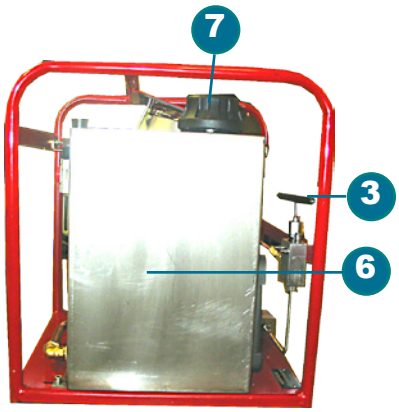
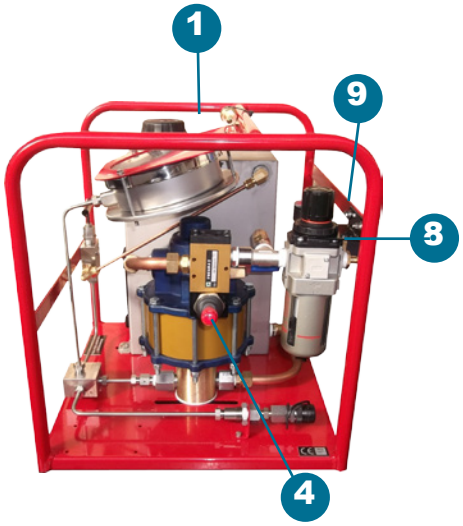
Tentec®
www.tentec.net

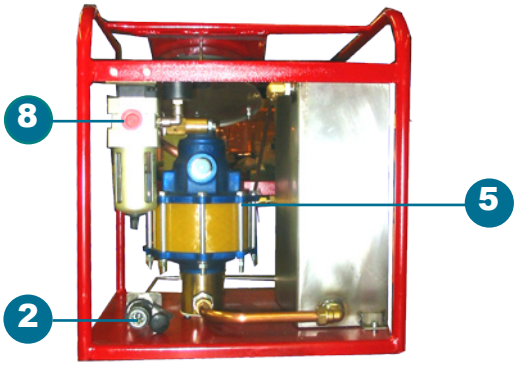
Instruction Document

Mini Air Driven Pump Unit
Model: HTT.627X Series

HTT.6271 Maximum Working Pressure = 1500bar (21750 psi)
HTT.6272 Maximum Working Pressure = 2275bar (33000 psi)







Part Identifier

1 - Frame
2 - Oil outlet, female quick release coupling
3 - Pressure release valve
4 - Safety On/Off Valve
5 - Pump Unit
6 - Oil Reservoir
7 - Filler cap
8 - Air Inlet
9 - Air pressure gauge
10 - Pressure Gauge

ISO9001 ISO14001 ISO18001

Tentec products are subject to continual development and Tentec reserve the right to make changes in the specification and design of there products without prior notice.
All rights reserved. Reproduction in whole or in part without the permission of Tentec Limited is prohibited.
© 2012 - Tentec Limited

Tentec Limited
Plymouth House
Guns Lane
West Bromwich. West Midlands
United Kingdom. B70 9HS

Internet: www.tentec.net
email:sales@tentec.net
Telephone: +44(0)121 524 1990
Telefax: +44(0)121 525 1999

Issued: March 2012
Tentec Instruction manual Air Pump HTT627X R3.indd

1.0 General Hydraulic System Safety Warnings

Failure to practice the following safety warnings could lead to personal injury and/or equipment damage

Always wear recommended protective clothing during the tensioning procedure.

Never exceed the maximum working pressure of the tensioning system. The maximum working pressure of the whole system is determined by the lowest pressure rated component.

Treat hydraulic hose with respect. Do not sharply bend or kink the hose when connecting tensioning tools. Be aware of the minimum bend radius of the hose. Sharply bending or kinking hose can lead to premature hose rupture.

Do not drop sharp objects on to the hydraulic hose, do not drive any type of vehicle over hydraulic hose. Doing so will cause internal hose damage and lead to premature hose failure.

Never lift tensioning tools by the hydraulic hose or hydraulic connections.

Never touch pressurised hoses or couplers. Escaping high pressure oil can penetrate your skin and is extremely dangerous. Seek urgent medical attention if oil penetrates skin.

Never preset the pump unit relief valve to a pressure greater than the lowest rated pressure component in the system. Do ing so may lead to injury and or equipment damage.

If prior to the tensioning operation you have any doubt in the correct and safe use of Tentec bolt tensioning equipment. Contact Tentec for advise.

Thoroughly read all instruction documentation prior to using the tensioning equipment. Ensure all safety precautions are followed to avoid personal injury and/or equipment damage during the tensioning procedure. Tentec can not be held responsible for injury or damage to equipment caused by product misuse or by lack of equipment maintenance.

2.0 Specific Bolt Tensioner Safety Warnings.

Bolt tensioning systems should only be used by trained and experienced personnel familiar with safe operating practices of bolt tensioning systems.

Bolting calculations should only be carried out by trained and qualified engineers who have been appropriately trained or have suitable experience in bolting technology.

Always wear suitable protective clothes including boots, gloves and eye protection during the tensioning procedure.

Always ensure that all personnel in the near vicinity are aware that pressurisation of high ressure equipment is about to take place. Cordon off the work area and exclude anyone from the area who is not involved directly with the tensioning procedure.

Never exceed the maximum working pressure of the system. The maximum working pressure of the tensioning tool is hard stamped on the tensioner body component.

Never exceed the maximum piston stoke capability of the tensioning tool. A red maximum piston stroke line will become visible as the tensioner approaches maximum stroke. The maximum piston stroke value will be hard stamped on the tensioner body.

Never stand in-line with the bolt axis during the tensioning or de-tensioning procedure. Unexpected bolt failure can result in serious personal injury or death. Premature bolt failure can lead to parts of the tensioner or bolt becoming high velocity projectiles. Alert all personnel to the consequences of premature bolt failure and clear the area of non essential personnel before the procedure starts.

Only approach pressurised tensioning tools when you are certain that the pressure is holding steady. Continually monitor the pump pressure at all times. If the pressure is not holding steady do not approach the system but release the pressure to zero and then investigate the cause of pressure loss. Never investigate at high pressure.

Thoroughly inspect the main thread of the thread insert component, look for sign of thread damaged or worn threads. Replace any worn or damaged parts. Ensure you have adequate thread engagement between the thread insert component and the bolt being tensioned.

Never attempt to disconnect an hydraulic coupler while at pressure.

Before pressure is applied to the system check that each hydraulic hose is connected correctly. Physically pulling on the connector will determine if the male couplers are correctly fitted to the female connectors.

Never pressurise an unconnected male coupler. Male couplers are not designed to withstand high pressure, in the unconnected mode. Pressurising an unconnected Male coupler can lead to serious personal injury or death.

It is safe to pressurise the unconnected female coupler fitted to the last tensioner in the circuit.

Check that the bolt is capable of taking the initial load applied by the tensioners. Tensioners are capable of breaking bolts if the bolt material is not strong enough to withstand the tensioner load.

Users should be aware at all times that pressure can build up very quickly and a member of the tensioning team should be ready to release pressure at any time.

Never leave a pressurised system unattended.

All investigation, maintenance or repair work should only be carried out when the tensioner is at zero pressure.

All tensioner specifications can be found hard stamped on the body of the tool. Be aware of the maximum working pressure and the maximum piston stoke capability.

The calculated required working pressure of the tensioners will typically be less than the maximum working pressure of the tool. Never exceed the maximum rated working pressure of the tensioner.

Air Pump - HTT.627x Series

IF YOU ARE IN ANY DOUBT ABOUT ANY INSTRUCTION DETAILED IN THIS PROCEDURE, DO NOT HESITATE TO CONTACT TENTEC

Introduction

The operating and maintenance procedures listed within this manual should be adhered to and will enable the operator to obtain maximum efficiency and reliability from the equipment.

Precautions

Prior to connection the hydraulic pump to any equipment, the user is to ensure that -

- The working pressure of the hydraulic pump and the equipment to be operated are compatible.
- The reservoir pump capacity is adequate to operate the equipment throughout its range.

The hydraulic oil specification used within the pump and the equipment are compatible.

Tentec Mini Air Driven Pump Unit

Tentec Air Driven Pump Units operate on the simple but efficient principle of power magnification through the use of differential areas. A relatively large air-operated piston drives the smaller piston, which provides fluid flow at high pressures. All Tentec air driven pump units are fitted into an easily transportable, tubular steel frame.

The pump units are available, fitted with a large choice of pressure gauges and are supplied complete with an air pressure regulator which can be set to stall the pump unit when it reaches the pressure required for each particular tensioning application.

Technical Specifications

Tentec supply many different air driven pump units, of varying pressure and fluid discharge specifications.

This document details the main tensioning air pump, the model HTT.627x Series.
The Tentec standard tensioning pump configuration is the model HTT.6271, with a maximum working pressure of 1500bar fitted with a suitable gauge and outlet connection.

For higher pressure needs the model HTT.627x series pump can be configured with a 2275bar max working pressure, fitted with a suitable gauge and outlet connection. Part number HTT.6272

Approximate size – 42cm x 42cm x 45cm
Weight (reservoir empty) – 22.5kg
Reservoir capacity – 9 litres
Hydraulic piston diameter – 6.35mm
Hydraulic piston area – 31.67mm²
Volume per stroke – 999.6mm²

Recommended Oil

ISO Grade 10, 32 and 68
Example: Shell Morlina oil 10

Air Consumption

When operating from zero to rated hydraulic pressure, air consumption will be approximately 28ft³/Min of free air at 100 PSI input. At lower air pressures and higher hydraulic pressures, air consumption will be reduced proportionally to flow rates included.

Series HTT.627X

Model Number	Max Working Pressure
HTT.6271	1500bar (21750psi)
HTT.6272	2275bar (33000psi)

Tentec Mini Air Driven Pump Unit

Tentec Air Driven Pump Units operate on the simple but efficient principle of power magnification through the use of differential areas. A relatively large air-operated piston drives the smaller piston, which provides fluid flow at high pressures. All Tentec air driven pump units are fitted into an easily transportable, tubular steel frame.

The pump units are available, fitted with a large choice of pressure gauges and are supplied complete with an air pressure regulator which can be set to stall the pump unit when it reaches the pressure required for each particular tensioning application.

Technical Specifications

Tentec supply many different air driven pump units, of varying pressure and fluid discharge specifications.

This document details the main tensioning air pump, the model HTT.627x Series.
The Tentec standard tensioning pump configuration is the model HTT.6271, with a maximum working pressure of 1500bar fitted with a suitable gauge and outlet connection.

For higher pressure needs the model HTT.627x series pump can be configured with a 2275bar max working pressure, fitted with a suitable gauge and outlet connection. Part number HTT.6272

Approximate size – 42cm x 42cm x 45cm
Weight (reservoir empty) – 22.5kg
Reservoir capacity – 9 litres
Hydraulic piston diameter – 6.35mm
Hydraulic piston area – 31.67mm²
Volume per stroke – 999.6mm²

Recommended Oil

ISO Grade 10, 32 and 68
Example: Shell Morlina oil 10

Air Consumption

When operating from zero to rated hydraulic pressure, air consumption will be approximately 28ft³/Min of free air at 100 PSI input. At lower air pressures and higher hydraulic pressures, air consumption will be reduced proportionally to flow rates included.

Approximate Air to Hydraulic Pressure Ratios Static Condition

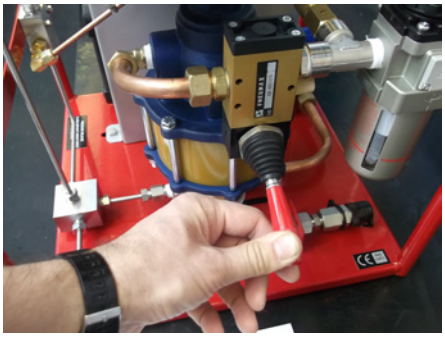
Air Pressure (psi)

Ratio	10	20	30	40	50	60	70	80	90	100
440:1	5000	8000	12500	16500	21000	25500	30000	34000	38000	42500

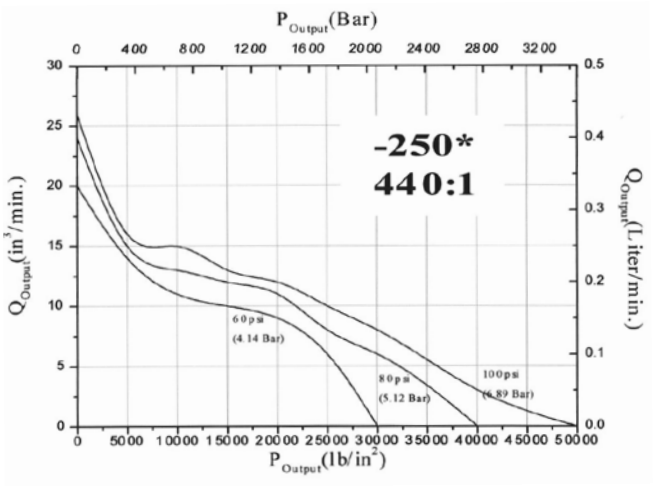
Note: When operating from 0 to rated hydraulic pressure, air consumption will be approx 28scfm of free air at 100psi input. At lower air pressures and higher hydraulic pressure, air consumption will reduce proportionaly

Specification

Model Ratio	Hydraulic Piston Diameter (In)	Hydraulic Piston Area (In2)	Volume per Stroke (In3)
440:1	0.25	0.049	0.061

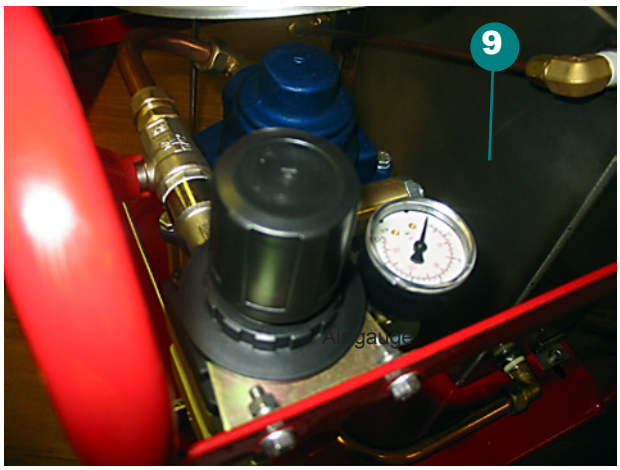


Approximate Rate of Discharge



Air Pump - Series HTT.627X

IF YOU ARE IN ANY DOUBT ABOUT ANY INSTRUCTION DETAILED IN THIS PROCEDURE, DO NOT HESITATE TO CONTACT TENTEC



Introduction

The operating and maintenance procedures listed within this manual should be adhered to and will enable the operator to obtain maximum efficiency and reliability from the equipment.

Precautions

Prior to connection the hydraulic pump to any equipment, the user is to ensure that -

- The working pressure of the hydraulic pump and the equipment to be operated are compatible.
- The reservoir pump capacity is adequate to operate the equipment throughout its range.

Tentec Mini Air Driven Pump Unit

Tentec Air Driven Pump Units operate on the simple but efficient principle of power magnification through the use of differential areas. A relatively large air-operated piston drives the smaller piston, which provides fluid flow at high pressures. All Tentec air driven pump units are fitted into an easily transportable, tubular steel frame.

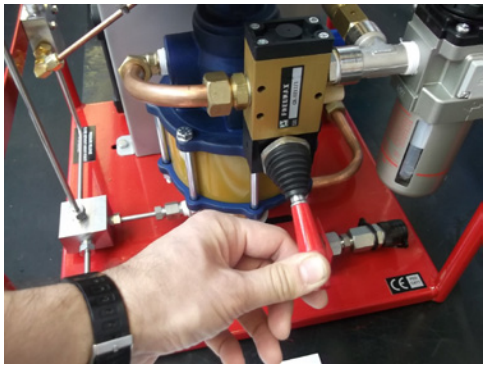
The pump units are available, fitted with a large choice of pressure gauges and are supplied complete with an air pressure regulator which can be set to stall the pump unit when it reaches the pressure required for each particular tensioning application.

Before Connecting the Air Supply

It is strongly recommended that the pump is regulated in order to stall at the required tensioning pressure.
This is achieved by adjustment of the Air Regulator Valve

Important
Before connecting an air supply, it is important to check the following –

- The pressure release valve is fully open.
- The On /Off valve is off (In the horizontal position). The On/OFF valve is by default closed until manually operated and held.
- The oil reservoir has sufficient oil (Grade ISO 10, 32, 68).



Setting pump stall pressure.

Step 1
Tentec supply all pump units with the air pressure regulator set to stall the pump at its maximum working pressure.
Connect the main air supply to the pump unit.
Slowly activate the safety On/Off valve by holding the control down, the pump will begin to operate, no pressure can be generated because the pressure release valve is open the oil is simply circulated through the system back to the tank.

Step 2
Before adjusting the pressure on the air filter/regulator it is necessary for the 'Snap Action Lock' to be in the up position. By turning the adjustment knob anti-clockwise on the regulator, reduce the air pressure to zero PSI, the pump will slow down considerably and may even stop.

Step 3
Fully close the pressure release valve, as this is done, a slight pressure will be generated on the pressure gauge and the pump will finally stall.

Step 4
Slowly increase the air supply pressure by turning the adjustment knob clockwise, the oil pressure gauge will indicate a higher pressure as more and more air is allowed into the pump unit. Stop the air adjustment when the oil pressure gauge indicates the desired tensioning pressure.

Step 5
Stop the pump by turning the On/Off valve and release the pressure by slowly opening the pressure return valve, the pump gauge will fall to zero. Lock the air regulator by pushing down on to the 'Snap Action Lock'.

Try the pump again and allow it to stall, check the pressure and further adjust if necessary. When satisfied that the pump stall pressure is correct the pump unit is now ready for the tensioning operation.

Pump Preparation

Step 1

Ensure the pressure release valve is in the open position (turn anti - clockwise)

Step 2

Ensure the safety on/off valve is set to the off position. Note this is a manually triggered spring loaded mechanism, the valve is off/ closed in the un-held position. Depress and hold to open/on the valve.

Step 3

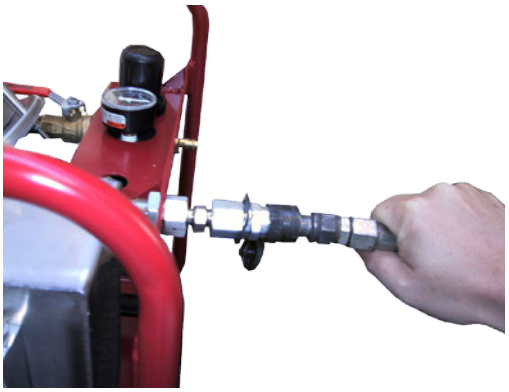
Connect the air hose to the air inlet connector.

Step 4

Connect the hydraulic link hose to the female quick connector. (Refer to the operation manual supplied with your tensioners for correct hydraulic link hose configuration)

Step 5

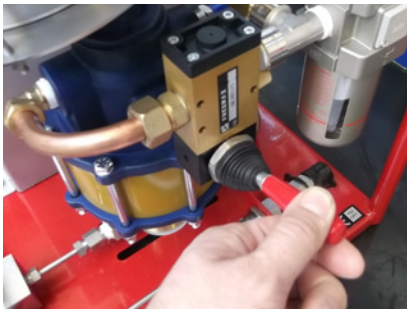
Ensure an adequate volume of oil is contained in the oil tank.

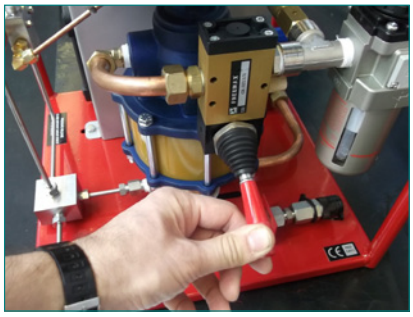


Safety On/Off Valve

The pump unit is fitted with a safety on off valve. The spring loaded valve defaults to off when the valve handle is untouched. Holding the valve handle in the down position turns the pump On. Releasing the handle turns the pump off.

Safety On/Off Valve - Default position = Off



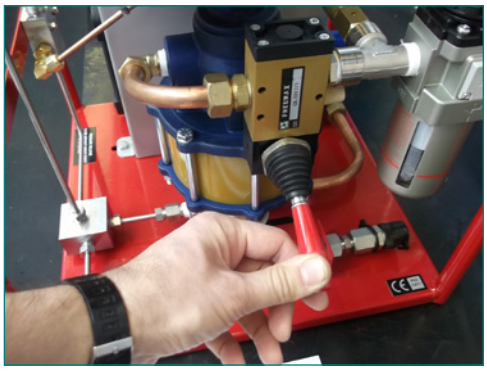


Safety On/Off Valve - Handle held down = On

Pump Operation

Step 1

Close the pressure release valve (clockwise)
Do not over tighten. (Damage will occur if continually over tightened.)



Step 2

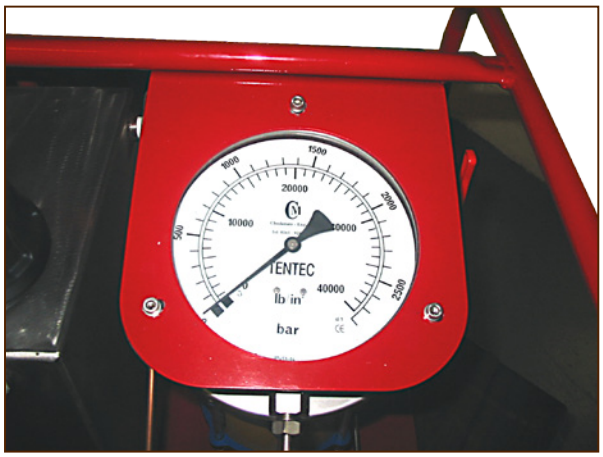
Slowly, hold down the on/off valve. The pressure gauge will slowly indicate pressure.

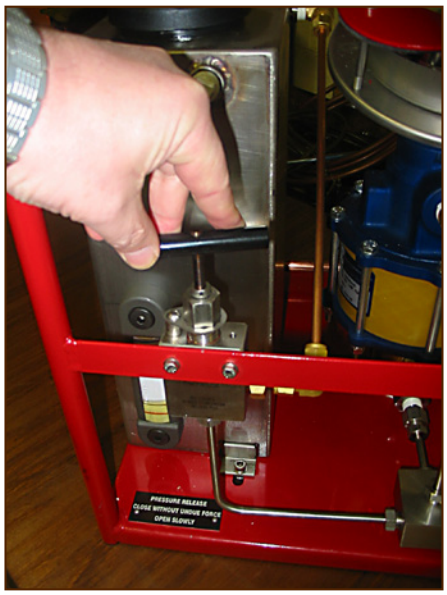
Step 3

Once the desired pressure is reached, release the safety On/Off valve. The valve will spring back to the Off position. The gauge will indicate a held pressure. (ensure the pressure is holding firm before approaching any pressurised bolt tensioning equipment)

Step 4

To release the hydraulic pressure slowly open the pressure release valve (anticlockwise) The pressure will slowly fall





Safety Note
It is recommended that the pressure should never exceed 90% of the gauge maximum pressure rating

Shut down procedure

Disconnect the main air supply

Open the oil pressure release valve

Open the On/Off valve (Air will vent through the exhaust)

Close the On/Off valve

Drain water from the air filter

Top-up oil reservoir

Store in pump box supplied.

Adjustment of Pressure Release Valve (PRV)

The PRV is factory set to vent air should the pump over-pressurise. Adjustment is not necessary

ISO9001 ISO14001 ISO18001

Tentec products are subject to continual development and Tentec reserve the right to make changes in the specification and design of there products without prior notice.
All rights reserved. Reproduction in whole or in part without the permission of Tentec Limited is prohibited.

© 2012 - Tentec Limited

Tentec Limited
Plymouth House
Guns Lane
West Bromwich. West Midlands
United Kingdom. B70 9HS

Internet: www.tentec.net
email:sales@tentec.net
Telephone: +44(0)121 524 1990
Telefax: +44(0)121 525 1999

Doc: Tentec Instruction Manual Air Pump HTT.627X R2
Issued: March 2012