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INTERLUBE
Leaders in Lubrication Solutions

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FILTAKLEEN
Significantly extending oil life

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FILTAKLEEN
Significantly extending oil life

Filtakleen By-Pass Oil Filter

SERVICE & MAINTENANCE MANUAL

SERVICE and MAINTENANCE MANUAL

INTRODUCTION

The Filtakleen By-Pass oil Filter is an ultra-fine 1 micron Bypass filtration system. It provides the best possible filtration protection against system wear, oil degradation, rust and corrosion. Working in conjunction with the equipments full flow filter, the Filtakleen By-Pass Filter stops all particles from causing some damage. The Filtakleen Bypass Filter typically filters all the oil in the system several times an hour, so the system continuously receives analytically clean oil.

What are the benefits of the Filtakleen Bypass Filtration?

- An extension of Oil Drain Change Intervals and Filter
- An improvment of Oil cooling
- An increase of filtration quality and so an extension of the engine life
- An increase in the fluid system capacity
- An efficiencient removal of small particle and soot

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FF878/MY778

Description	Part number
Heavy Duty Cartridge (Hydraulic)	MYC-1717078
Heavy Duty Cartridge (Oil)	C78-1717078
Lid Seal Heavy Duty	17-17047
Dowty Seal	17-17035
Male adaptor (1/4 BSP)	17-17076
Male Adaptor (1/8 BSP)	17-17074T
Swept Elbow	17-17092
Hose Insert straight	17-17052
R/U 1T 1/4 Ferrile	17-17056
Heavy Duty Bracket	17-17002
Manifold Block	17-17016A
Ball Valve	17-17067A

FF988/MY788

Description	Part number
Heavy Duty Cartridge (Hydraulic)	HYC-1717088
Heavy Duty Cartridge (Oil)	C88-1717088
Lead Seal Maxi Duty	17-17048
Dowty Seal (1/4)	17-17035
Male Adaptor (1/4)	17-17076
Male Adaptor (1/8)	17-17074T
Swept Elbow	17-17092
Hose insert straight	17-17052
RU 1T 1/4 Ferrile	17-17056
Maxi Duty Bracket	17-17013
Manifold Block	17-17016A
Ball Valve	17-17067A

Models for Engines:

Number	Flow Rate L/Min	Max Sump Capacity	Replacement Elements
FF368	1.5	8L	C58
FF668	3	14L	C68
FF878	4.5	36L	C78
FF988	6	72L	C88

Models for Hydraulics:

Number	Flow Rate L/Min	Max Sump Capacity	Replacement Elements
HY778	4.1L	900L	HYC78
HY788	6.1L	2000L	HYC88

Spares:

FF368 Bantam

Description	Part number
Cartridge	C58-1717058
Lid Seal	17-17046
Dowty seal	17-17035
Male Adaptor (1/4 BSP)	17-17076
Male Adaptor (1/4 BSP)	17-17074T
Swept Elbow	17-17092
Hose insert straight	17-17052
R/U1T 1/4 Ferrile	17-17056
Bantam Duty Bracket	17-17009

FF668

Description	Part number
Cartridge	C68-1717068
Lid Seal	17-17046
Dowty Seal	17-17035
Male Adaptor (1/4 BSP)	17-17076
Male Adaptor (1/4 BSP)	17-17074T
Swept elbow	17-17092
Hose insert straight	17-17052
R/U 1T 1/4 Ferrile	17-17056
Light Duty Bracket	17-17006

Why fit a Filtakleen By-pass Filter?

Results of Contaminants in a typical system

AQUEOUS BASED

1. WATER (EMULSIFIED)
2. FREE WATER
3. ACIDS

EFFECTS

Water:
Affects Oil Properties (e.g. Lubricity)
Corrosion of system components.
Promotes harmful Bacterial growth
Acids
Etches away system component surfaces

PARTICULATE BASED

1. PARTICLES BEYOND CONTROL OF EXISTING OEM FILTRATION
2. COMPRESSIBLE MATTER

EFFECTS

Particulates
Promotes erosion of system parts
Creates " Wear Chain" from friction

Compressible Matter
Sludge Formation

TYPICAL RESULTS

Hydraulic Systems

Excess Heat through
Loss of oil viscosity
And eroded valves

Engine Lube Oil Systems

Excess Bearing Wear
Harmful emissions produced
Loss of power

Insulating Oil Systems

Loss of electrical resistance

NET RESULTS

Loss of System performance
Frequent system failures and component replacement
Frequent oil changes
Unnecessary System Downtime
Environmental Hazards
Loss of productivity
Excess costs

DO'S AND DON'TS

DO'S

Do read all instructions before commencing installation.
Do observe safety regulations regarding operating the equipment in confined spaces.
Do take precautions to keep all components in the system clean.

DON'TS

Don't drill holes through any part of the vehicle or equipment until you have checked the area is free of electric cables and pipe work.

Where to mount the units?

1. Preferably the units should be mounted with the lid above the liquid level in the hydraulic tank or the motor oil sump. This because in the return lines there are non-return valves and the liquid could overflow the bowl when opening the lid for cartridge change. Also the units should be easily accessible from the front, again for easy change of cartridge.
And lastly, there must be enough space above the unit to accommodate the cartridge change.

Hydraulic Kit

		Qty
17-17067A	Ball Valve	1
17-17070	R/U 3/8 Swept Elbow	1
17-17055	R/U RIT 3/8 Ferrule	2
17-17092	R/U 1/4 Swept Elbow	1
17-17054	R/U R2T 1/4 Insert	1
17-17052	R/U 1/4 Insert	1
17-17072	R/U 3/8 Insert	1
17-17060	R/U 3/8 90 Degree Elbow	1
17-17069	1/4 90 Degree Swivel Adaptor	1
17-17091	R/U 1/4 90 Degree Compact Elbow	1

Engine Kit

		Qty
17-17092	R/U 1/4 Swept Elbow	2
17-17052	R/U 1/4 Insert	2
17-17076	1/4 BSP 1/4 BSP Male Adaptor	2
17-17074T	1/8 BSP 1/4 BSP Male Adaptor	1
17-17056	R/U RIT 1/4 Ferrile	4

Filter element life is dependant on the original oil condition. Figures given are for guidance. If the oil is very dirt, or a higher level of cleanliness is required, more element changes will be needed. However, the Filtakleen filter will always purify the oil to a safe re-usable condition, given sufficient element changes. Even totally emulsified oil will be reclaimed and purified to a better than new condition usually within 4 element changes.

Element Specification:

	Filter Use	Filter Width Dia.	Filter Height	Filter Length	Total Surface Area	Dirt Holding	Water Absorbsion	Beta 3 Rating	Typical Filtration	Element Weight (dry)
Heavy Duty C78	Automotive	145mm	115mm	>210M	>300 000 sq. cm.	800 grams	800ml	N/A	Extends Oil Life Up To 11 X	Min. 550 grams
Maxi Duty C88	Automotive	190mm	115mm	>410M	>500 000 sq. cm.	1400 grams	1400ml	N/A	Extends Oil Life Up To 11 X	Min. 950 grams
Heavy Duty HYC78	Hydraulic	145mm	115mm	>260M	>350 000 sq. cm.	900 grams	900ml	75	Min. ISO 14/11	Min. 600 grams
Maxi Duty HYC78	Hydraulic	190mm	115mm	>460M	>550 000 sq. cm.	1500 grams	1500ml	75	Min. ISO 14/11	Min. 1000 grams

Guidance for Element Changes:

ENGINES	**Filtakleen filter change**	**Main filter change**	**Oil Change**
Bantam	3000m/5000km	2000 hours/annual	
Light	3 months/500 hours 3750m/6000km	2000 hours/annual	
Heavy	9300m/15000km	100000m/160000km/annual	
Maxi	15600m/25000km	100000m/160000km/annual	
HYDRAULICS			
Heavy	300 or 500 hours?	2000 hours/annual	10000 hours/5 years
Maxi	500 hours	2000 hours/annual	10000 hours/5 years

How to change the Cartridge/Element?

On engine systems, make sure the engine is switched **OFF**.
On Hydraulic systems, turn the ball valve to the **OFF** position.

The easiest way of changing the cartridge is unlocking the central lid bolt so that air can enter the system. If the units are mounted above liquid level, the bowl will empty into the system. There after the lid can be removed completely without oil spill Then take the plastic bag of the new cartridge and slide it over the opened bowl. Through the plastic one can take the brass ring and put some force on it. Soon the vacuum underneath the cartridge will break and the cartridge slides into the bag, which then can be overturned, closed and disposed of. Insert the new cartridge without cleaning inside the bowl, replace the gaskets and close the lid again.

Bantam | Light Duty | Heavy Duty | Maxi Duty

2. Pressure points:

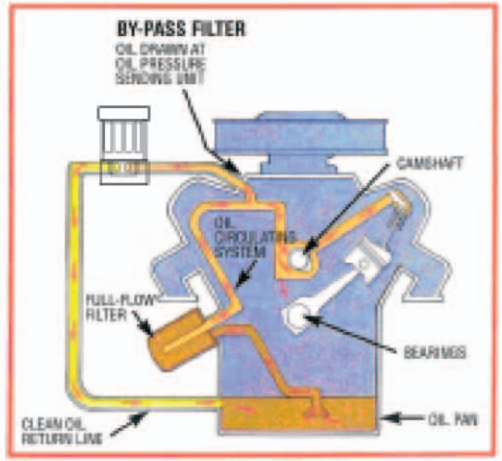
In principle the pressure point to take the oil from is always in the main pump circuit.

Engine oil Systems

Usually located in the oil gallery, many engines have unused plugs here, or on the oil filter housing. Another option is to remove the oil pressure sensor and refit a T-piece adaptor.

The turbo lubrication is usually fed via a banjo-bolt, which can be replaced by one with an external inlet.

A mechanical fuel pump is fitted with a banjo-bolt lubrication line too, which can also be replaced by one with an external inlet. And if necessary, the compressor lubrication can be used. Each individual situation will show which is preferable.



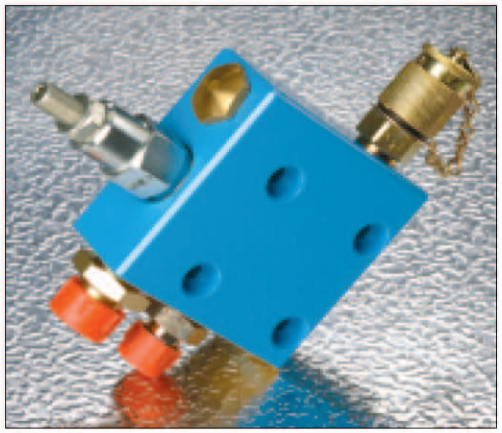
Hydraulic Oil Systems

The pressure should be taken from the main pump circuit, as this is the system which will have the most working hours, (if more than one pump is fitted). The units can be fitted to high pressure systems, up to a maximum of 5000 psi. Use of this circuit maximises the time available for effective for filtration. Typically this pump has overcapacity, so that the oil stream taken to the by-pass filter will not influence the performance of the system. Never take the pressure from a servo or pilot circuit, because one cannot predict if certain functions of the system will be adversely influenced. This may even be dangerous. Hoses must be rated for the operating pressure of the equipment.

In the majority of cases, on the pressure side of the main pump, there is a pressure test nipple, which can be taken out and refitted with a T-piece. If not, this nipple is situated on the first valve block in the pump pressure line. Sometimes the pump or the valve block has loose plugs, which can be replaced by an adaptor. If none of these exist somewhere in the main pressure line, a T- piece or other suitable coupling fitting should be taken off; drilled and threaded to accommodate a 1/8 BSP x 1/4 BSP adaptor. Into this line the Ball Valve should be fitted.

Once the Ball Valve is in place the next item is the Manifold Valve. This operates as a pressure reducing and pressure relief valve, thereby maintaining a consistent flow (at a maximum pressure of 65psi) into the filter. A restrictor fitting is supplied with each unit and is fitted on the inlet side of the filter. Sometimes, depending on the operating pressure of the equipment, it may be necessary to install a second restrictor at the pressure supply point of the equipment. If this is not possible, it may be located on the inlet side of the ball valve.

When working on an hydraulic system it is preferential to have the tank air pressure relieved, or even better if a vacuum pump is placed on the tank filler opening to maintain underpressure in the tank and system while working. This helps to prevent awkward oil spills.



3. Return points

In general there must not be any backpressure in the return line such as orifices, partial pressures in pilot systems, etc. The outlet of the by-pass filter should be zero pressure.

In engines

Return points can be found in unused plugs on the sump (if this is below liquid level use a vacuum pump on the oil filling point).
Alternatives are:

- the return of the turbo lubrication to the block is a banjobolt, which can be replaced.
- on the sump rim is a plug for a second sounding rod on the opposite side of the block.
- the oil-filling pipe can be removed, drilled and threaded to fit an adaptor.
- the valve cover can be removed, drilled and fitted with an adaptor. See that the adaptor outlet is above the camshaft rod and not over the valve stem. This results in excessive oil consumption.

In Hydraulic system

Return points can be found on the tank return manifold in unused plugs.
Alternatives are:

- an extra coupling can be drilled, threaded and fitted with an adaptor, can interrupt leakage lines.
- lines such as knee bends or bulkheads feeds be removed, drilled and threaded.
  Remember this is all low pressure, where some hydraulic seal compound is enough to prevent oil spill.

4. Oil temperature

In engine oil the temperature can be as high as 120 degrees C. Therefore remember to use hoses with one steel braiding and temp spec of 150 C continuous.

Hydraulic oil temp is normally not more than 80 C so the emphasis here in pressure. Modern construction equipment uses up to 450 bar pump pressure, which can be handled by the Safety Manifold. But the hose must be 2 steel inlays with working pressure of at least 650 bars, to compensate for peek pressure.

Brackets

Brackets should be bolted to the frame of the equipment. Welding is an option, but some modern equipment has sophisticated computers, which must be unplugged completely, before welding starts.

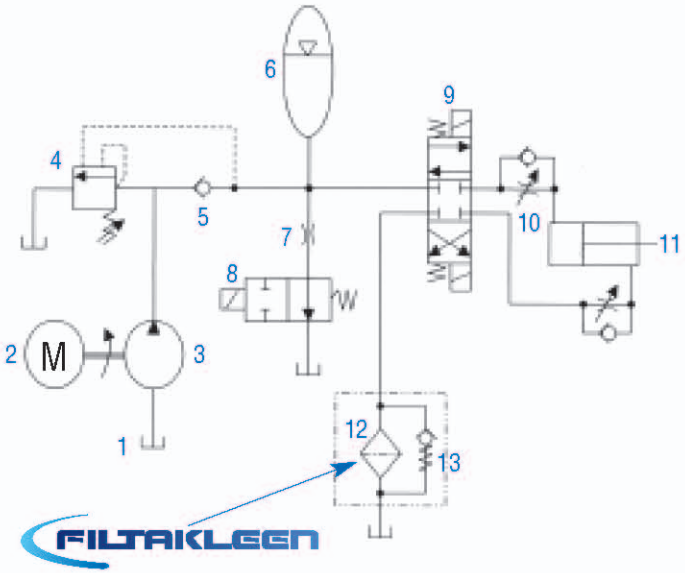
Post Installation:

Once the installation is complete, all the connections should be tested for tightness.. Run the equipment (mostly load sensing systems) and quickly check for major leaks. Then connect a pressure gauge to the test point on the Safety Manifold. After the air is pushed out towards the tank the gauge should read anywhere between 4.5 and 7 bar, depending on the build up of air pressure in the tank. If it goes higher, attempt to adjust the reducer valve downward. There after ref up hydraulic system against a blocked position for maximum system pressure. The reading of the gauge should not change or very slightly.

Next check if the engine oil bowl is heating up. The fastest way is comparing by hand the temperature of the hose connectors below the bowl. The inlet adaptor must become higher in temperature than the other one fairly quickly.

If all is well, the last part of the installation is fixing the hoses to other components of the equipment at each point where any abrading can occur. Especially very near the inlet and outlet adaptors on the equipment the hoses should be secured tightly with tie-raps to take away vibration from the components and prevent damage to the adaptors and safety valve.

Hydraulic Circuit Example



Part List:

1. Tank
2. Electric Motor
3. Hydraulic Pump with one direction of flow
4. Pressure reducing valve adjustable
5. Non-return valve free
6. Accumulator vertical gas load system
7. Restrictor
8. Solenoid control
9. Solenoid control-spring centred-external pilot supply
10. Adjustable restrictor valve
11. Cylinder double acting
12. Filter
13. Non-return valve spring loaded