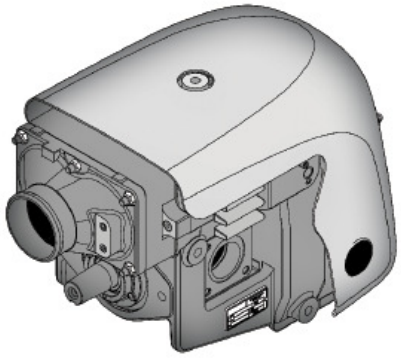
Installation, Operating & Maintenance Manual

(Original Instructions)

DRUM
A Gardner Denver Product

XK SERIES SCREW COMPRESSOR

Models
XK12
XK12HD



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Contents

1 Health & Safety

READ THE WHOLE MANUAL BEFORE COMMENCING INSTALLATION.

Static electricity.

Ensure, that where required, the compressor and ancillaries are earthed in accordance with BS5958 Part 1 1983; 'Control of Undesirable Static Electricity'.

Powder-air combinations are potentially explosive.

Drive line.

It is the responsibility of the installer of the equipment to ensure all rotating and moving parts of the installation are adequately guarded to a standard which complies with the prevailing safety legislation.

Compressor.

The compressor has internal moving parts some of which may be accessed through the inlet and outlet apertures. Do not place any objects especially fingers into these apertures since personal injury could result.

Installation.

A relief valve must be fitted in the outlet pipe work as close to the compressor as possible. The valve must be positioned so as not to vent air onto any personnel since the air discharged will be hot and can cause severe burns.

Storage/Low use

Before the machine is installed or when it will not be used for long periods:

- Store in a dry, heated building.
- Handle with care and keep the suction and delivery ports covered.
- Rotate the drive shaft each week, in the direction shown by the arrow on the the cover.

Where the compressor is mounted on a vehicle and located outside, it should be operated for at least 15 minutes each week (twice a week In damp/ cool conditions)

Fire.

The compressor includes seals made of fluoroelastomer polymers which degrade if exposed to temperatures above 300°C. If the material has been so exposed then it must not be handled with bare hands.

Relief Valve Check

This procedure should be carried out every month to clear the valve seat and check the valve is functional. (Ear protection is recommended)

Noise

Gardner Denver Drum Ltd's own tests show maximum noise levels for the XK12 should typically not exceed 94 dB(A) in the worst case (1600rpm 2.5bar g).

2 General

2.1 Product general description

The XK12 is a robust, medium flow, oil free, contactless, low maintenance screw compressor designed for the contaminant free discharge of dense bulk powder products (e.g. cement, flour and lime), usually at 1.5-2.5 bar g pressure in 3" pipework.

The machine is generally comprised of synchronised screw rotors, combined main body/step up gearcase assembly and inlet bearing carrier.

The compact shape and size of the compressor make it ideal for mounting inside the chassis on most vehicles to enable low cost prop. shaft driving.

A through shaft allows CW or ACW input drive rotation with mounting points on either side of the machine to provide further flexibility.

The standard compressor package consists of the following equipment:

- Basic XK12 machine and mounting kit.
- Inlet filter/kit
- Commissioning filter
- Relief valve
- Check valve and flange pack.
- Discharge (outlet) silencer - absorptive or reactive
- Torque limiting coupling

2.2 Drive options

The XK12 can be driven using the following drive systems.

Prop. shaft drive	Direct from a vehicle PTO
Hydraulic drive	Several drives can be offered depending on the application
Electric motor	Packages on base frames
Engine drive	Packages on base frames

NOTE

The shape and size of the compressor make it particularly suitable for PTO/ prop. shaft driving inside the vehicle chassis on most applications.

2.3 Available packages - see fig 1

The following packages are available as standard:

Package 1 - Loose ancillaries with absorptive discharge silencer

Standard ancillaries supplied as separate items including the absorptive type discharge silencer and cyclonic inlet filter/kit

Package 2 - Loose ancillaries with reactive discharge silencer

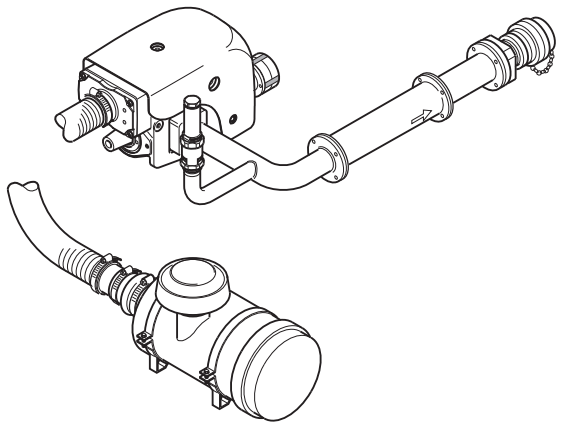
Standard ancillaries supplied as separate items including the reactive type discharge silencer and cyclonic inlet filter/kit

Fully assembled package (5)

See appendix 1 for additional information on package 5

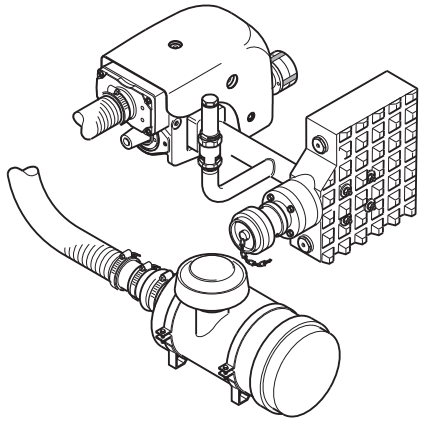
XK12 PACKAGE 1

Absorptive, Separate Ancillaries



XK12 PACKAGE 2

Reactive, Separate Ancillaries



XK12 PACKAGE 5

XK12 and Air Cooler Pack

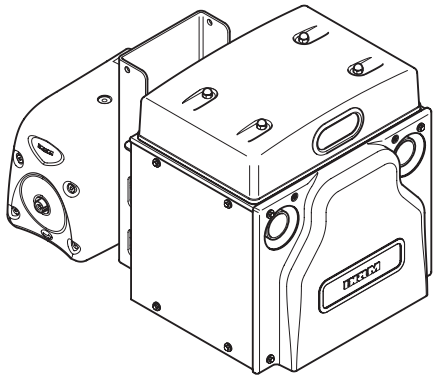


Figure1. Standard Packages (1, 2 & 5)

2.4 Dimensions, Performance data & Operating Environment

Dimensions

The dimensions of the basic XK12 are shown in figure 2 below.

Performance

The performance details and power requirements of the compressor are shown on the product data sheet.

For additional information, the constant running torque does not exceed:

270 Nm on the standard XK12	Speed range 1000 - 1600 rpm
149 Nm on the high speed XK12	Speed range 1810 - 2896 rpm

Operating environment

The permissible/foreseen operating environment is as follows:

Ambient temperature range	-40 to +50°C
Resistant to tropical rain (in operation and transit), salt and sun	
Humidity level	Up to 100% RH condensing
Vibration level	0 to 40 Hz; ± 40 mm amplitude tested.
Inlet depression	Not to exceed 100 mbar
Orientation	See fig 4 page 8
Max. outlet temperature	230°C

NOTE

High speed machine is dimensionally identical to the standard machine.

CAUTION

Propshaft drive start-up conditions could be severe. A Drum torque limiting coupling is recommended to protect the compressor and drive system.

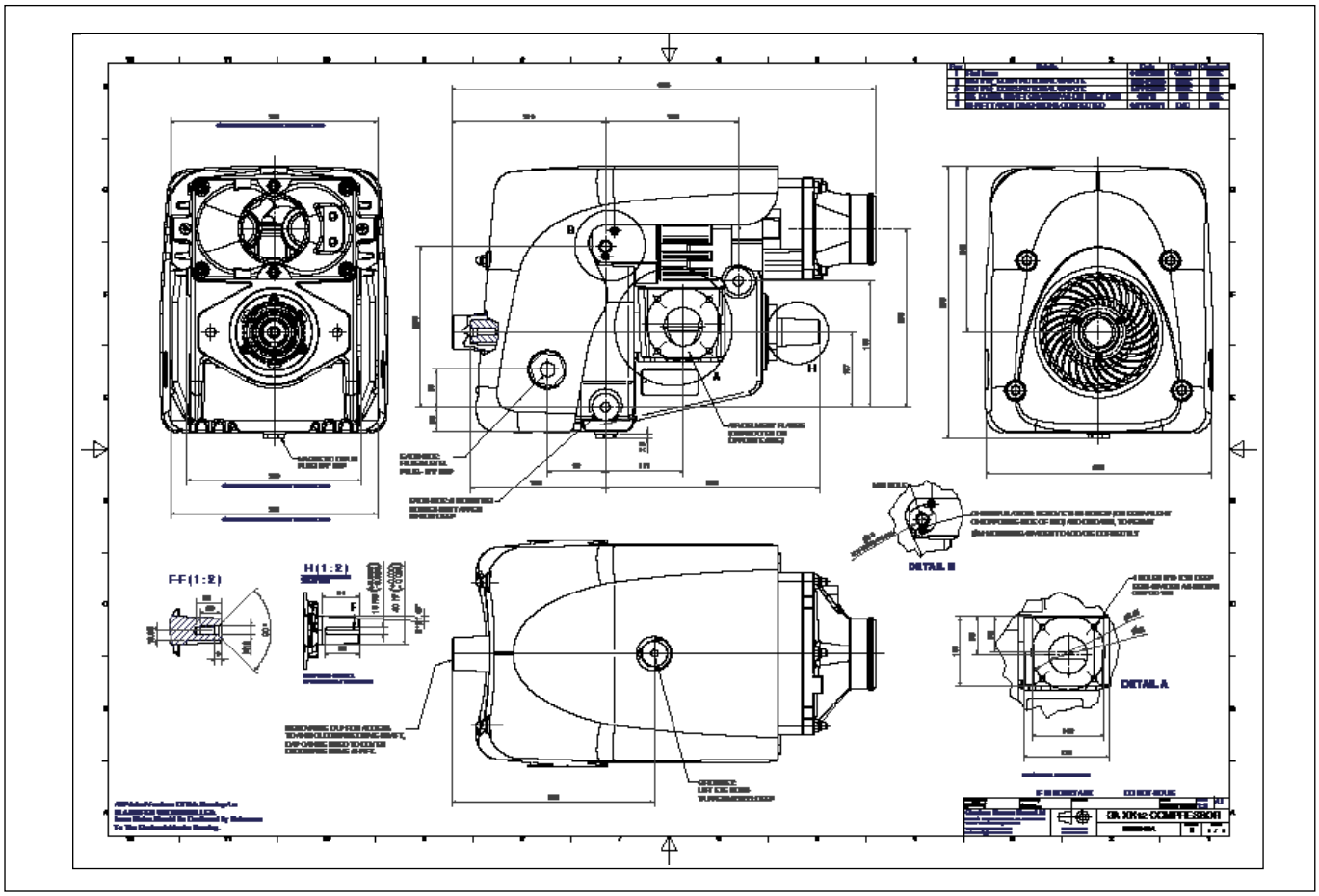


Figure 2. Dimensions - basic machine

3 Installation

3.1 General

When selecting the machine mounting position, the following points should be considered:

- Access to oil fill/level and drain plugs
- Adequate clearance to allow the cooling air to circulate around the machine
- Install away from sources of heat, e.g. vehicle exhaust air or hot pipes that could effect the compressor temperature in any way.
- Venting relief/control valve air must be unobstructed and direct to the atmosphere.
- Fit the relief and/or protection valve control valves as close as possible to the XK12 discharge port.
- Venting valves must be positioned so that hot air cannot vent onto the operator or the compressor
- Silencers should be fitted as close as possible to the discharge port.

For the recommended layout of the machine and ancillaries, see figure 1.

3.2 Lifting - see fig. 3

CAUTION ⚠

Do not lift using other parts of the machine.

The weight of the basic compressor without ancillaries is 120 kg.

The mounting face to which the basic machine is fitted should be flat to avoid distortion/stress and mounting bolts/locking nuts should be M16, grade 8.8 or higher.

The basic compressor is supplied with an eyebolt attached for lifting. When the machine has been installed, the eyebolt should be removed and replaced by the blanking grommet (supplied) fitted to the cover.

Any equipment used for lifting should be rated accordingly.

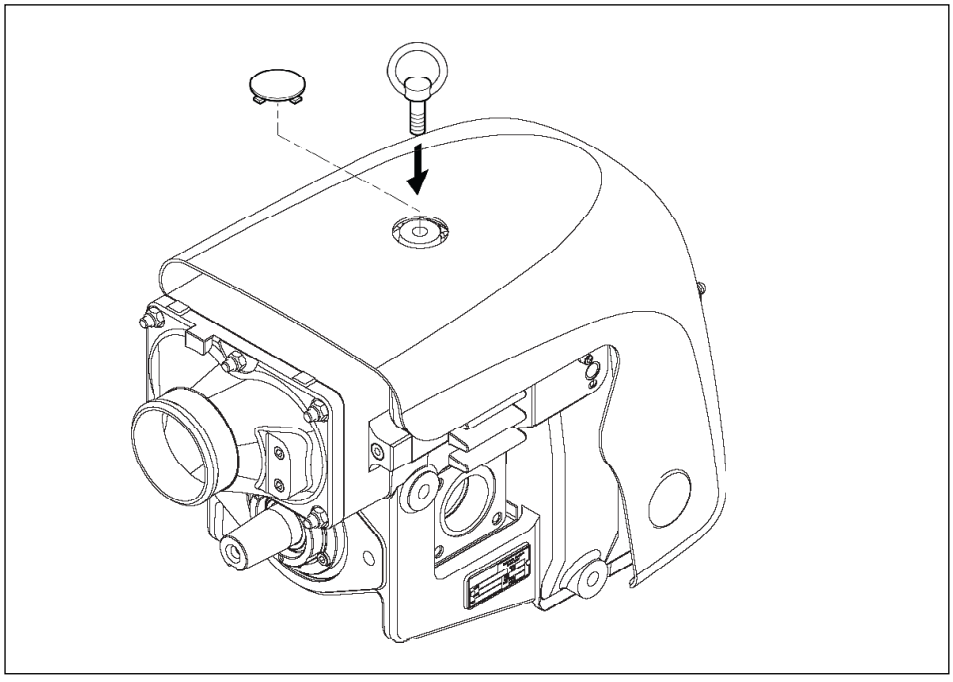


Figure 3. Lifting

3.3 Mounting

NOTE

The compressor has three mounting feet on each side of the machine and should be mounted using all 3 feet on one side only.

CAUTION

An incorrect drive rotation will damage the compressor.

NOTE

Loctite 270 should also be applied to secure the M16 mounting studs into the XK12 feet.

The XK12 should be installed vertically utilising all three mounting feet on one side of the machine and can be driven in both rotations by using either end of the input shaft.

Additionally, the machine has discharge flanges on both sides.

The input drive rotation and air path possibilities are shown below.

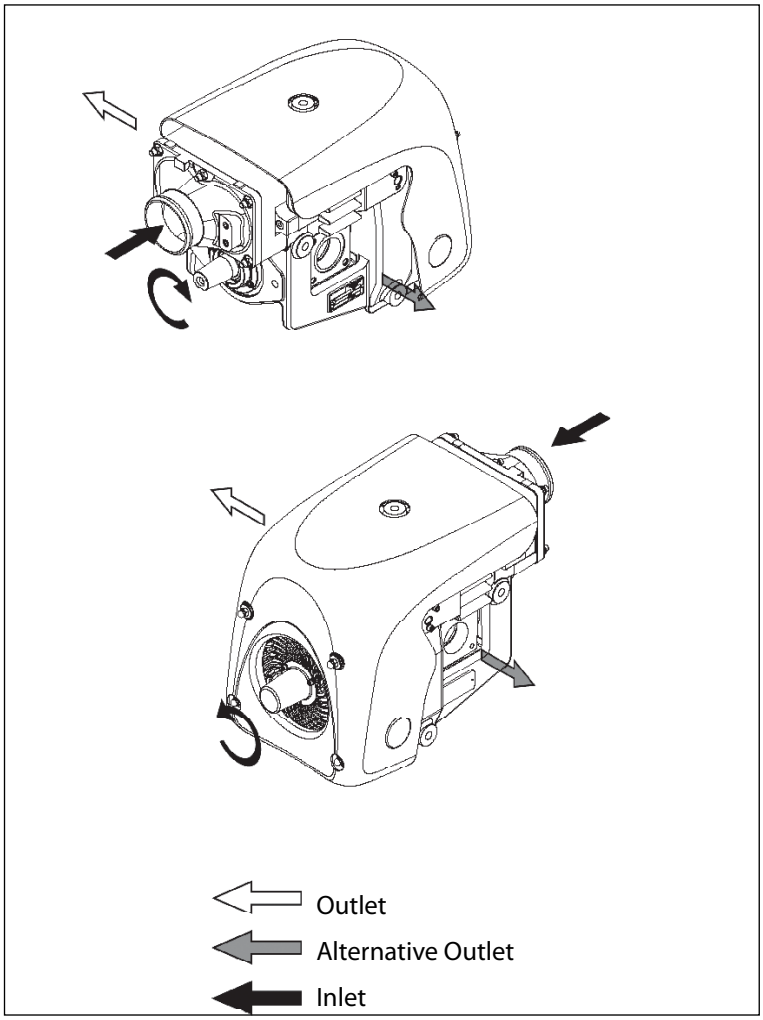
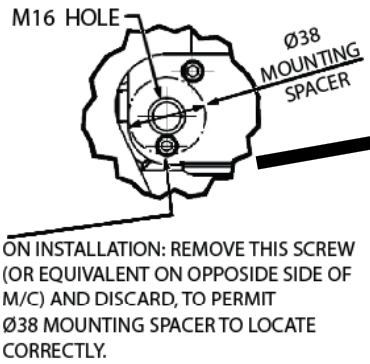


Figure 4. Mounting & Drive options

The basic XK12 compressor should be installed/mounted (using the M16 fittings supplied in the machine mounting kit) as shown in fig. 5.

All M16 Grade 8.8 mounting nuts/bolts should be applied at a torque setting of 225Nm.

NOTE

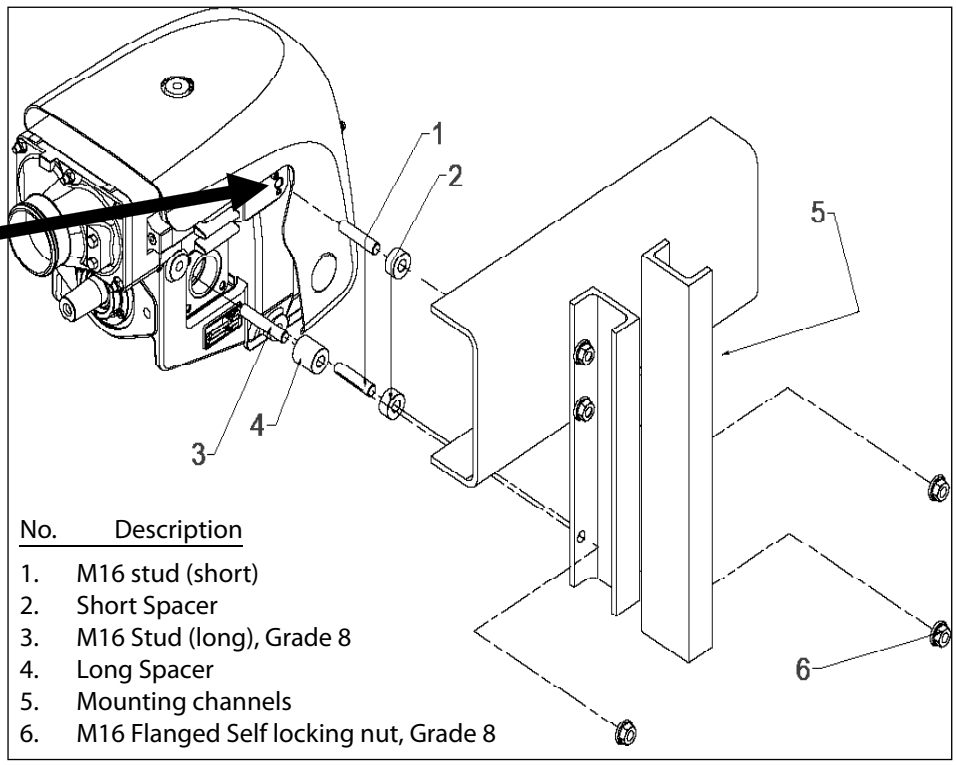


NOTE

Alternative mounting channels maybe neccesary due to other vehicle ancillaries (e.g. fuel tank). These should provide comparative strength to the configuration shown.

NOTE

Taper washers should be used if mounting channels with tapered flanges are to be used.



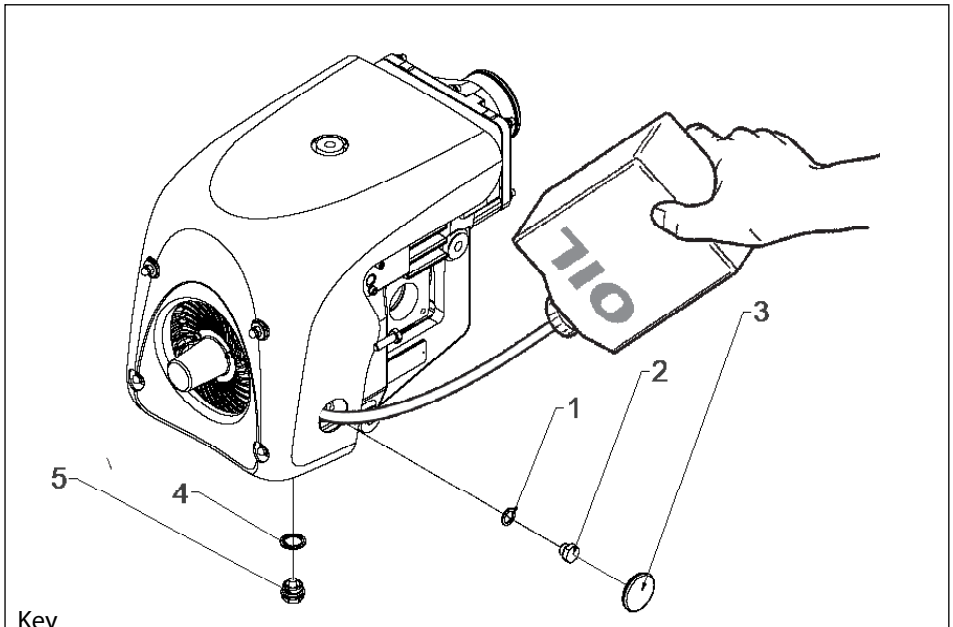
No.	Description
1.	M16 stud (short)
2.	Short Spacer
3.	M16 Stud (long), Grade 8
4.	Long Spacer
5.	Mounting channels
6.	M16 Flanged Self locking nut, Grade 8

Figure 5. Mounting Details - separate ancillary packages

3.4 Lubrication

The XK12 is supplied complete with oil.

When the compressor has been mounted, the oil level should be re-checked as shown in figure 6 and topped-up with oil through, and up to, the fill/level plug hole (approximately 1.5 litres total if necessary).



Key

1 - Fill Plug washer 2 - Fill / Level Plug 5 - Magnetic Drain Plug

3 - Plug Cap 4 - Drain Plug washer

Figure 6. Oil Lubrication Components

3.5 PTO and prop. shaft drive alignment

Shaft cover

The compressor can be driven from either end of the input shaft (see section 3.3 for further details of the orienations possible).

The clockwise end of the compressor input shaft is protected with a shaft cover. If this shaft is required, remove the cover and refit it over the unused shaft at the opposite end of the machine.

Drive couplings

See the 'Ancillaries' (section 3.8-torque coupling) for recomendations on couplings for PTO drives.

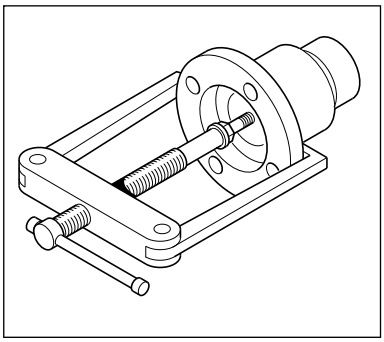


Figure 7a. Drive Flange Removal

Before fitting, the tapers on the machine shaft and drive coupling should be clean and damage free to help ensure the flange fits correctly. Both tapers should be smeared with a light oil to aid future separation.

The companion flange should be fitted to the compressor shaft in line with Figure 7b, for the DIN type coupling and Figure 7c for the SAE type coupling.

The cap screw and washer which is used to retain the coupling to the shaft, should be tightened to a torque of 88Nm.

Flange/coupling removal should only be undertaken with the aid of a puller type device and screw in the shaft end, as shown in Figure 7a, to avoid damaging the flange or shaft end.

Parts List		
Item	Qty	Description
1	1	Friction Coupling, DIN (Red Flange)
2	1	Ring Adaptor, DIN
3	1	Washer
4	1	Key, Parallel Rectangular Round End 10 x 8 x 50 Long
5	1	Socket Head Cap Screw M12 x 40 Long

NOTE

Cap Screw (Item 5) should be tightened to a torque of 88Nm.

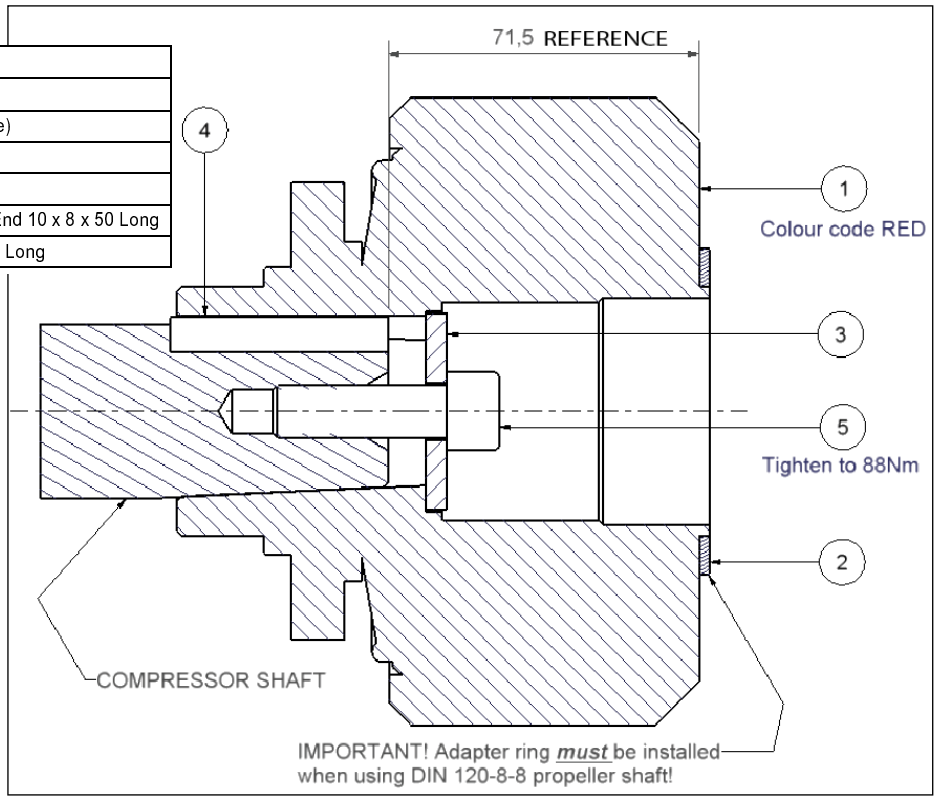


Figure 7b. DIN Friction Coupling

3.5 PTO and prop. shaft drive alignment (cont.)

Drive Couplings (cont.)

Parts List		
Item	Qty	Description
1	1	Friction Coupling, SAE (Blue Flange)
2	1	Ring Adaptor, SAE
3	1	Washer
4	1	Key, Parallel Rectangular Round End 10 x 8 x 50 Long
5	1	Socket Head Cap Screw M12 x 40 Long

NOTE

Cap Screw (Item 5) should be tightened to a torque of 88Nm.

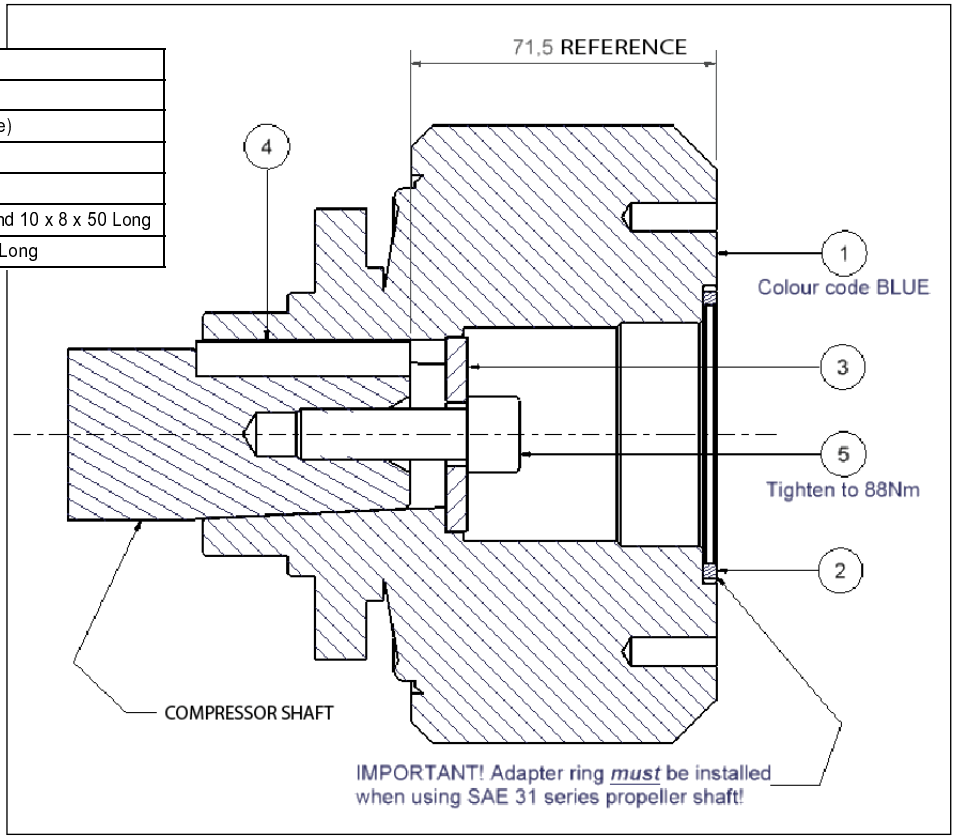
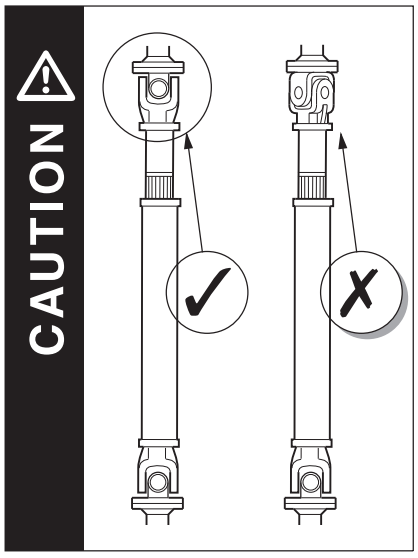
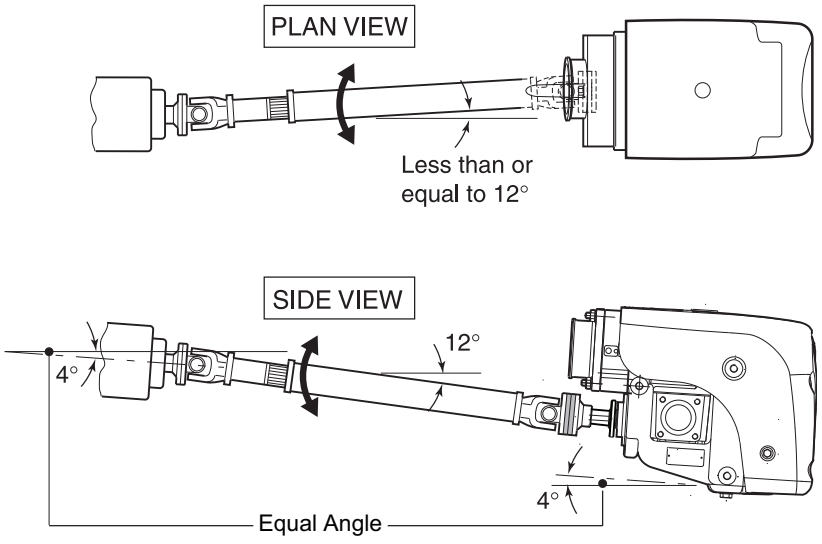


Figure 7c. SAE Friction Coupling





NOTE

The combined angle in any plane should not exceed 12°

Figure 8. Drive Alignment

3.5 PTO and prop. shaft drive alignment (cont.)

Alignment - See Figure 8

The axis on majority of PTO's is mounted at approximately 2° - 5° to the horizontal, which reflects the angle of the engine and gearbox.

The compressor should be mounted so that its drive axis is parallel to the PTO's drive axis.

The compressor should also be mounted so that the prop. shaft angle between the PTO and XK12 in any plane is less than or equal to 12°.

Consideration should be given to the prop. shaft length when mounting the machine.

The prop. shaft should be sized so that it always has sliding clearance.

It is recommended that a torque limiting device should be installed between the compressor and PTO drive flanges to protect the drive line against all eventualities. Torque limiting couplings are supplied as standard.

NOTE

The compound prop.shaft angle must also be less than 12°.

NOTE

Also check the prop shaft manufacturers information.

3.6 Pipe Work

Figures 10a and 10b show a breakdown of packages 1 and 2.

Flexible pipe is provided in the inlet induction kit with both packages.

Where any pipe work is to be fabricated using slip-on-weld flanges, such as on the inlet in Fig 9, the following points should be followed to prevent damage to the machine and contamination of the discharged product.

- All inlet pipe work must be stainless steel or thick wall aluminium to help prevent corroded particles entering the machine and reduce noise emissions.
- Outlet pipe work can fabricated from any material (including mild steel) to suit the application.
- All fabricated pipe work, should be de-scaled/cleaned before commissioning the compressor.
- Pipe work should be attached to the vehicle chassis using flexible mountings to prevent unnecessary vibration and noise transfer.
- A flexible element is recommended in the discharge pipe work (and inlet pipe work when necessary) to prevent distortion of the XK12 from the fabricated pipe work through chassis movement and heat expansion.

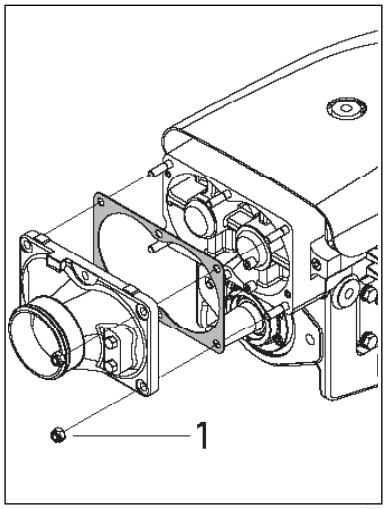


Figure 9. Inlet Flange

NOTE

Tighten item 1 fig. 9 to a torque of 50 Nm. See above.

CAUTION

After the initial 15 minute commissioning run (at 1000rpm, 1810 rpm high speed), the filter **must** be replaced with the standard inlet flange gasket.

Prolonged or higher speed operation with the filter fitted will result in machine failure.

3.7 Commissioning Filter

The compressor is supplied with a commissioning filter fitted to the inlet port to prevent debris entering the machine during the installation and initial commissioning processes.

3.8 Ancillaries (relating to figures 10a - 10b)

Inlet Air Filter and Flexible Induction Kit

Should be located so that the inlet air is cool and clean. Do not mount close to exhausts or other warm air sources. Ensure screw-on cuffs are sealed onto inlet hose using suitable high-temperature silicone sealant, such as DOW CORNING Silicone AP.

Relief Valve

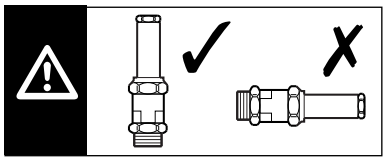


Fig 10. Relief valve orientation

The relief valve is installed to prevent the XK12 from encountering pressures beyond its operating range.

The relief valve should be installed as close as possible to the discharge port of the machine prior to any other discharge ancillary and should be mounted vertically (as shown in fig 10).

It is pre-set, wired and leaded (tamper proof) and fitted to protect the XK12 (rather than the system which should be protected by the vehicle tank relief valve) against pressures of over 2.5bar g . Adjustment of the machine relief valve will invalidate the XK12 and relief valve warranty.

Discharge Silencer

Should be mounted/connected as close as possible to the discharge port (after the relief valve) utilising the slip-on-weld flanges supplied.

Silencers should be mounted/supported separately to prevent the generation of loads on the machine and discharge port due to weight or temperature expansion. Flexibility in the mounting or connecting pipe work to the silencer should be incorporated where this could occur.

Check (non-return) valve

This is to prevent a back-flow of air and product (often encountered when stopping compressors whilst the discharge tank is still pressurised) from entering and damaging the XK12.

The check valve should be the last ancillary on the discharge pipework (but before any regular disconnection point) to protect all the other ancillaries. It is often mounted directly to the delivery port of the discharge silencer.

If the check valve has to be mounted horizontally on the silencer or separately, the check valve hinge should be positioned at the top in horizontal pipe work to encourage closure under gravity. If mounted vertically, the position of the check valve hinge is not important.

Torque Coupling

We recommend and supply a torque-limiting device for fitting to the compressor when direct PTO driving.

This is to protect all the drive-line equipment against the possibility of high torque during operation for any circumstances.

Expansion Joints

Any pipe work or equipment should incorporate flexible elements where:

- Movement due to thermal expansion is likely
- Pipe work crosses the vehicle chassis.

Ball Valve

A 1" - 1.5" manual ball valve must be fitted on the discharge side of the machine between the compressor discharge port and the check valve.

This allows the compressor discharge air to vent to atmosphere to prevent the machine being started against a pressurised tank.

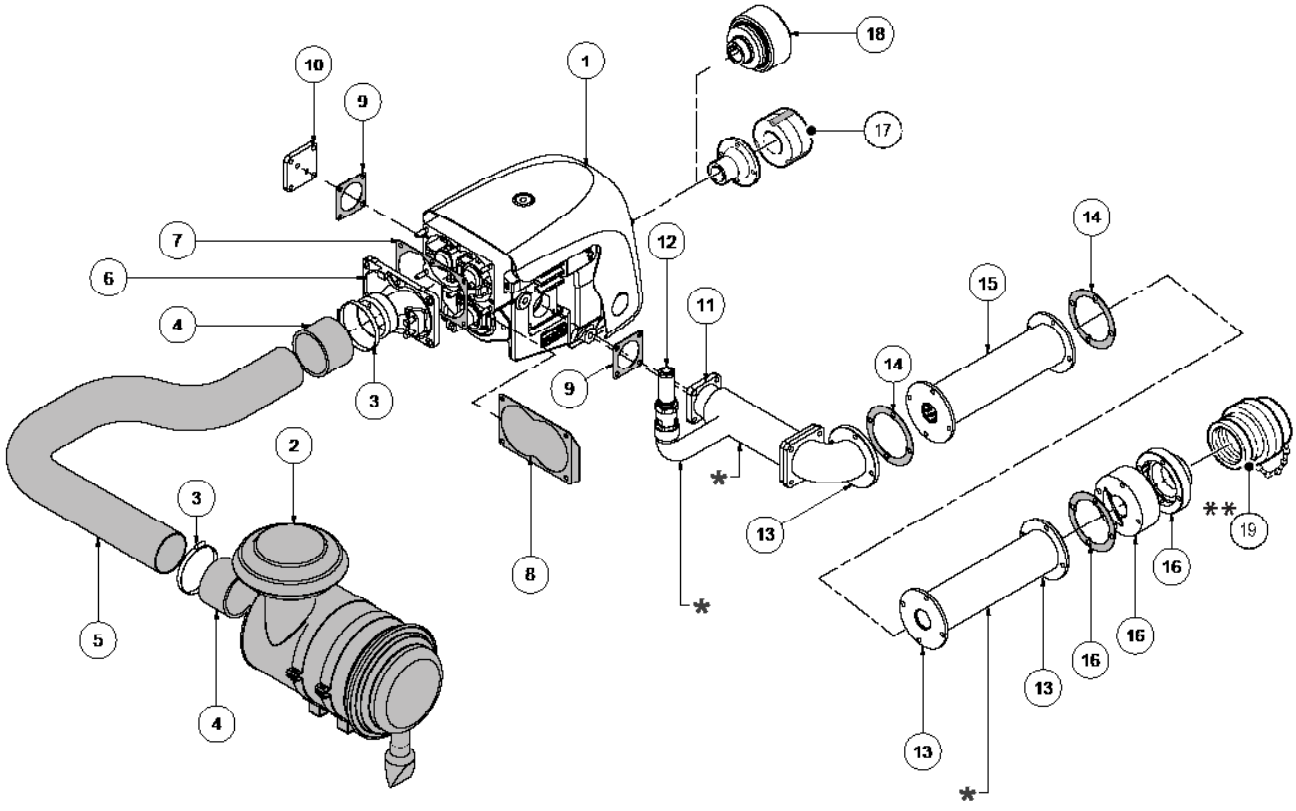
Comissioning Filter

See section 3.7

3.9 Package 1 - Separate ancillaries with absorptive discharge silencer

CAUTION

Compressors should never be started against pressurised discharge lines or tanks.



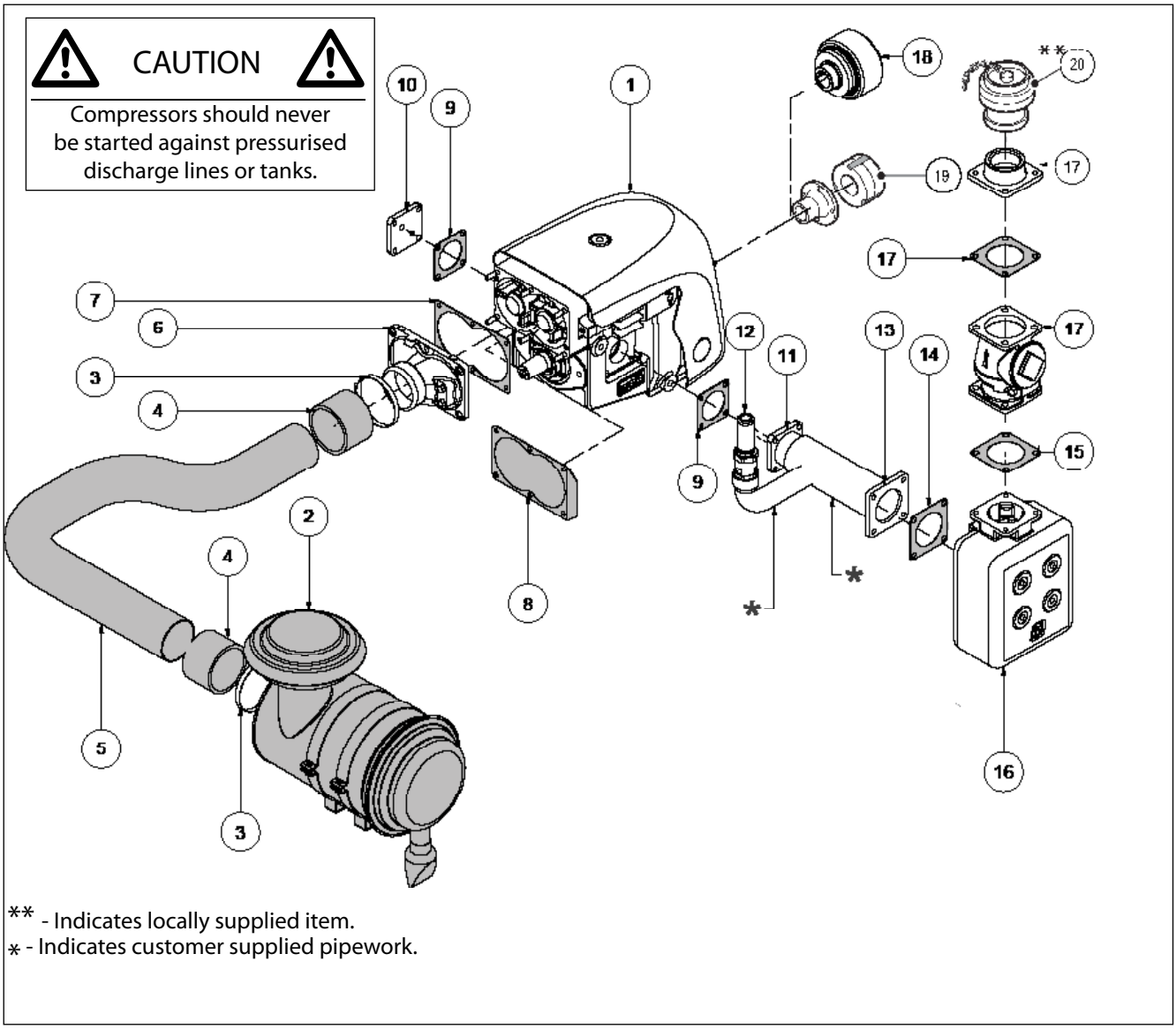
** - Indicates locally supplied item.
* - Indicates customer supplied pipework.

Ref. No.	Description
1	XK-12 Basic M/C (or high speed unit)
2	10" Cyclonic Inlet Filter
3	3.75" Hose Clip
4	Hose Adaptor (Cuff)- Nitrile
5	Ducting -2m x 89mm Bore
6	Inlet Flange - XK-12
7	Inlet gasket
8	Commissioning Filter XK-12 / XK-18
9	Gasket - Outlet Port
10	Outlet Blanking Flange

Ref. No.	Description
11	Outlet Flange (S0W) - 77mm Bore
12	Relief valve - 1.25", 2.5barg
13	Flange TW1 (S0W) - 80mm Bore
14	Gasket, 90mm NB, TWI
15	2" Absorptive Discharge Silencer
16	Check Valve Kit (3" BSP Outlet)
17	Shear Coupling (K1310/DIN100)
18	Friction Coupling (K1310/DIN100)
19	Storz Coupling - 3" BSP

Figure 10a Absorptive, separate ancillaries.

3.10 Package 2 - Separate ancillaries with reactive discharge silencer



Ref. No.	Description
1	XK-12 Basic M/C - (or high speed unit)
2	10" Cyclonic Inlet Filter
3	3.75" Hose Clip
4	Hose Adaptor (Cuff) - Nitrile
5	Ducting -2m x 89mm Bore
6	Inlet Flange - XK-12
7	Inlet gasket
8	Commissioning Filter XK-12 / XK-18
9	Gasket - Outlet Port
10	Outlet Blanking Flange

Ref.No.	Description
11	Outlet Flange (S0W) - 70mm Bore
12	Relief valve - 1.25", 2.5barg
13	Flange TW1 (S0W) - 80/90mm Bore
14	Gasket, 90mm NB, TWI
15	Manifold Gasket
16	'Drum' Reactive Silencer Assembly
17	Check Valve Kit (3" BSP Outlet)
18	Friction Coupling (K1310/DIN100)
19	Shear Coupling (K1310/DIN100)
20	Storz Coupling - 3" BSP

Figure 10b Reactive, separate ancillaries.

4 Commissioning

4.1 Pre-commissioning check list.

Tick when completed ✓

Lubrication plugs fitted.	
Gearbox filled with oil.	
Pipe bores etc cleaned after fabrication.	
Commissioning filter in position.	
All flanges, fasteners and mountings secure.	
Vehicle PTO disengaged.	
Engine management system set-up correctly for the application.	
Commissioning temperature and pressure probes fitted (see fig. 12)	
Blow (ball) valve open (if starting against a tank pressure).	
Commissioning 2.5"-3" gate valve and silencer fitted.	
Ancillaries correctly fitted and sequenced.	

4.2 Inlet commissioning filter.

CAUTION ⚠

Failure to remove the comissioning filter during commissioning may lead to failure of the compressor.

Should have been in place throughout the installation of the XK12 and its pipework.

The filter should be removed during commissioning after 15 minutes operation at 1000 rpm (or 1810 rpm for high speed machine).

4.3 Monitoring probes.

Two 1/4" BSP blanking plugs are fitted in each of the inlet port flange and unused outlet port blanking flange.

These should be removed and replaced with a temperature probe and a pressure probe for commissioning only. (see Fig. 11)

If Gardner Denver Drum supplied flanges are not used, the installer must provide 2 x 1/4" BSP tappings adjacent to the inlet and outlet ports for the commissioning test probes.

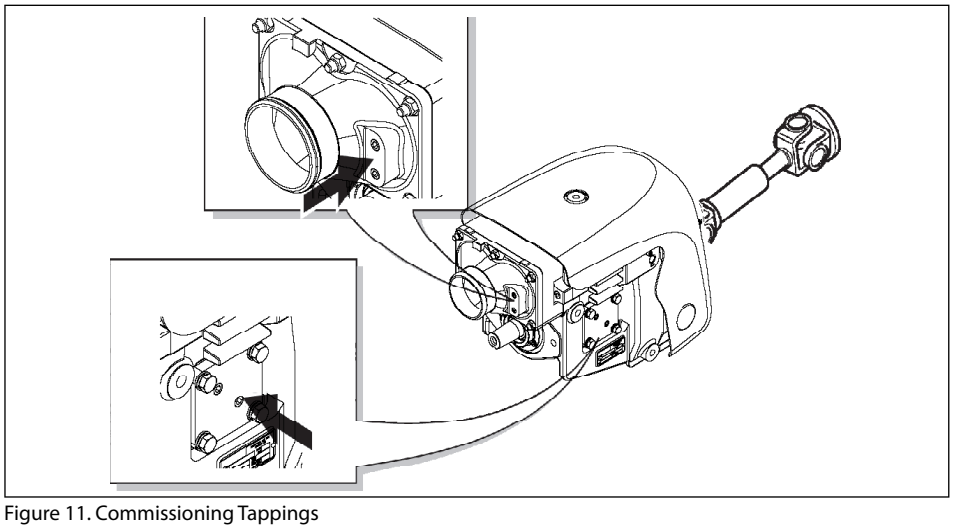


Figure 11. Commissioning Tappings

4.4 Commissioning Procedure

All procedures and temperature readings should be taken via the 4 probes fitted in the XK12 inlet and outlet flanges.

		Tick when completed ✓
1	Check that the discharge gate valve on the pipe work is open.	
2	Start the engine, depress the clutch and allow the vehicle gearbox parts to stop rotating (5 seconds should be sufficient). Engage the PTO and slowly raise the clutch, then set the engine speed to give a PTO output of 1000 rpm.	
3	Whilst the compressor is operating, check the pipe work for leaks and gently agitate the inlet to release any debris that may be present.	
4	After 15 minutes, depress the clutch, and engage the PTO.	
5	Check the oil/fill level and drain plugs for leaks, and replace the commissioning filter with the inlet gasket supplied being careful to remove any debris that could fall into the pipe bore.	
6	Repeat point 2 above and set the speed to 1600rpm or the future/working operating speed.	
7	Record the inlet depression and check for induction leaks. A maximum of 70mbar is permitted on a new machine, if it is greater than this, check the inlet pipes and filter for potential blockages and that the comissioning filter has been removed.	
8	Raise the discharge pressure to just below 2.5 barg by adjusting the gate valve setting. Check for system leaks. If all is well, run the compressor for 45 minutes recording temperatures and pressures at 10 minute intervals. Measure the inlet and outlet pressure and temperature as well as the ambient temperature. Re-check for oil leaks	
9	Increase the pressure beyond this to operate the relief valve.	
10	The relief valve should crack (begin to open/blow off) at a pressure not exceeding 2.5 bar g and then fully open (full bypass) at no more than 2.5bar g.	
11	Slowly reduce the pressure until the relief valve re-seats (should be before 2.2 bar g) and record this value on the commissioning test sheet.	
12	Make sure that all flanges are leak free and that fastenings/ mountings are still tight.	
13	Disengage the PTO, return the engine speed to tick over and then stop the engine.	
14	Remove the commissioning probes and plug off the holes again.	

On completion of the installation and driver training, complete the commissioning chart, sign, date and retain for future reference.

We also recommend photographing the installation and retaining with the commissioning chart.

CAUTION

If the outlet temperature exceeds 230°C or the difference between inlet temperature and outlet temperature exceeds 200°C, whichever occurs first stop the test immediately and contact the Gardner Denver Drum Representative.

Max. Inlet Depression
100mbar under all circumstances. 70mbar with the commissioning filter removed.

Max. Discharge Pressure
2.5 bar g

NOTE

Watch out for hot-pipes and make sure you replace/re-tighten any fastenings.

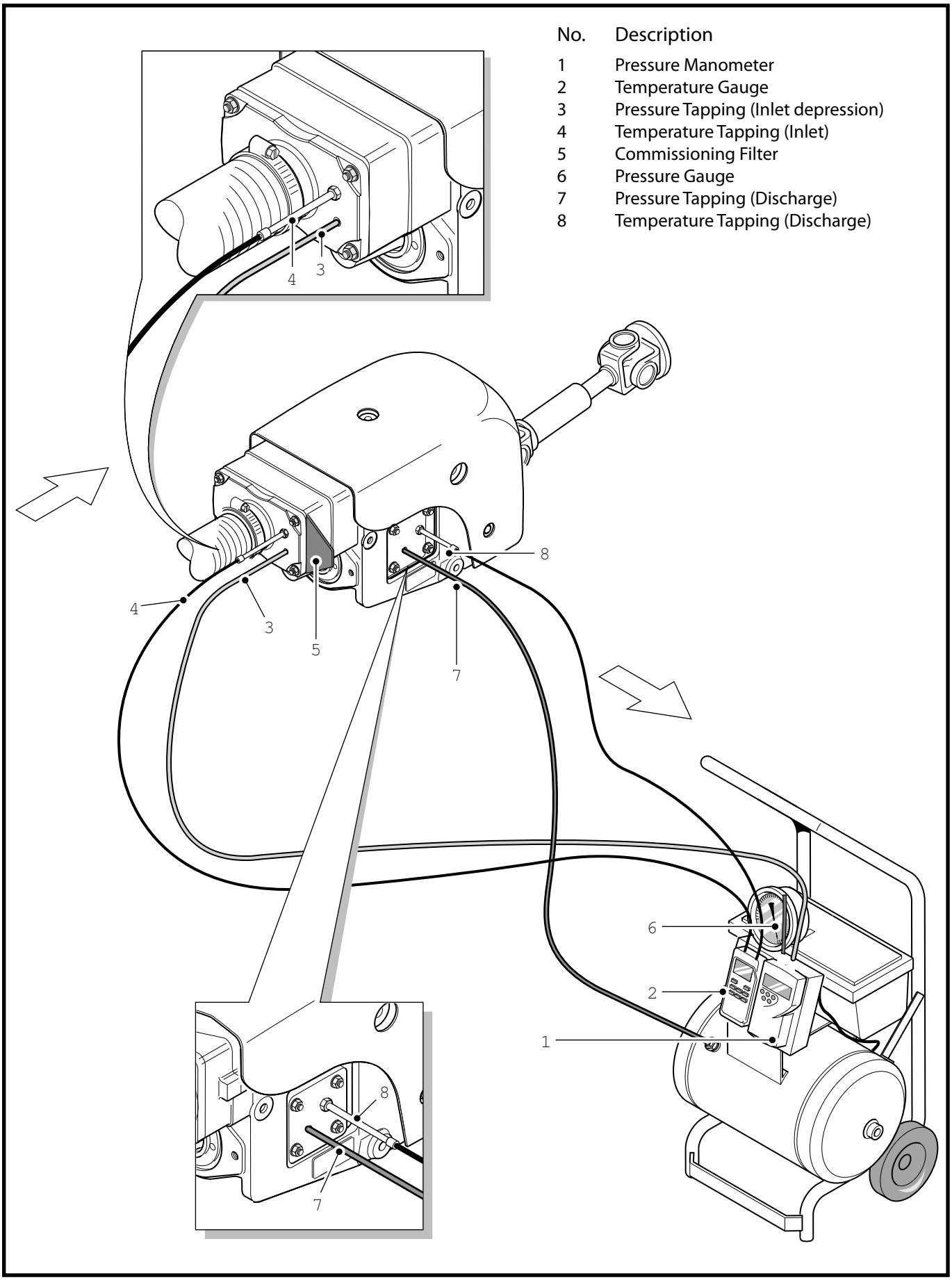


Figure 12. Commissioning Tests

4.5 Driver Operating Instructions

The input speed should be between 1000 and 1600 rpm (1810 and 2896 rpm for high speed machine) and the maximum pressure should not exceed 2.5 bar gauge.

Where the operator will be subjected to prolonged exposure to noise, it is recommended that ear protection is provided.

CAUTION

To avoid risk of burns, do not touch pipework or stand close to ventable valves during discharge. If there is a risk, suitably resistant gloves/ clothing must be used.

To prevent high shaft torque and material blow-back, the XK12 should never be started directly against a pressurised tank. Mid-delivery re-starting should only be undertaken direct to atmosphere by fitting a valve from discharge line (prior to the check valve). When the compressor reaches operating speed, the line can be slowly closed again to restart delivery.

Starting the compressor

- Check that the PTO is disengaged and then start the engine.
- Set the engine speed to tick over.
- Depress the clutch and allow a minimum of 5 seconds for the gears to stop rotating.
- Engage the PTO.
- SLOWLY release the clutch.
- Check that the XK12 is producing air.
- Set the engine speed to give a compressor operating speed between 1000 rpm and 1600 rpm as required, (1810 and 2896 rpm for high speed machine).

Stopping the compressor

- Return the engine speed to tick over
- Disengage the PTO.
- Stop the engine.

4.6 XK12 Driver training

Driver training should be given when ever possible and should include:-

Safety

Instruct the driver regarding:

- Rotating parts
- Hot Pipework
- Safety valve
- Safety coupling

Operation

Instruct the driver regarding:

- Speed range
- Maximum operating pressure
- PTO engagement
- Unloading valve

Routine Maintenance

Instruct the driver regarding:

- Gearbox oil - topping-up and replacement
- Air filter - cleaning/replacing
- Pipe connections - checking
- Relief valve function

SERIAL NO.

DATE COMMISSIONED

XK12 COMMISSIONING TEST

TIME	DURATION	INPUT SPEED Rpm	PRESSURE BAR (g)	BARO. m.bar	INLET DEPRESSION	RELIEF VALVE LIFT	RELIEF VALVE PEAK	RELIEF VALVE BYPASS	AMBIENT TEMP °C	AIR IN T2 °C	AIR OUT T1 °C	DELTA (t) °C	COMMENTS

CUSTOMER

VEHICLE REG

VEHICLE MAKE

VEHICLE MODEL

PTO TYPE

RATIO

ENGINE SPEED

COMMENTS

DRIVER TRAINING COMPLETED ☐

5 Maintenance

5.1 Schedule

Daily	• Check Air Filter blockage indicator and clean or replace filter element if required.
40 - 60 hours from new	• Change the gearcase oil; see section 5.2
Weekly	• Where the compressor is mounted on a vehicle and located outside, it should be operated for at least 15 minutes each week (twice a week In damp/cool conditions).
Monthly	• Check gearbox oil level • Check function of Relief Valve • Remove air filter and clean inside the casing. • Check security of compressor and pipe mountings.
500 hours run time or every 12 months (which ever is sooner)	• Change the gearcase oil; see section 5.2 • Drain plug - clean magnetic (plug See Fig.6)
Annually	• Examine the internals of the check valve • Examine pipes and silencers for corrosion and replace as required • Replace Air Filter element • Check Relief Valve function, setting and visually.

NOTE

The relief valve should be operated every 3 months to clear the valve seat and check that the valve is functional.

(Ear protection is recommended)

NOTE

500 hours is the maximum oil change interval.

Drive systems must be maintained in accordance with the manufacturers instructions.

NOTE

If the XK12 unit cannot be completely drained of oil without tilting the unit, it will be sufficient to drain as much as possible (1.3 l/min+ should be at least possible).

5.2 Changing the gearcase oil - see fig 6

1. Remove the magnetic drain plug and sealing washer (can also remove the fill/level plug for faster drainage).
2. Allow the oil to drain into a can for environmental disposal.
3. Clean and then refit drain plug and re-fill the gearcase with approximately 1.5 litres oil until the oil reaches the fill level level hole.

5.3 Valves

NOTE

New gaskets may be required when inspecting the check valve.

Check Valve

The check (non-return) valve should be removed, visually checked for signs of wear. If in any doubt, replace the entire valve.

Relief Valve

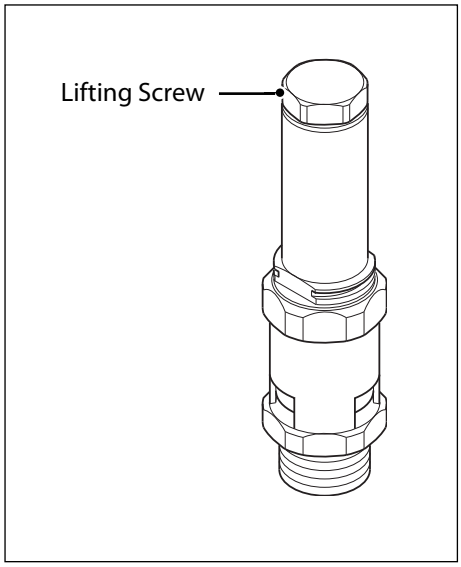
The screwed top of the relief valve (lifting screw) can be used to check/clear the relief valve during operation. This removes the necessity for using seperate ancillaries/valves in the discharge line making checking much easier and faster. With the compressor operating at greater than 85% of its pressure setting:-

Setting	85%
2 bar(g)	>1.7 bar(g)
2.2 bar(g)	>1.87 bar(g)
2.5 bar(g)	> 2.25 bar(g)

Operation / Function Test

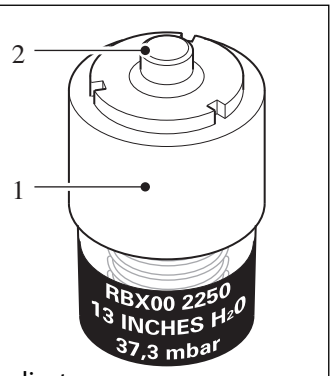
1. Rotate the lifting screw ACW until a clear, audible, air discharge is produced.
2. Rotate the lifting screw CW until it reaches the limit stop.

The valve is now checked and ready for operation.



5.4 Silencers / Pipework

The silencers and pipework should be inspected for signs of damage or corrosion. When paintwork is damaged, clean off any corrosion and treat with rust inhibitor before repainting. Use paints that can withstand temperatures of 180°C.



1. Indicator
2. Reset button

Figure 14b. Blockage indicator - packages 1,2&4

NOTE

Filter elements should replaced every 12 months or sooner if restriction is indicated by the blockage indicator.

5.5 Air Inlet Filter - Cyclonic

The blockage indicator is designed to show/hold the maximum inlet blockage encountered. It is set to show 100% blockage when the inlet depression reaches 37mbar. The filter element should be replaced/cleaned before the indicator enters the red portion of the blockage scale.

If the indicator valve has entered the red portion of the scale:

1. Press the reset button and re-check with the compressor operating.
2. If the blockage indicator still returns to red, the filter must be cleaned or replaced as follows:

Note: Stop the machine before cleaning or replacing filter elements.

Cleaning the casing

1. Unscrew the clamp retaining the end cover of the air filter and remove it noting the position of the vacuator valve. Empty out any dust or dirt and then re-fit in the original position (vacuator valve downwards)

Cleaning the element

The air filter is fitted with a blockage indicator to show when the filter requires cleaning. If this indicator shows red when the compressor is operating then the filter must be cleaned or replaced as follows:

1. Remove the end cover by releasing the retaining clips and withdraw the filter.
2. Clean the filter by blowing compressed air through the filter from the inside outwards
3. Replacement of the element/end cover is a direct reversal of the above

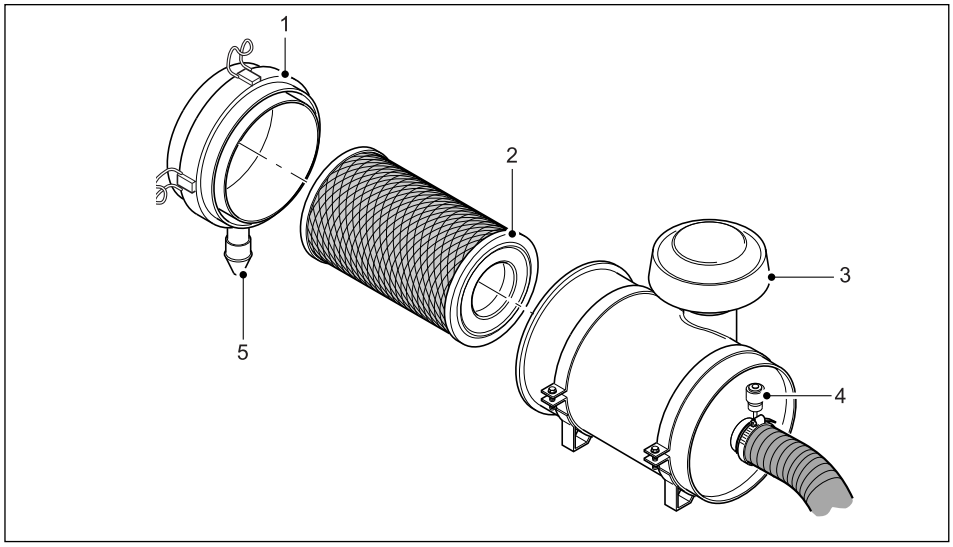


Figure 14a. Replacing Air Filter

No.	Description
1.	End Cover
2.	Filter Element
3.	Raincap
4.	Filter Blockage Indicator
5.	Vacuator Valve

5.6 Alternative Oils

OIL:- The XK12 is supplied filled with GD AEON S68 synthetic oil. Other ISO 68 Poly alpha Olefin (PAO) grade oil with EP (extreme pressure) additives can theoretically be used, but may affect the long term reliability of the machine. All oils should be checked that they are mixable with both mineral and other Synthetic PAO variants used without a reduction in performance.

NOTE

ISO 68 EP grade oils from different manufacturers can be mixed.

Service Maintenance Record for XK12 Compressor

Serial Number

Monthly

For the monthly check, simply initial the boxes as the check is completed.

Year ________ starting the month of ______________________________

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
Oil Level												
Relief valve												
Air Filter												
Security												

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
Oil Level												
Relief valve												
Air Filter												
Security												

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
Oil Level												
Relief valve												
Air Filter												
Security												

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
Oil Level												
Relief valve												
Air Filter												
Security												

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
Oil Level												
Relief valve												
Air Filter												
Security												

Annually

For the annual/ 500 operational hours service, initial the box as each check is completed.

MONTH	DATE	DATE	DATE	DATE	DATE
Oil Change					
Air Filter					
Check Valve					
Relief Valve					
Silencers					
Pipe Work					

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