



**NTF Bypass filtration  
on Road Sweepers  
to prevent valve  
malfunctions**



# Road Sweepers Test cases





## NTF bypass filters and Road sweepers

There are many problems with the hydraulic pumps and valves in road sweepers sticking or blocking completely due to the smaller contamination in the oil.

A standard filter package usually filters down to 10-25 microns because large amounts of oil must be able to flow through it.

However, critical components such as electronically operated valves, pumps, cylinders, etc. have tolerances of 1-5 microns

These disturbances arise because the standard filter does not filter out the 4 $\mu$  and 6 $\mu$  particles.

As a result, unnecessary warranty claims and end users experience problems and downtime of their machines and sometimes dangerous situations can arise because the machines do not respond in time.

Research and practical experience with sweepers and other industrial machines shows that these problems are solved by installing an NTF micro bypass filter.





Installation of NTF  
ALH19A bypass  
microfilter on a  
Ravo sweeper at  
Appeldoorn BV







# NTF Filter and APPELDOORN BV

## **Why NTF bypass micro filters could improve the reliability of the sweepers at Appeldoorn BV.**

A standard filter package usually filters down to 10-25 microns because large amounts of oil must be able to flow through it. However, critical components such as electronically operated valves, pumps, cylinders, etc. have tolerances of 1-5 microns.

As a result, it is only a matter of time before the hydraulic valves fail. They will stick, react slowly or block completely.

Appeldoorn BV manages most of the maintenance on the sweeper trucks in-house. After my visit and the introduction of our filter, Wesley and Gert-Jan were very skeptical about the filter and felt they had few problems. They did have regular problems with the shut-off valves not working properly and hydraulic pumps, but this had become a fairly normal thing over the years.

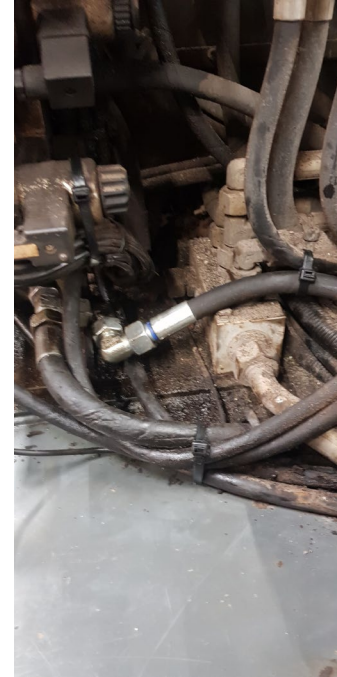
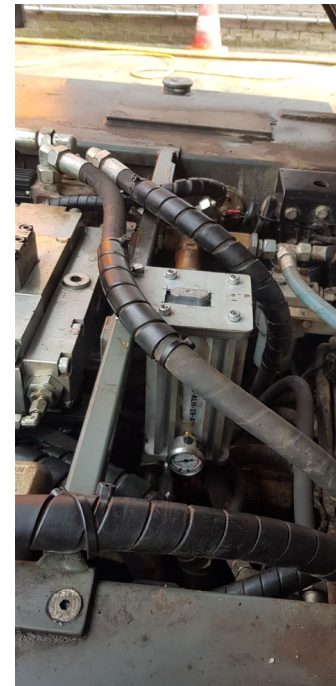
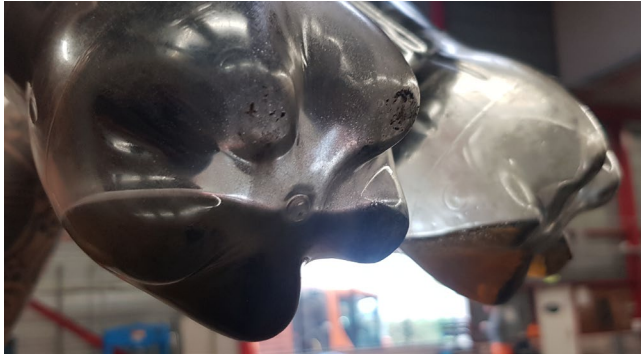
I gave them a filter system to test. After a few months there was a clear difference to be noticed and seen. The recurring problems with the valves were no longer there and the oil had become visibly cleaner. The oil was also tested in the laboratory and it also followed that the oil was clearly cleaner with the microfilter. After this positive test, they equipped all Ravo machines with an ALH19A microfilter.

The result after about a year:

- 90% decrease in tight valve problems
- Fewer hydraulic pump failures
- Less downtime
- Spare parts savings
- Saving man-hours workshop
- Saving on oil changes









# Test case on a Mathieu Azura MC 120 Road sweeper

Participant:

NTF Filter

Ravo Benelux

HVC Dordrecht

Location test

Jan Nieuwland

Gerard Hoff

Marco Bleek

Dordrecht Netherlands



Together with Ravo Benelux we installed an ALH-19-A bypass microfilter on a Mathieu Azura MC 120 with 2538 km and 3234 operating hours.

We took several oil samples to demonstrate the effect of the bypass microfilter.

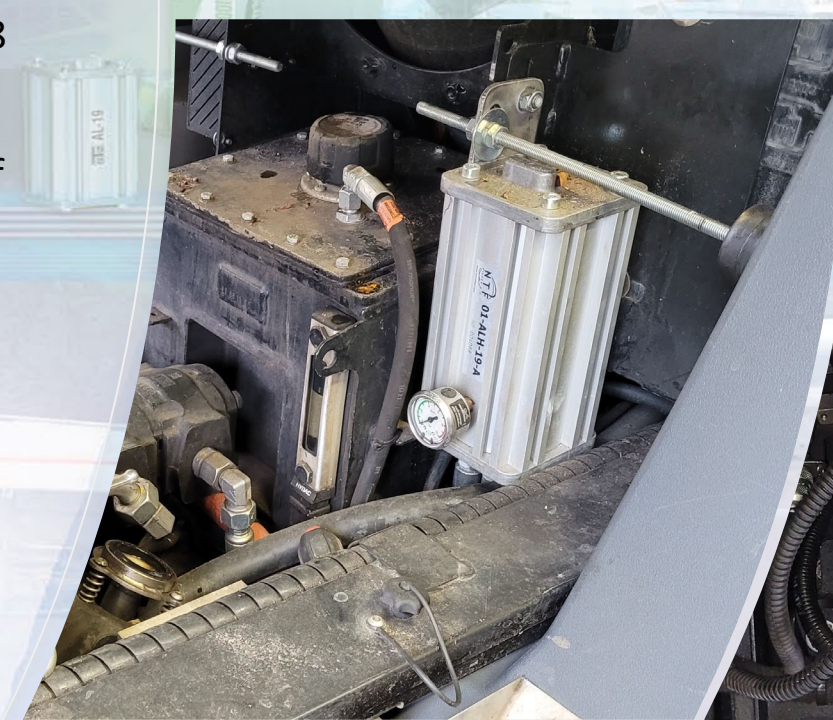
Cleanliness code before the oil change: ISO 22/20/14.

Cleanliness code after oil change: ISO 19/16/11.

Necessary cleanliness class: ISO 16/14/11

Purpose of the Test:

Maintain oil cleanliness at or below ISO 16/14/11 throughout service life. So that the servo valves can function properly and do not cause malfunctions.





HVC Dordrecht Mathieu MC20 Azura Road sweeping machine									
Old oil 1000Hr +- 2538KM 3234Hours No NTF Filter									
Test nr.	Date	Time	ISO Code	4 micron	6 micron	14 micron	21 micron	38 micron	70 micron
Average of 5 counts	ISO		22/20/14	2.088.784	736.162	8.460	1590	104	6

Oil is heavily polluted and is far from the cleanliness class 16/14/11 and is now 22/20/14  
customer comments: frequent breakdowns and downtime

HVC Dordrecht Azura Start wiht NTF Filter ALH19A instald									
New oil from After oil change 2538KM 3234 start NTF Filter									
Test nr.	Date	Time	ISO Code	4 micron	6 micron	14 micron	21 micron	38 micron	70 micron
Average of 7 counts	ISO		19/16/11	397.936	58.770	2.048	761	134	8

The oil is changed but it is not clean enough for the valves that should be 16/14/11

HVC Dordrecht Azura 129 hours 886Km wiht NTF Filter ALH19A instald									
working oil from 3424KM 3363 Hours									
Test nr.	Date	Time	ISO Code	4 micron	6 micron	14 micron	21 micron	38 micron	70 micron
Average of 7 counts	ISO		14/12/9	12.981	3.547	317	151	39	2

notes: the oil is well within the oil cleanliness class ISO 16/14/11 and is now 14/12/9

HVC Dordrecht Azura 620 hours 2141Km wiht NTF Filter ALH19A instald									
working oil from 7217KM 3854 Hours									
Test nr.	Date	Time	ISO Code	4 micron	6 micron	14 micron	21 micron	38 micron	70 micron
Average of 9 counts	ISO		14/12/9	11.040	2.372	381	182	54	3

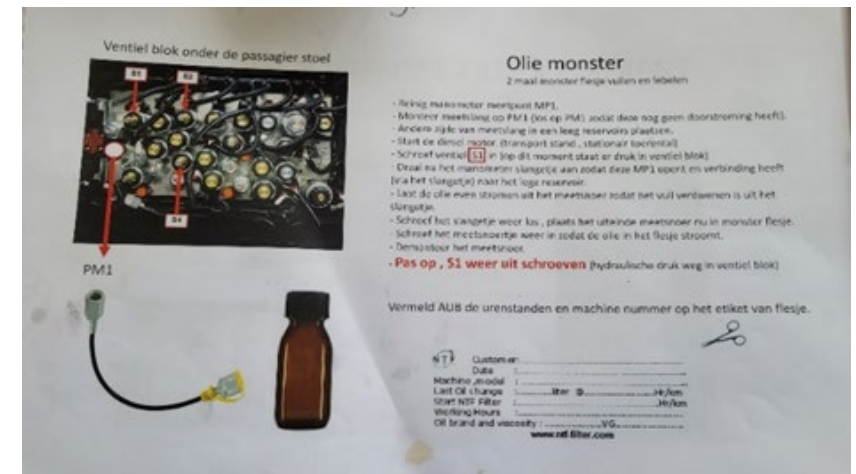
notes: the oil is well within the oil cleanliness class ISO 19/16/13 and is now 14/12/9  
customer comments: no more valve problems and oil looks very clean normally  
without filter the oil is already much darker



After an oil change the ISO cleanliness class was 19/16/11.  
After 620 hours the oil has become 91% cleaner.  
From ISO 19/16/11 to 14/12/9

Compared to the oil before changing, the oil is 99.21% cleaner !

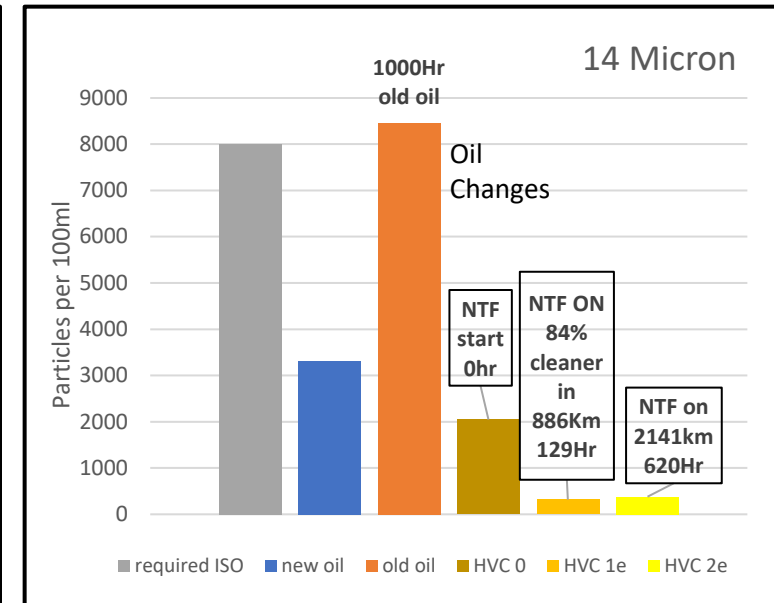
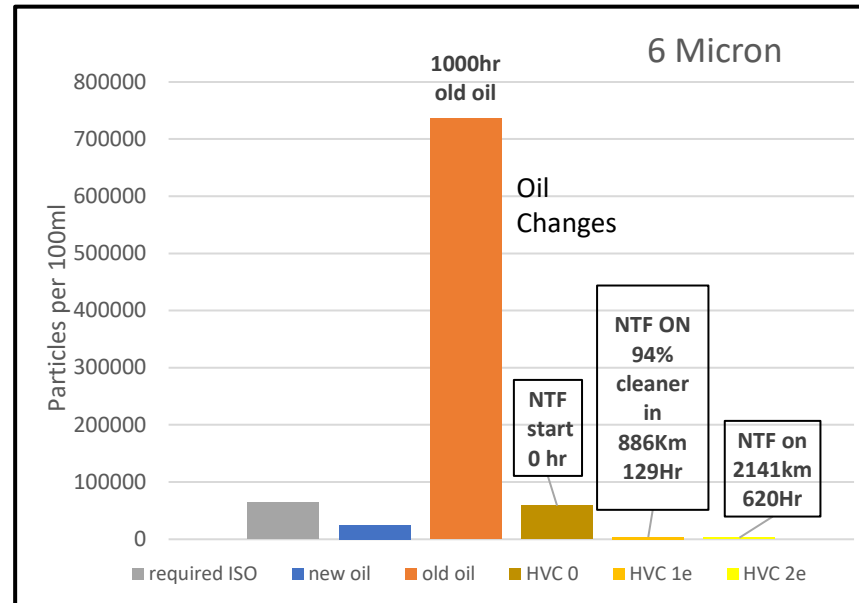
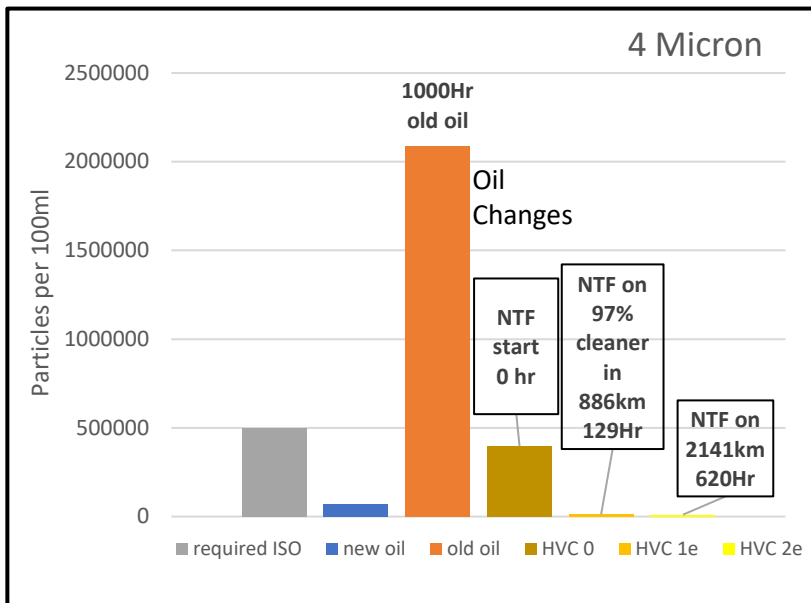
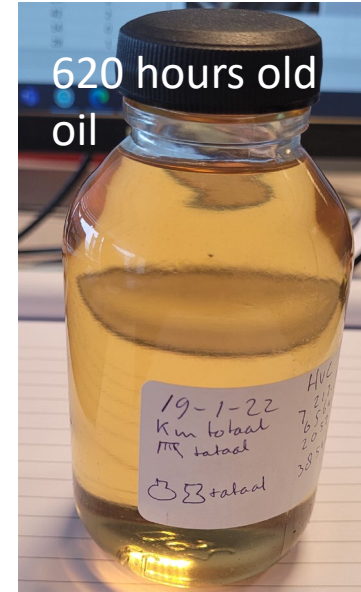
From ISO 22/20/14 to 14/12/9





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 From ISO **22/20/14** to **14/12/9**

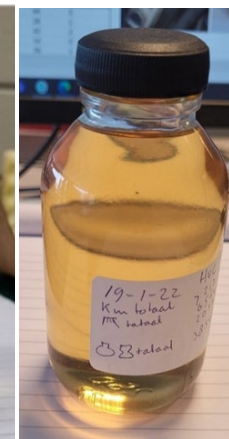






# After the positive test, they have all 20 Ravo and Mathieu machines equipped with an ALH19A microfilter.

Oil remains clean even after 1051 hours  
129 hr      620 hr      1051 hr

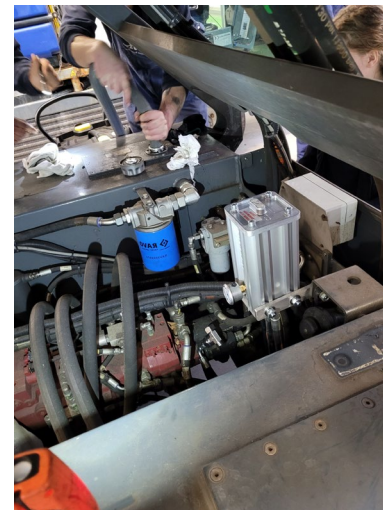






Gemeente  
Rotterdam

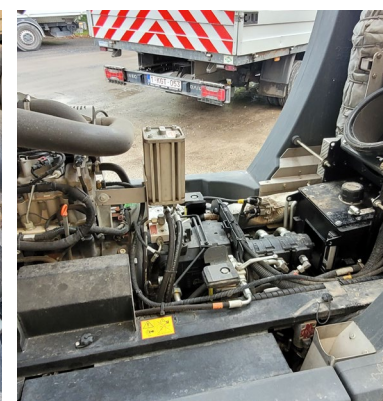
Kleinpolderplein 5, 3042 CE Rotterdam



Neonstraat 4, 6718 WV Ede



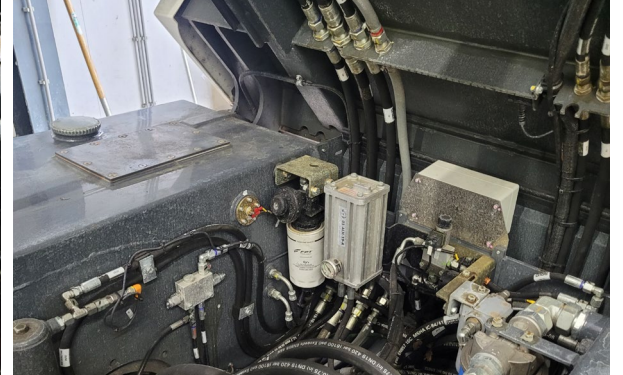
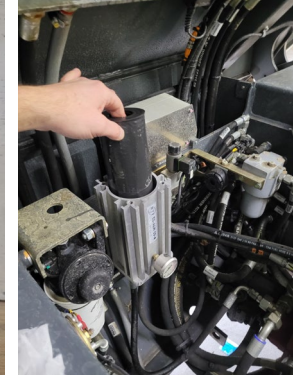
Harelbekestraat 27  
8540 Deerlijk  
België







spaarne landen  
jouw leefomgeving in goede handen



hvc.  
energie en hergebruik



APPELDOORN





## Advantages:

### 1) Clean oil! Even many times cleaner than new oil!

This allows the oil to be used up to 3 to 5 times longer. The oil remains within the desired specifications. Required ISO 4406 Cleanliness code for valves= ISO 15/13/11

### 2) Fewer breakdowns and machine downtime!

As of 1/1/2020, the installation of a bypass filter is now mandatory on all newly sold CNH tractors in the Benelux according to an Agri-insurance program. To prevent malfunctions of hydraulic valves.

### 3) Safety!

Malfunctioning valves due to contamination can lead to dangerous situations.

### 4) Environmentally friendly!

Less waste oil due to the possibility to extend the oil drain interval and fewer spare parts.

### 5) Longer equipment life

less wear on transmission and hydraulic system

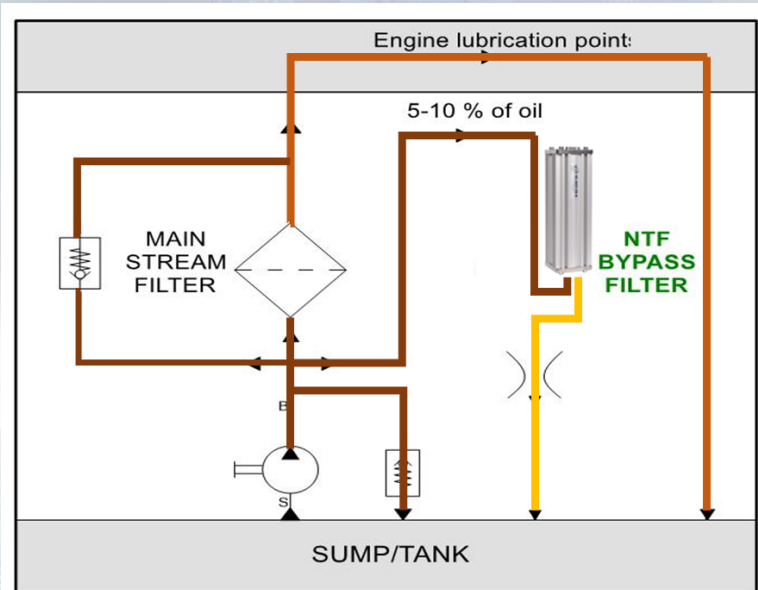
### 6) Structural cost savings!

- Less oil required
- Fewer machine parts
- Fewer man hours
- Less downtime and production loss
- The frequency of maintenance can be reduced
- Original filters last much longer!
- Longer machine life





# What is a bypass and what is microfiltration?

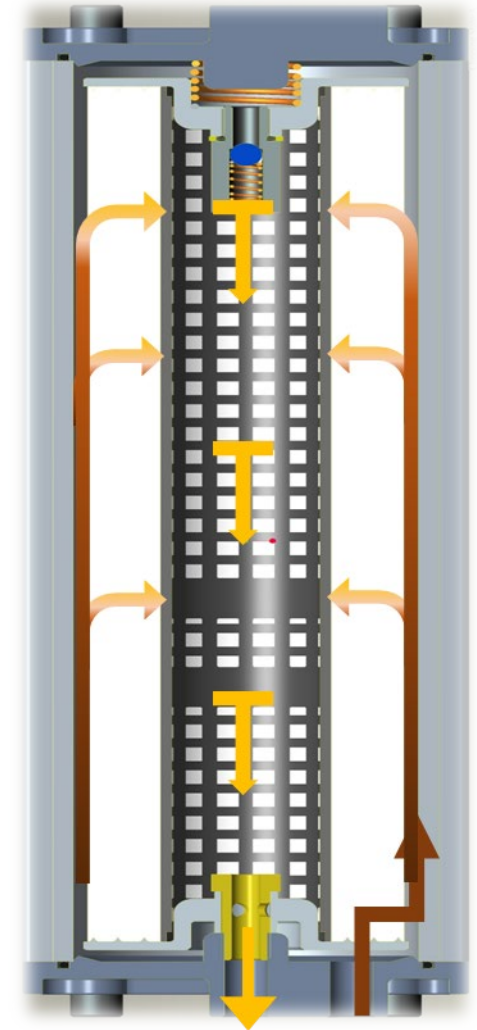


NTF bypass microfilter is an efficient microfilter connected in parallel with the original oil circuit. Microfiltration provides additional filter efficiency over the primary filter system.

On average, 1-2 liters per minute flows through the bypass filter (versus 10-20 liters per minute through a full-flow filter). Due to the lower flow, the bypass system can be more restrictive and remove 99% of the smallest particles of dirt and water from the liquid.

Hydraulic oil flows through a flow control valve and thereby guarantees a constant flow and pressure in the filter system, independent of the system pressure and flow offered. This is to prevent the oil pressure of the hydraulic system from becoming too low due to the bypass filter.

Microfiltration results in superior fluid purity of lubricating, transmission, engine or hydraulic oils.



Principe bypass-microfiltratie voor motor, transmissie of hydrauliek





**Element after use is dirty !! But the oil is clean!!**

**The filter element can also absorb water!**

**Absorption capacity  
142ml H2O**

**Retention value: 0.5 micron**

**Beta ratio: Beta 2 > 2335**

**Beta ratio: Beta 4 > 10649**

**Efficiency: 99.97% @ 2  $\mu$**



**1051 hr**







## ALH19A 420Bar Filter system for Ravo sweepers

### Contents of the kit :

1x ALH19A filter housing

1x F19A filter element

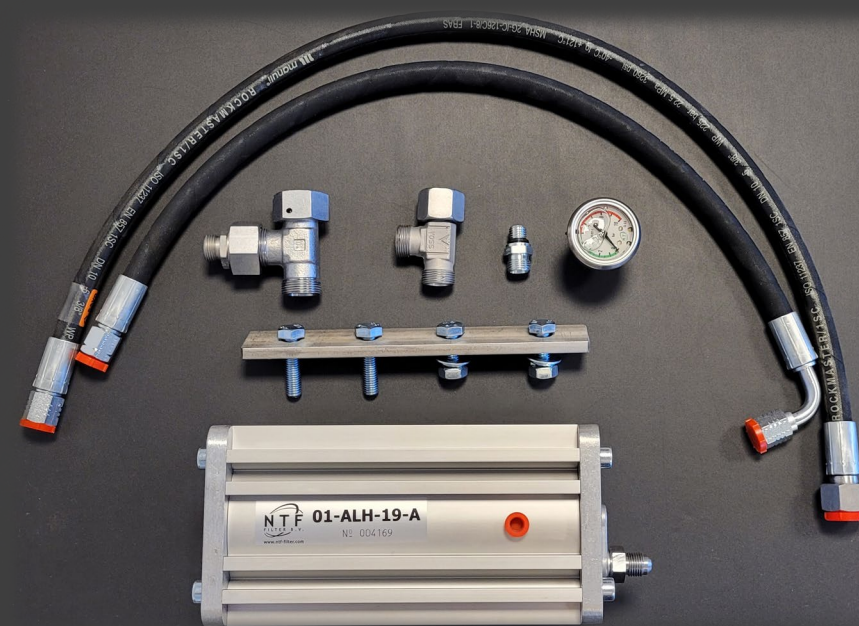
1x pressure gauge

1x Assembly set of bolts and nuts

1x Bracket

1x Hose set

**Can be installed within 1 hour!**





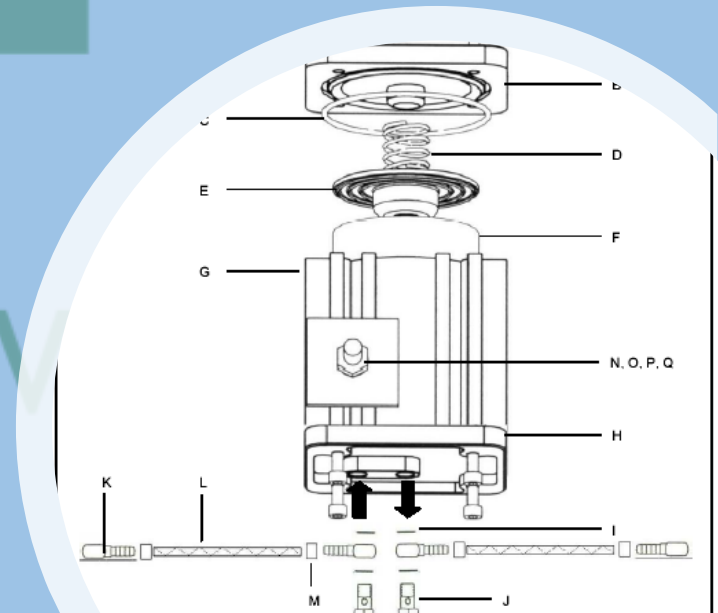
## CONCLUSION:

Bypass filtration systems clean oil to any desired level and extend the life of the oil, engine, transmission and hydraulic system.

Machines will run smoother and more cost-effectively because significantly reduces failures and downtime.

To avoid high repair costs and downtime of your valuable machines, you need clean oil... To get clean oil you need NTF MICRO FILTRATION.

# ALH SERIES FOR HYDRAULICS, TRANSMISSION AND ENGINE





# Thanks for your time



Yours sincerely

Jan-Herman Nieuwland

Product specialist en sales engineer

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If you have any questions or want specific assembly instructions, you can always call or email us.





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