the vehicle will steer to the left, resulting in the steering wheel having to be turned to the right to counter-act the rear steering force. At the same time the front wheel position adopts a set-back situation with respect to the vehicle's centre line. Should the front wheels now be measured from the front only, this set-back situation will not be noticed. So to offer a full alignment service a vehicle's trust angle must be checked. Basically, rear wheel toe must be kept equal to the centre line and correctly toed in or out in order for the vehicle to handle correctly.

- 4.1.1. Place the turnplates centrally in front of each front wheel with the curve facing downwards. Drive the vehicle onto the turnplates (fig.2). NEVER attempt to carry out any wheel alignment without positioning the vehicle correctly on the turnplates.
- 4.1.2. Turn the steering wheel to the straight-ahead position and lock it in position with the spring loaded steering wheel clamp positioned between it and the driver's seat (fig.3).
- 4.1.3. Hang the alignment assemblies onto the top of the rear tyres and make adjustments, so that the horizontal bar is sitting at approximately the centre of the wheel and touching the tyre at both ends. Ensure that the scale is at 90° to the wheel. Check the spirit level to ensure the correct position is achieved (fig.4).
- 4.1.4. Mount the laser measuring heads onto the front wheels with the toe scales to the front of the vehicle. The black locking hand screw on the assembly allows the hanger to be shortened or lengthened to suit different wheel sizes. Set the hand screw so that the hanger sits on top of the tyre and the three 40mm locators touch the wheel rim. Check the spirit level to ensure the bubble is centred (fig.5).
- 4.1.5. Switch the switches on the laser measuring heads to position I, the laser can be observed hitting the rear scales (fig.6). Check the reading on each scale, add the readings together and divide by 2. For example: if the nearside scale reads 3 and the offside scale reads 5, adding together and dividing by 2 equals 4, making each side in this example 4.
- 4.1.6. Adjust each track rod end to achieve this reading, when both rear scales are equal, the front wheels are aligned. Leave aligning equipment in place for the next check.

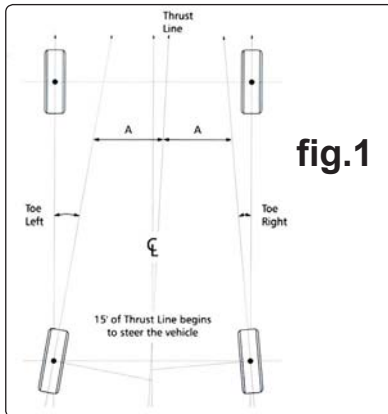


fig.1



fig.2



fig.3



fig.4



fig.5

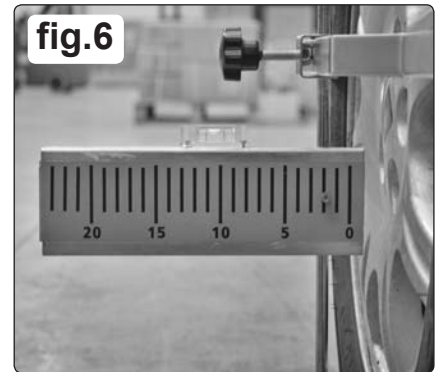
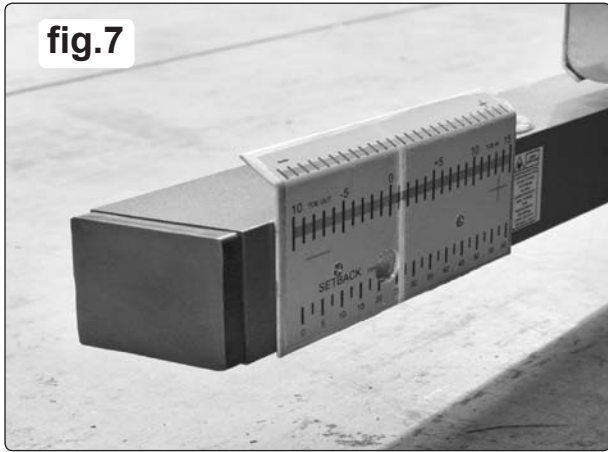


fig.6

4.2. FRONT WHEEL TOE ANGLE (TRACKING)

Toe angle, also referred to as tracking, relates to the way in which the actual width of the wheel track varies between the front edges when compared to the rear edges of an axle's wheels. (See fig.9 - in this case B is greater than A). As viewed from above, the front road wheels, will either be pointing towards the centre line or away from it. If the wheels point away from the centre line, they are said to be toed-out (also called negative toe); in specification books this will be represented by a number preceded by a minus sign. Wheels pointing towards the centre line (as shown in the diagram), are toed-in (positive toe). Please note, in this simple front-only situation, the steering wheel position is shown set at right angles to the centre line, and each front wheel equally set toed in to the centre line, with the rear wheels parallel. Toe angle is built into vehicle geometry to reduce the tyre wear to a minimum and to counteract any tension built in by the other angles. Ideally once the vehicle is moving, the two wheels of a said axle should become perfectly straight (parallel) to each other. In order to achieve this, when static the axle is set with a small amount of toe-in or toe-out. Once the vehicle starts moving forward, forces in the suspension and drive should pull the wheels almost parallel. However, most vehicles today will be set to have a slight toe-in or toe-out, this is a result of vehicle designers compromising; for example, setting the wheels to toe-in provides better straight-line stability whereas setting to toe-out offers a quicker steering response.

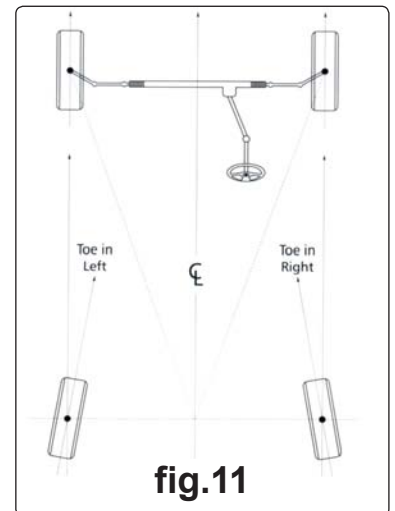
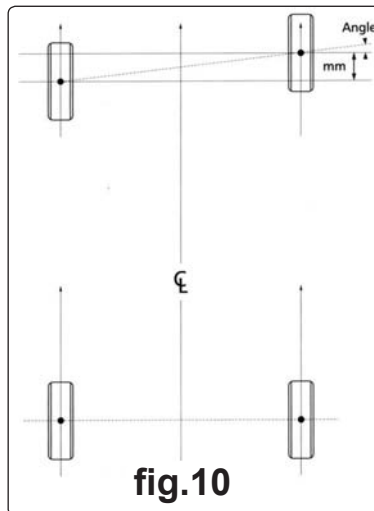
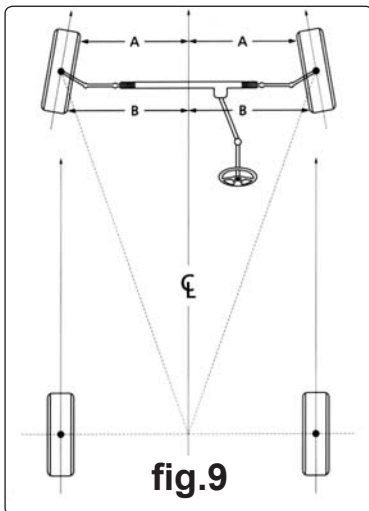
- 4.2.1. Each toe scale is made up of two colours, green for toe in and red for toe out. When the laser beam hits the toe scale (fig.7), if both colours are the same then add the readings together, e.g: 2 green and 1 green means the axle is 3mm toe in: 2 red and 1 red means 3mm toe out. If the readings are different colours then subtract the lower figure from the higher figure, e.g. 2 green and 1 red means the axle is 1mm toe in.
- 4.2.2. After calculating the above figure and obtaining your reading, refer to the vehicle manufacturer's settings to ascertain if adjustment is necessary. If it is, adjust each track rod end by referring to the rear scale, making sure the rear scale readings remain equal at all times. e.g. total toe on the toe scales is 1mm toe in and required total toe to be 3mm toe in. Adjust each track rod (fig.8), increasing the rear scales from 4 to 4.5 or 5 on each side until arriving at the desired toe on the scale. If less toe is required on the axle, then reduce the numbers on the rear scales.
- 4.2.3. If the vehicle has power steering, run the engine at this point. Lock up the track rod ends.



4.3. FRONT WHEEL SET-BACK

Front wheel set-back is a check used to determine the position of the front wheels with reference to a line placed perpendicular to the vehicle's centre line. Ideally the left hand wheel should be located directly opposite the right hand wheel. However, a tolerance of 5mm is allowed on all new cars, and on older cars a set back of 10mm is acceptable. Whilst conducting a routine toe check on vehicles, noting any excessive set back provides a good indicator, which suggests closer inspection is required, as collision damage or suspension problems may be present. Please note: Most alignment equipment does not indicate which wheel is at fault, just that there is a difference across the centre line. However, positive set-back indicates that the off-side wheel is set-back further than the left. Negative set-back indicates that the near-side wheel is set-back further than the right (fig.10).

- 4.3.1. Place the turnplates centrally in front of each front wheel with the curve facing downwards. Drive the vehicle onto the turnplates (fig.2). NEVER attempt to carry out any wheel alignment without positioning the vehicle correctly on the turnplates.
- 4.3.2. Turn the steering wheel to the straight-ahead position and lock it in position with the spring loaded wheel clamp positioned between it and the driver's seat (fig.3).
- 4.3.3. Mount the laser measuring heads onto the front wheels with the toe scales to the front of the vehicle adjust to fit - see 4.1.4.
- 4.3.4. Using the bottom scale labelled SETBACK, record the readings for the near and off side of the vehicle. A difference of more than 10mm will require further investigation for any damage to the suspension.



4.4. REAR WHEEL ALIGNMENT

NOTE: toe readings are reversed when the laser measuring heads are on the rear wheels i.e. Toe in = Toe out and visa versa.

- 4.4.1. Place the turnplates centrally in front of each REAR wheel with the curve facing downwards. Drive the vehicle onto the turnplates. Make sure the front wheels are in the straight ahead position. Place the alignment assemblies on the front wheels and position correctly.
- 4.4.2. Place the laser measuring heads on the rear wheels, position correctly and ensure the toe scales are at the rear. Turn the units' switches to position I, note the front wheel scale readings. e.g. left front wheel reads 1, right front wheel reads 4. The difference is 3 to the right.
- 4.4.3. Transfer the laser measuring heads to the front wheels and the alignment assemblies to the rear wheels. Adjust the track rods equally to give a rear scale indication of 3 lines to the right i.e. 1.5 lines on both scales. The steering wheel is now set to the vehicle thrust line.

4.5. REAR WHEEL TOE ANGLE (TRACKING)

Rear wheel toe angle, either in or out, is an individual measurement. Front wheel toe angle can be measured as a total, because the steering system will allow unequal adjustments on either side to self centre. With rear wheel toe however, each wheel can affect the steering as there is no compensating steering wheel for the rear axle. It is the rear wheel axle alignment that controls the steering wheel position. When adjusting rear wheels for toe in or toe out, the angles must be exactly equal for both sides, if not, the vehicle will be steered away from it's centre line. The rule of thumb, when making rear wheel adjustments, is to firstly adjust both wheels to equal toe with respect of the centre line, then equally increase or decrease them to the manufacturer's settings. The vast majority of modern vehicles have a toe in or toe out of no more than 1mm per wheel. More than that and tyre wear occurs at unacceptable levels. With the introduction of the front wheel drive vehicle, rear wheel toe adjustments have become more common place. It is easier to build an average tolerance body shell and trim the rear wheel alignment to suit, to give acceptable tyre wear and steering capability, as opposed to building a close tolerance body shell (fig.11).

- 4.5.1. Place the turnplates centrally in front of each rear wheel with the curve facing downwards. Drive the vehicle onto the turnplates. Make sure the front wheels are in the straight ahead position. Place the alignment assemblies on the front wheels and position correctly (fig.12).

- 4.5.2. Place the laser measuring heads on the rear wheels, ensuring the toe scales are at the rear (fig.13). Turn on the lasers and note the front wheel scale readings (fig.4). These must be equal, if they are not, use the rear wheel track adjusters to equalise them.
- 4.5.3. Check the toe scales at the rear and add both toe scales to find the total toe. If this amount is between 0mm and 2mm then generally the axle can be said to be correct. If the readings are outside of these limits, adjust both sides equally using the rear track adjusters until the correct toe is achieved.



5. MAINTENANCE

- 5.1. After use, always replace all tools and measuring units onto the main unit to minimise damage.
- 5.2. If a laser beam becomes difficult to see on the gauge, the batteries in question may need a full charge. If the unit has been switched off at the mains switch - the charging light will still illuminate even though the batteries are not being charged. Re-charge the batteries, if they are still performing poorly, they will need replacing.
- 5.3. To replace the batteries, remove the battery covers on the laser alignment unit by unscrewing the cover screws, to reveal the battery compartment. Remove the 4 AA Ni-Cad batteries and fit new batteries. Only use Ni-Cad rechargeable batteries, do not try to charge normal non-rechargeable batteries. Dispose of batteries (see below). Replace the cover and securing screws.
- 5.4. Periodically clean all the measuring units and tools with a slightly dampened cloth.
- 5.5. The lasers do not need to be calibrated on a regularly basis. If the units are damaged and there is doubt that the laser heads are still in alignment, contact your Sealey dealer to arrange returning the unit for re-calibration.

Environmental Protection.



Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycle centre and disposed of in a manner which is compatible with the environment.

When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.



Battery Removal.

1. Remove the battery covers on each laser alignment unit by unscrewing the cover screws, to reveal the battery compartment.
2. Remove the 4 AA batteries from their holder and dispose of the batteries according to local authority guidelines.



Under the Waste Batteries and Accumulators Regulations 2009, Jack Sealey Ltd are required to inform potential purchasers of products containing batteries (as defined within these regulations), that they are registered with Valpak's registered compliance scheme. Jack Sealey Ltd's Batteries Producer Registration Number (BPRN) is BPRN00705

Parts support is available for this product. To obtain a parts listing and/or diagram, please log on to www.sealey.co.uk, email sales@sealey.co.uk or phone 01284 757500.

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 will be required for any claim.

INFORMATION: For a copy of our latest catalogue and promotions call us on 01284 757525 and leave your full name and address, including postcode.



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