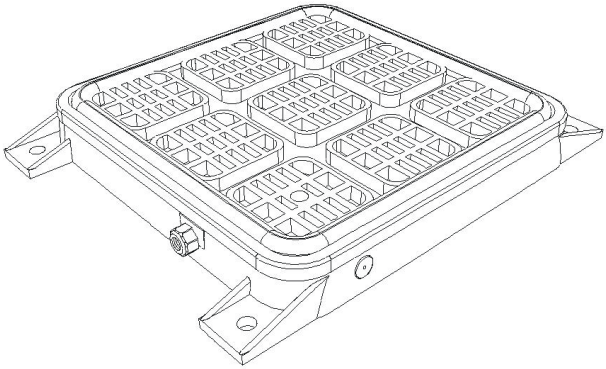
Vac-Clamp powered by compressed air

PATENTED

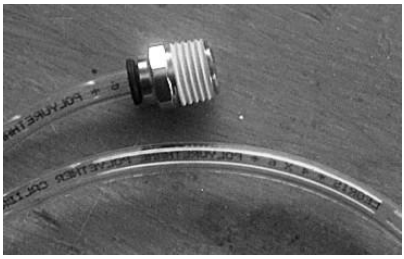
Instructions, read before use:



VAC-CLAMP IS INTENDED FOR USE AS A HOLDING MECHANISM FOR PARTS WITH AT LEAST ONE FLAT SIDE. IT HAS NO MOVING PARTS AND IS POWERED BY COMPRESSED AIR. SUITABLE FOR WOOD, PLASTIC, GLASS, ALUMINIUM ETC.

Unpack and check

- This package contains a transparent air supply line, a 3 piece spare seal/gasket "pack" as well as the Vac-Clamp unit (shown above) which has a seal already fitted.
- The transparent air supply line has a "quick fit" (¼"BSP) connector on it. The open end of the supply line should be pushed firmly into the Vac-Clamp, until it stops. To check correct installation pull gently on the line. A properly installed airline cannot be pulled out.
- **Care should be taken to prevent the black collar from being depressed while the clamp is in use. This will cause the air hose to release immediately. The air hose will flail and may cause injury.**



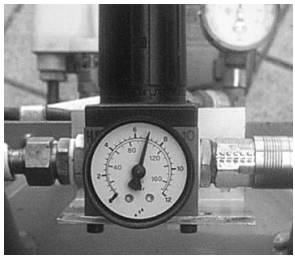
Bolting Down

- Vac-Clamp is a holding device and needs to be bolted to a workbench or work column. For best results the bench or column needs to be as rigid as possible. Excessive work piece vibration could, in extreme cases, cause the clamp to let go of the work.
- The four bolting points will accept a ¼" whitworth or M6 bolt or a type 17 HWF roofing screw.

- Vac-Clamp does tolerate quite a bit of unevenness in a work piece, but needs a flat support surface for best results.

Air Supply

- The "quick fit" ¼"bsp fitting, on the transparent air supply line, is a very common thread form for valves. Most on/off valves and "snap on" fittings will have this thread form.
- We recommend that an on/off valve be used with this unit, and that the valve be fixed firmly in place. Vac-Clamp can supply an appropriate valve if required. Refer to accessories on page 7
- Air supply must be between 80 psi and 100 psi (600 to 700kPa). **Exceeding 120psi 800kPa could damage the unit and be potentially dangerous**.

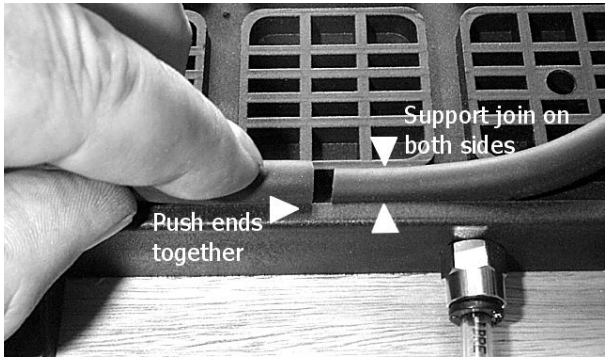


- Less than 80 psi (600kPa) will give reduced holding power. Refer to the graphs at the end of this book for the performance graphs.
- Air supply needs to be clean. Oil or dust in the air supply will block internal parts within the clamp and reduce its' efficiency. Small amounts of water condensate will not adversely affect the clamp.
- A small compressor will power Vac-Clamp quite easily as it uses only 23 normal litres of air per minute (1 cfm @80 psi supply pressure).
- A lower air pressure will also use less air.
- The compressed air should be coming from a receiver so the air is not pulsed.

Rubber Seal

- The seal/gasket installed into the Vac-Clamp unit has been performance tested and is ready for use in its' current form.
- If you need to re-install the seal/gasket, please note the oval shape of the rubber. DO NOT twist the seal prior to installing. Twisting will result in a poor or nonexistent seal.

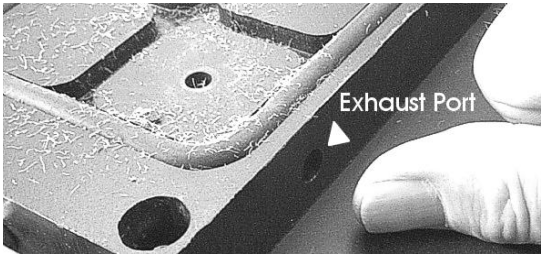
- Different shaped, and quite small, work pieces can be held by moving the rubber seal to the required size i.e. smaller than the work piece. The three piece seal kit should be able to accommodate almost all situations
- If a seal needs to be cut it is good practice to make the seal 3mm (1/8") longer than required, as the rubber will readily compress.
- If you do need to cut a seal/gasket ensure that the ends to be joined are cut square. There should be no frayed edge to allow loss of vacuum. To achieve this type of cut use a SHARP chisel and cut in one pass preferably using a mallet on the chisel. This will give the square end required.
- It is best to put the ends together in the clamp before pressing the remainder of the seal in.
- The join of the seal should always be supported on both sides.
- **Always include the suction hole in any shape to be made.**
- Extra seal/gasket kits are available. Refer to page 7 for a list of accessories



Clearing the suction hole from dust or debris

- Even though most dust particles will not affect the clamp, the clamp may become blocked. Simply follow these instructions to unblock

1. Clear excess dust and debris from the work surface of the clamp by blowing or sweeping.
2. Reduce air supply pressure to approx 40 psi
3. Locate the air exhaust on the side of the clamp, (when it is working you can feel the air coming out)
4. With the air switched on hold your finger tightly over the exhaust and block the airflow. DO NOT PUT YOUR FACE OVER THE CLAMP WHILST DOING THIS, IT MAY BE HAZARDOUS. DUST WILL FLY INTO YOUR FACE.
5. Airflow is reversed and will now come out of the suction hole.
6. Dust and debris will be ejected from the suction hole.
7. You may need to repeat this procedure a couple of times to completely unblock the suction hole.
8. Remember to blow or sweep off the excess dust.
9. Vac-Clamp should be ready for action.



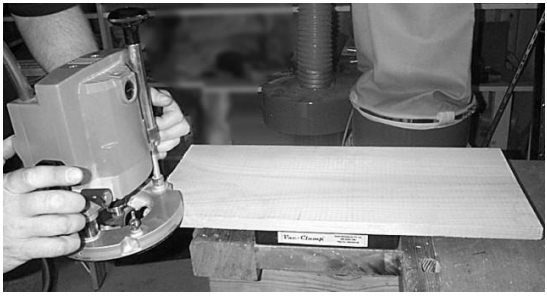
Irregular, small shapes

- Vac-Clamp can hold small and irregular shaped work pieces by moving the seal into the work grooves of the clamp that best suits the shape required.
- Use the different sized seal/gasket
- The seal may need to be cut to fit the size of the work piece. It is best to make the seal slightly longer (1/8") than is exactly required, as the rubber will compress readily.

Small work pieces

- The picture alongside shows a small piece of material being worked safely.
- The piece measures only 100mm x 100mm (4" x 4") and does not move even with a 3hp plunge router.
- Note that the clamp has a rated holding power of 800 grams per cm^2 (12 psi), so a large area is held with greater force than a small area.
- Use the largest possible seal/gasket under the workpiece.

Large work pieces



- Larger work pieces of up to 1 metre square can be held by just one Vac-Clamp, but the work piece will need to be supported at its' extremities, as the lever action may cause the work piece to lift off the clamp.
- Very large work pieces will need to be held by at 2 or more clamps. Consider how traditional of clamps would be used as a guide.
- By using more than one clamp the margin of safety is increased particularly if using timber. Knotholes may cause loss of suction in a particular clamp but the other clamps holding the large work piece may provide adequate holding power.

Intended function

- Vac-Clamp is designed to hold any flat **non-porous** material without damaging delicate surfaces.
- Although it can, Vac-Clamp is not intended for use as a lifting device.
- Vac-Clamp can be used with vacuum jigs, however no warranty of performance can be provided for the jigs.
- This product is not intended for use on moving or dynamic items.
- If the work piece is drilled or cut through where the holding vacuum has been created, this will cause loss of holding **instantly**.
- Vac-Clamp is not designed to hold tall items

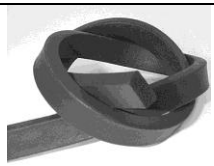
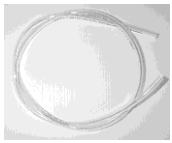
Cleaning

- Vac-Clamp requires no special cleaning. Air dusting is all that is usually required.
- Do NOT use solvents.
- Internal parts of the clamp will be adversely affected by dust and debris. Ensure all incoming air is free from grit, dust and debris, as this will reduce the performance significantly.

Useful Notes

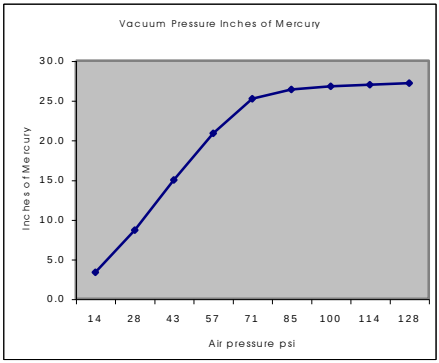
- For any given application use the largest possible holding area. More area gives greater holding power.
- The air supply line is clear to allow monitoring of the quality of the air supply. Dust and oil in the air supply will reduce the performance of the unit and ultimately cause its' demise.
- Although it is possible to use just one square of the clamp we do not recommend it, particularly for routing work.
- Holding power for Vac-Clamp is rated at 800 grams per cm^2 (about 12 psi). So more surface area equals more holding power
- Raw MDF is porous and will not give a stable work-piece. Painted MDF works very well
- Cracks knots and pinholes will allow air to flow through a piece of wood causing greatly reduced holding power. Small openings may be successfully sealed with masking tape

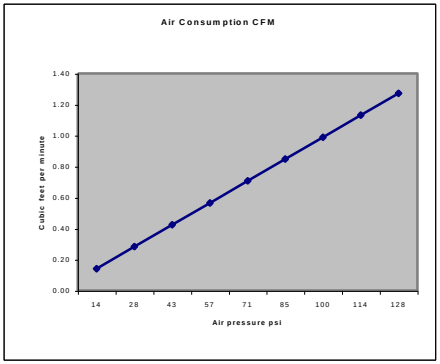
Accessories

Three Piece Oval section rubber seal Closed cell EPDM	
Tall Rubber Seal 10mm x 6mm ($^3/_8$" x ¼") for use on curved or irregular surfaces	
Tubing transparent 6mm polyurethane For high-pressure air.	
On/off valves, Lever type 1/8" BSP female/female	
Connector fitting, 6mm quickfit ¼" BSP male Teflon® coated Suits most air fittings	
Connector fitting, 6mm quickfit 1/8" BSP male Teflon® coated Suits lever valve	
Tee junction 6mm quickfit	

Specifications

Width	160mm	6.3"
Height	22mm	7/8"
Length	200mm	7.8"
Air consumption	22 Nl/min ANR @ 0.6MPa	1 cfm @ 80psi
Weight	325 grams	12 ounces
Holding force	approx 800gm sq cm 0.6Mpa supply pressure	12.0 lbs/in^2 85psi supply pressure
Main Body material:- Filled Nylon		





Disclaimer: This product is intended to hold non-porous objects. Using this product for any other purpose may be dangerous or fatal. Users should check held items for stability before working or machining. Failure to do so could create a dangerous work area. Whilst every endeavor is made to provide a reliable vacuum hold, the performance of this product is only as good as the proficiency of the user. High altitude will reduce the performance of the clamps. Do not use for lifting purposes. Do not disassemble this product.