



NSD™ NON-SPARK DISCHARGE FILTERS

Overview

As fluid passes through the typical tortuous filter media fiber matrix, turbulence increases. This results in thermal events as the fluid layers shear, creating static accumulation on filters that can lead to high-voltage spark discharge from the filter media to the support tube. Figures 1A and 1B show evidence of sparking on the filter support tube (pitting and burning), and Figure 1C shows the filter media and support mesh from a lube filter with spark discharge burn damage.

The change from Group I to Group II base stock oils has enhanced the effect of spark discharge. Group I oils could conduct low levels of static charge out of the system to ground. The changes in resistivity with Group II oils mean that static charges stay in the system and can yield higher levels of static charge on filters. If the filter cannot minimize and dissipate the charge, static will build until it eventually arcs to a nearby surface.

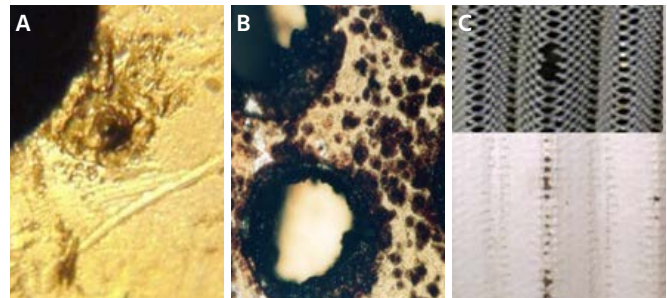


Fig. 1—Filter support tube pitting (A) and burning (B) due to sparking. (C) Filter media and mesh damage from spark discharge.

Key Features of NSD™ Filters

- G8 element and media technology is optimized to prevent spark discharge and minimize potential energy in bearing lubrication and hydraulic control systems.
- Prevents oil degradation caused by thermal events associated with element spark discharge.
- Prevents antioxidant additive depletion and extends useful fluid life.

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NSD™ Filters, Cleaner Fluid Without Sparking

For some, the answer to preventing element sparking and high potential energy is to use coarse strainer type filters (Stat-Free) in the main bearing lube filter duplex. Although this may prevent sparking, the compromise between reduced filtration and risk of catastrophic bearing failure is not a reasonable trade off, nor necessary. Independent lab analysis proves that Hy-Pro high efficiency 3 micron absolute ($\beta_{5[c]} > 1000$) NSD™ filters are resistant to spark discharge.

The degree to which filter spark discharge contributes to overall varnish problems is misunderstood. Varnish is caused from oxidation. Spark discharge causes a severe form of oxidation called thermal degradation. Thermal degradation prematurely consumes additives and reduces fluid life. With NSD™ filters, spark-induced thermal degradation is significantly reduced or eliminated thereby maximizing fluid additive life.

ORIGINAL PART NUMBER	HY-PRO PART NUMBER
*03384509 Stat-Free	HP101L18-12EV-NSD
200EB10	HPQ20082S-12EV-NSD
234A6578P0002, 234A6579P0002	HP41L13-3EV-NSD
254A7220P0008	HP41L13-3EV-NSD
254A7229P0005	HP41L13-3EV-NSD
258A4860P002	HP61L11-2EV-NSD
258A4860P004	HP61L21-2EV-NSD
315A2600P003	HP21L4-15EV-NSD
361A6256P010	HPK3L18-3EV-NSD
363A4378P003	HPQ20082S-17EV-NSD
363A4378P004	HPQ20082S-12EV-NSD
363A7485P0001	HPQ20082S-12EV-NSD
932683Q	HPK3L18-3EV-NSD
B984C302P012	HP21L4-15EV-NSD
FQ19165	HPQ20082S-12EV-NSD
HC0101FAP18ZYGE	HP101L18-3EV-NSD
HC0101FAS18Z	HP101L18-12EV-NSD
HC0101FAS18ZYGE	HP101L18-12EV-NSD
HC101FAP18Z	HP101L18-3EV-NSD
HC2006FAS28Z	HPQ20082S-12EV-NSD
HC2006FAT28Z	HPQ20082S-25EV-NSD
HC2006FKS28Z	HPQ20082S-12EV-NSD

ORIGINAL PART NUMBER	HY-PRO PART NUMBER
HC2006FKT28Z	HPQ20082S-25EV-NSD
HC2006FMS28Z	HPQ20082S-12EV-NSD
HC2006FMT28Z	HPQ20082S-25EV-NSD
HC2618FAP18Z	HP102L18-3EV-NSD
HC2618FAP18ZYGE	HP102L18-3EV-NSD
HC2618FKP18Z	HP102L18-3EV-NSD
HC2618FKP18ZYGE	HP102L18-3EV-NSD
HC2618FAS18Z	HP102L18-12EV-NSD
HC2618FAS18ZYGE	HP102L18-12EV-NSD
HC2618FKS18Z	HP102L18-12EV-NSD
HC2618FKS18ZYGE	HP102L18-12EV-NSD
HC8900FMN26HY550	HPQ98320L26-6EB-NSD
HC8900FMN26ZY550	HPQ98320L26-6EV-NSD
HC8900FMN39HY550	HPQ98320L39-6EB-NSD
HC8900FMN39ZY550	HPQ98320L39-6EV-NSD
HC8900FMS26HY550	HPQ98320L26-12EB-NSD
HC8900FMS26ZY550	HPQ98320L26-12EV-NSD
HC8900FMS39HY550	HPQ98320L39-12EB-NSD
HC8900FMS39ZY550	HPQ98320L39-12EV-NSD
HC9021FAP4Z	HP21L4-2EV-NSD
HC9021FAP4ZYGE	HP21L4-2EV-NSD
HC9021FAP8Z	HP21L8-2EV-NSD



When Results Matter

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ORIGINAL PART NUMBER	HY-PRO PART NUMBER
HC9021FAP8ZYGE	HP21L8-2EV-NSD
HC9021FAT4Z	HP21L4-15EV-NSD
HC9021FAT4ZYGE	HP21L4-15EV-NSD
HC9021FAT8Z	HP21L8-15EV-NSD
HC9021FAT8ZYGE	HP21L8-15EV-NSD
HC9021FDP4Z	HP21L4-2EV-NSD
HC9021FDP4ZYGE	HP21L4-2EV-NSD
HC9021FDP8Z	HP21L8-2EV-NSD
HC9021FDP8ZYGE	HP21L8-2EV-NSD
HC9021FDT4Z	HP21L4-15EV-NSD
HC9021FDT4ZYGE	HP21L4-15EV-NSD
HC9021FDT8Z	HP21L8-15EV-NSD
HC9021FDT8ZYGE	HP21L8-15EV-NSD
HC9601FAP11Z	HP61L11-2EV-NSD
HC9601FAP11ZYGE	HP61L11-2EV-NSD
HC9601FAP16Z	HP61L16-2EV-NSD
HC9601FAP16ZYGE	HP61L16-2EV-NSD
HC9601FAP21Z	HP61L21-2EV-NSD
HC9601FAP21ZYGE	HP61L21-2EV-NSD
HC9601FDP11Z	HP61L11-2EV-NSD
HC9601FDP11ZYGE	HP61L11-2EV-NSD
HC9601FDP11ZYGE	HP61L11-2EV-NSD
HC9601FDP16Z	HP61L16-2EV-NSD
HC9601FDP16ZYGE	HP61L16-2EV-NSD
HC9601FDP21Z	HP61L21-2EV-NSD
HC9601FDP21ZYGE	HP61L21-2EV-NSD

ORIGINAL PART NUMBER	HY-PRO PART NUMBER
HC9650FAP8Z	HP50L8-3EV-NSD
HC9650FAP8ZYGE	HP50L8-3EV-NSD
HC9650FKP16Z	HP50L16-3EV-NSD
HC9650FKP16ZYGE	HP50L16-3EV-NSD
HC9650FKP8Z	HP50L8-3EV-NSD
HC9650FKP8ZYGE	HP50L8-3EV-NSD
HC9651FAP16Z	HP51L16-2EV-NSD
HC9651FAP16ZYGE	HP51L16-2EV-NSD
HC9651FAP8Z	HP51L8-2EV-NSD
HC9651FAP8ZYGE	HP51L8-2EV-NSD
HC9651FAT8Z	HP51L8-15EV-NSD
HC9651FAT8ZYGE	HP51L8-15EV-NSD
HC9651FDP8Z	HP51L8-2EV-NSD
HC9651FDP8ZYGE	HP51L8-2EV-NSD
HC9651FDT8Z	HP51L8-15EV-NSD
HC9651FDT8ZYGE	HP51L8-15EV-NSD
HC9701FAP18Z	HPK3L18-3EV-NSD
HC9701FAP18ZYGE	HPK3L18-3EV-NSD
HC9701FDP18Z	HPK3L18-3EV-NSD
HC9701FDP18ZYGE	HPK3L18-3EV-NSD
HP9560FAP16Z	HP50L16-3EV-NSD
HP9560FAP16ZYGE	HP50L16-3EV-NSD
PH718-05CNVGE	*HP101L18-17EV-NSD
PMG528-10	HPQ20082S-17EV-NSD
PMG528-10B200-GE	HPQ20082S-12EV-NSD
PMG528-10-GE	HPQ20082S-17EV-NSD