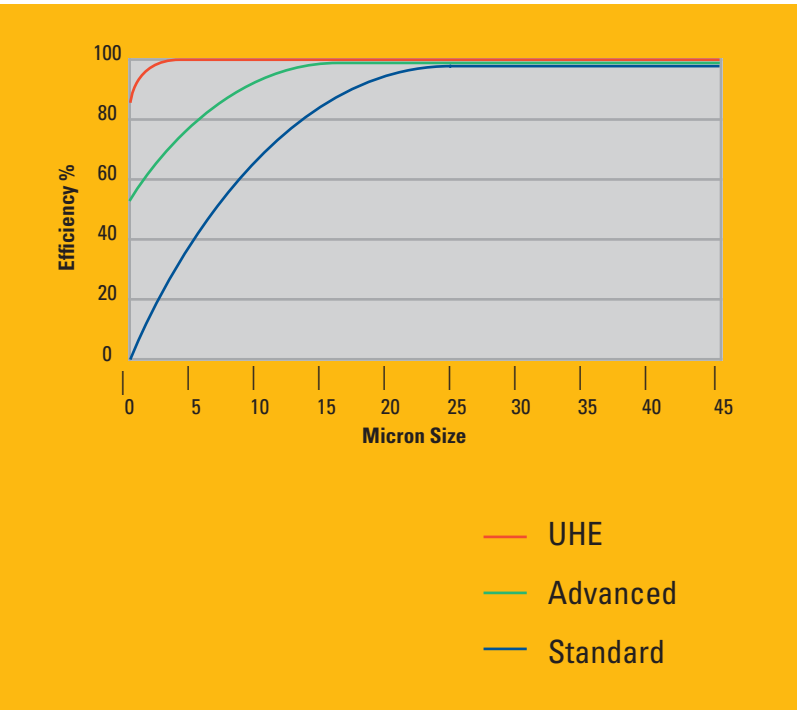
Cat® Hydraulic & Power Train Filters

Three Filter Choices To Lower Contamination

The key to extending hydraulic and power train component life is to reduce contamination. Choosing the correct Cat® filter is essential in minimizing damage to components from abrasives. You should consult your Cat Dealer to determine which Cat Hydraulic and Power Train Filters are available to meet the specific cleanliness needs in your applications.

- Standard Efficiency Filter—media is designed to maintain system cleanliness in most general and light duty applications.
- Advanced High Efficiency Filter—protects systems against accelerated wear with a special filter media to provide greater protection in moderate to severe conditions.
- Ultra High Efficiency (UHE) Filter—features a super-fine synthetic media removes a higher proportion of fine particles for optimum contamination control in moderate and severe applications. Also for use, in most cases, as a "clean out" filter for 250 hours after maintenance, rebuild or debris invasion.

With tighter tolerances in today's components, it is very important to properly address cleanliness levels. Caterpillar engineers the best protection into all Cat filters, resulting in higher efficiency filtration, longer system life, greater reliability and improved machine productivity.



Determine the Best Level of Filtration

Any filter must meet the specifications required for the system it is on. Filter efficiency and capacity must be matched to both the system and the change interval. As a result, the Cat Standard Efficiency Filter is not always the recommended filter for every hydraulic and power train system. Some newer machine models, like large track-type tractors, require Cat Advanced or UHE Filters instead of the Standard Filter for superior protection and maximum system life and performance.

To upgrade filtration performance, the first step is to check the Parts Identification Manual for the recommended filter part number and change interval.

If the recommended filter is a Cat Advanced Filter, then you should never use a Standard Filter. Likewise, if the recommendation is for a Cat UHE Filter, you should never use a Standard or Advanced Filter in its place. You are able to substitute a higher-efficiency filter, but never substitute a lower-efficiency filter for the recommended filter.

In most power train applications, a UHE filter is not the preferred option. Using a UHE filter can result in extended filter bypass due to high viscosity oil at cooler ambient temps (<50°F, <10°C).

Transmission Filter Recommendations

Transmission Filters		
Filter Size	**Recommended**	**Replaces**
5 x 11	328-3655	338-3540
Spin on	341-6643	1G-8878 102-2828
4 x 9	343-4464	1R-0773 132-8875
5 x 9	343-4465	1R-0778 132-8876
7 x 9	417-8416	1R-0792 167-2009

Caterpillar recommends using the transmission filters here for transmission applications in place of the previously recommended hydraulic filters.

Quality Filters, Consistently

All filters should be evaluated not only on the basis of quality, but also consistency. The challenge isn't to make one quality filter, but to manufacture quality filters each and every time. Cat Filters are manufactured in a highly automated process. Strict quality control and automation together virtually eliminate filter-to-filter variation. Select filters based on three criteria—quality, consistency and on-machine performance. This provides the most cost-effective hydraulic and power train filtration.

Caterpillar offers the best selection of Hydraulic and Power Train Filters to cover your entire fleet of Cat Equipment.

Hydraulic & Power Train Cartridge Filter Cross Reference

Filter Efficiency	Standard Efficiency	Advanced	UHE Resistant	Fire Size
1 X 4	109-7293	N/A	N/A	N/A
2 X 3	094-1053	N/A	N/A	N/A
2 X 4	109-7289	N/A	N/A	N/A
2 X 8	7F-7238	N/A	N/A	N/A
2 X 8	1G-5459	N/A	N/A	N/A
2 X 8	123-8999	N/A	117-9900	N/A
2 X 9	9U-5871	N/A	N/A	N/A
2 X 10	8T-7479	N/A	N/A	N/A
3 X 4	5J-8879	N/A	N/A	N/A
3 X 4	081-4169	N/A	N/A	N/A
3 X 5	9J-6472	N/A	N/A	N/A
3 X 5	2U-6391	N/A	N/A	N/A
3 X 5	094-4421	N/A	N/A	N/A
3 X 5	180-0850	N/A	N/A	N/A
3 X 6	081-2634	N/A	N/A	N/A
3 X 6	N/A	N/A	280-7424	N/A
3 X 8	9T-9054	N/A	9T-7656	N/A
3 X 8	N/A	N/A	7R-4568	N/A
3 X 8	134-0964	N/A	4C-6860	N/A
3 X 8	185-1379	N/A	185-1378	N/A
3 X 9	8H-0847	N/A	N/A	N/A
3 X 9	N/A	N/A	8T-3815	N/A
3 X 13	1Q-1688	N/A	N/A	N/A
3 X 17	159-2967	N/A	N/A	N/A
4 X 6	9C-8668	N/A	N/A	N/A
4 X 7	077-3250	N/A	N/A	N/A
4 X 7	077-2825	N/A	N/A	N/A
4 X 7	032-9868	N/A	N/A	N/A
4 X 8	123-2873	N/A	N/A	N/A
4 X 8	2C-8410	N/A	N/A	N/A
4 X 8	092-2568	N/A	N/A	N/A
4 X 8	143-2849	N/A	N/A	N/A
4 X 8	159-1427	N/A	N/A	N/A
4 X 8	159-1428	N/A	N/A	N/A
4 X 9	1R-0719	1R-0773	132-8875	4T-3131
*4 X 9	077-5479	N/A	077-5479	N/A 4 X
4 X 9	054-1719	N/A	N/A	N/A
4 X 9	086-3940	N/A	N/A	N/A
4 X 9	078-0651	N/A	N/A	N/A
4 X 9	081-3540	N/A	N/A	N/A
4 X 11	N/A	N/A	146-9290	N/A
4 X 11	093-5369	N/A	N/A	N/A
4 X 16	163-4032	N/A	N/A	N/A
4 X 16 R*	7R-8234	N/A	N/A	N/A
4 X 16	077-3569	N/A	N/A	N/A
4 X 26	6E-5216	N/A	N/A	N/A
5 X 5	6J-0363	N/A	N/A	N/A
5 X 6	5J-8877	N/A	N/A	N/A
5 X 7 R*	1R-0735	1R-0777	139-1537	104-6931
5 X 9	1R-0741	1R-0778	132-8876	4T-3132
5 X 9	9G-6420	N/A	N/A	N/A
5 X 10.5	N/A	N/A	1R-1809	N/A
5 X 11 R*	1R-0722	1R-0774	139-1536	N/A
5 X 24	N/A	109-7287	N/A	N/A
5.5 X 24	N/A	137-7249	N/A	N/A
6 X 12	094-3229	N/A	139-1539	N/A
**6 X 16	126-2081	179-9806	126-2131	N/A
6 X 18	094-4412	N/A	139-1540	N/A
7 X 9	1R-0732	1R-0792	167-2009	4T-3133
7 X 9 R*	N/A	249-2337	243-3758	N/A
10 X 22	185-1375	192-1560	N/A	N/A

R* = Reverse flow filter
* 083-7905 CRB 077-5479
** 178-9806 used in hammer applications

Hydraulic & Power Train Spin-On Filter Cross Reference

Filter Size	Standard Efficiency	Advanced Efficiency	UHE	Fire Resistant
3 X 5	119-4740	077-3492	211-1026	N/A
3 X 6	4I-3948	184-3931	126-1813	N/A
3 X 6	N/A	5I-8670	N/A	N/A
3 X 9	N/A	130-3212	126-1814	N/A
3 X 9	N/A	4I-3950	126-1814	N/A
3 X 9	N/A	185-0337	126-1814	N/A
4 X 6	090-2900	144-6691	126-1815	121-9868
4 X 6	123-8189	N/A	N/A	N/A
4 X 6	4T-6915	N/A	N/A	N/A
4 X 6	139-4359	N/A	N/A	N/A
4 X 7	N/A	093-7521	N/A	N/A
4 X 7	161-4741	N/A	N/A	N/A
4 X 8	N/A	3T-8642	N/A	N/A
4 X 8	N/A	149-4533	N/A	N/A
4 X 9	N/A	201-0875	223-7810	N/A
4 X 9	N/A	1G-8878	102-2828	156-0214
4 X 10	8C-0292	N/A	N/A	N/A
5 X 7*	N/A	4T-6788	223-7809	N/A
5 X 7**	N/A	9T-8578	144-0832	N/A
5 X 7***	N/A	077-3058	N/A	N/A
5 X 8	N/A	9T-6636	126-1816	N/A
5 X 8	N/A	209-5590	N/A	N/A
5 X 11	9U-6985	9U-5870	9U-6983	198-3188
5 X 11	9U-6985	9U-6984	9U-6983	N/A
5 X 12	N/A	108-1153	126-1817	134-3014
5 X 12	N/A	9T-0973	126-1817	134-3014
5 X 12	N/A	N/A	225-4118	N/A
5 X 12	N/A	6E-6408	126-1818	N/A
5 X 14	N/A	152-6902	207-5035	N/A

* Uses square-cut gasket
** Uses o-ring gasket
*** Uses c-gasket

Product Selection: Compare the Levels of Efficiency

The fine filtering media of higher efficiency filters trap a larger range of contaminants than lower efficiency filters. Lower contaminant levels reduce wear on components, resulting in extended life and improved system performance. The chart below indicates the three Cat filters' relative efficiencies.

Filter	Efficiency Range
Standard	**28 - 40 microns**
Advanced	**11 - 27 microns**
UHE	**4 - 10 microns**

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Filter Upgrade Procedures With A Filter Bypass Dash Indicator

Upgrading from a Cat Standard Efficiency Filter will provide better contamination control. If the system has a filter bypass dash indicator, and the Parts Identification Manual recommends a Cat Standard Efficiency Filter, the Advanced or UHE filter can replace it.

The increased efficiency filters remove additional fine particles, achieving longer hydraulic or power train system life by protecting components from increased wear. Note that an upgrade in filter level may reduce your ability to extend the oil change interval.

Filter Upgrade Procedures Without a Filter Bypass Indicator

1) Install a UHE Filter for a 250-hour interval to clean-up the system.
2) Install a higher efficiency filter, either Advanced or UHE.
3) Sample oil every 100 hours or once a week.
4) Replace the filter if the bypass valve opens before 250 hours.
5) Check oil every 100 hours until the filter lasts 250 hours or a change interval is established.
6) After change interval is established, oil sampling can extend to 500 hours or the recommended sampling interval. Oil cleanliness levels should be ISO 18/15.
7) With these requirements met, the hydraulic oil change interval can be increased to:

- 4,000 hours when using Cat DEO™, TDTO-TMS™ or MTO with S•O•S oil analysis OR
- 6,000 hours when using Cat HYDO™ Advanced with S•O•S oil analysis

Keeping A Count On Particles

S•O•S℠ Oil Sampling includes Particle Count, which is reported in the form of ISO Codes. Particle Count quantifies the number of particles but cannot distinguish their composition. Each ISO Code represents a range of particles per milliliter. This chart shows how the contamination approximately doubles for each additional increase in the ISO Code. Optimum cleanliness levels for Cat hydraulic and power train systems are ISO 18/15 or less.

ISO Code		Number of Particles/mL [23]
23	— Very Dirty —	40,000 - 80,000
22		20,000 - 40,000
21		10,000 - 20,000
20		5000 - 10,000
19		2500 - 5000
18	— Clean (Operating) 18/15 —	1300 - 2500
17		640 - 1300
16	— Very Clean (Fill Oil) 16/13 —	320 - 640
15		160 - 320
14		80 - 160
13		40 - 80
12		20 - 40
11		10 - 20
10		5 - 10
9		2 - 5
8		1 - 2

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