



Filter Sizing Information

FO Series Filter Cartridges

CARTRIDGE FLOW RATE (USGPM) VS. VISCOSITY DATA FOR 2 PSI AND 5 PSI INITIAL PRESSURE DROPS

| CARTRIDGE | 33 SUS 2 CS | | 39 SUS 4 CS | | 46 SUS 6 CS | | 59 SUS 10 CS | | 98 SUS 20 CS | | 142 SUS 30 CS | | 187 SUS 40 CS | |
|--------------|----------------|-------|----------------|-------|----------------|-------|-----------------|-------|-----------------|-------|------------------|-------|------------------|-------|
| | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi |
| FO-614PLF1/2 | 68 | 68 | 50 | 66 | 33 | 65 | 20 | 50 | 10 | 25 | 7 | 17 | 5 | 12 |
| FO-614PLF1 | 68 | 68 | 50 | 66 | 33 | 65 | 20 | 50 | 10 | 25 | 7 | 17 | 5 | 12 |
| FO-614PLF2 | 68 | 68 | 66 | 66 | 65 | 65 | 52 | 64 | 26 | 63 | 18 | 44 | 13 | 33 |
| FO-614PLF5 | 68 | 68 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 53 | 62 | 40 | 61 |
| FO-614PLF25 | 68 | 68 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 61 |
| FO-614PLF75 | 68 | 68 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 61 |
| FO-718PL1/2 | 50 | 50 | 50 | 50 | 38 | 50 | 23 | 50 | 12 | 29 | 8 | 19 | 6 | 15 |
| FO-718PL01 | 50 | 50 | 50 | 50 | 38 | 50 | 23 | 50 | 12 | 29 | 8 | 19 | 6 | 15 |
| FO-718PL02 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 31 | 50 | 21 | 50 | 16 | 39 |
| FO-718PL05 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| FO-718PL15 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| FO-718PL50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| FO-618FGA5 | 68 | 68 | 66 | 66 | 42 | 65 | 25 | 60 | 13 | 31 | 8 | 21 | 6 | 16 |
| FO-618FGA10 | 68 | 68 | 66 | 66 | 50 | 65 | 30 | 64 | 15 | 38 | 10 | 25 | 8 | 19 |
| FO-618FGA25 | 68 | 68 | 66 | 66 | 50 | 65 | 30 | 64 | 15 | 38 | 10 | 25 | 8 | 19 |

| CARTRIDGE | 233 SUS 50 CS | | 348 SUS 75 CS | | 463 SUS 100 CS | | 927 SUS 200 CS | | 1390 SUS 300 CS | | 1853 SUS 400 CS | | 2316 SUS 500 CS | |
|--------------|------------------|-------|------------------|-------|-------------------|-------|-------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi | 2 psi | 5 psi |
| FO-614PLF1/2 | 4 | 10 | 3 | 7 | 2 | 5 | 1 | 3 | 1 | 2 | – | 1 | – | 1 |
| FO-614PLF1 | 4 | 10 | 3 | 7 | 2 | 5 | 1 | 3 | 1 | 2 | – | 1 | – | 1 |
| FO-614PLF2 | 10 | 26 | 7 | 18 | 5 | 13 | 3 | 7 | 2 | 4 | 1 | 3 | 1 | 3 |
| FO-614PLF5 | 32 | 60 | 22 | 55 | 16 | 40 | 8 | 20 | 5 | 13 | 4 | 10 | 3 | 8 |
| FO-614PLF25 | 60 | 60 | 59 | 59 | 45 | 58 | 22 | 55 | 15 | 50 | 11 | 28 | 9 | 23 |
| FO-614PLF75 | 60 | 60 | 59 | 59 | 58 | 58 | 45 | 57 | 30 | 56 | 22 | 55 | 18 | 45 |
| FO-718PL1/2 | 5 | 12 | 3 | 8 | 2 | 6 | 1 | 3 | 1 | 2 | 1 | 2 | – | 1 |
| FO-718PL01 | 5 | 12 | 3 | 8 | 2 | 6 | 1 | 3 | 1 | 2 | 1 | 2 | – | 1 |
| FO-718PL02 | 12 | 31 | 8 | 21 | 6 | 16 | 3 | 8 | 2 | 5 | 2 | 4 | 1 | 3 |
| FO-718PL05 | 41 | 50 | 27 | 50 | 20 | 50 | 10 | 25 | 7 | 17 | 5 | 13 | 4 | 10 |
| FO-718PL15 | 50 | 50 | 50 | 50 | 42 | 50 | 21 | 50 | 14 | 35 | 10 | 26 | 8 | 21 |
| FO-718PL50 | 50 | 50 | 50 | 50 | 50 | 50 | 30 | 50 | 20 | 50 | 15 | 38 | 12 | 30 |
| FO-618FGA5 | 5 | 13 | 3 | 8 | 2 | 6 | 1 | 3 | 1 | 2 | 1 | 2 | 1 | 1 |
| FO-618FGA10 | 6 | 15 | 4 | 10 | 3 | 8 | 1 | 4 | 1 | 3 | 1 | 2 | 1 | 2 |
| FO-618FGA25 | 6 | 15 | 4 | 10 | 3 | 8 | 1 | 4 | 1 | 3 | 1 | 2 | 1 | 2 |

NOTE: Figures in table are flow rates (US GPM) that will cause a pressure drop of 2 or 5 psi across the cartridge.

Housing Selection Guidelines

FILTER SIZING

1. Select the desired filter cartridge type and micrometer (micron) rating.
2. Determine the viscosity at the operating temperature for the fluid being filtered. See Bulletin 1533.
3. From the cartridge flow rate data estimate the flow rate that will result in a 2 psi differential pressure.
4. Divide the total desired flow rate by the flow rate determined in 3, above. This will give the required number of cartridges.
5. Select a filter housing that will hold the required number of cartridges.

NOTES: a) For double and triple length cartridges find the flow rate for the equivalent single length cartridge and multiply by 2 or 3, as appropriate. For example, the triple length five micron rated FO-644PLF5M would have 3 times the flow rate of the single length five micron rated FO-614PLF5.

b) For recirculating lube and hydraulic oil systems where contaminant generation will be slight, it is common practice to size for a 5 psi initial pressure drop.

CONTAMINANT CAPACITY

Velcon recommends filter cartridges be changed when they reach 25 psi differential or in accordance with your company's fuel handling procedures. The amount of contaminant a cartridge will hold before that point depends on many factors, the key one being the nature of the contaminant itself. A hard, particulate contaminant has very different filtration characteristics than a soft, gel-like contaminant.

Accurately estimating the life of a cartridge in a given application, therefore, is extremely difficult. However, when a cartridge has been sized for an initial pressure drop of 2 psi, the following rule of thumb is often employed for particulate contaminants: A 1 or 2 micrometer cartridge will hold up to 3 pounds of contaminant, and a 5 micrometer or greater cartridge will hold up to 5 pounds.

REDUCED FLOW RATE EFFECTS

The filter sizing above is based on a 2 psi initial pressure differential which is a widely accepted industry standard. However, where heavy contaminant loads are anticipated, a substantial savings in operating costs for cartridges and filter change labor can be achieved by over-sizing the filter. **Reducing the flow rate per cartridge in half will increase the contaminant capacity of each cartridge by 30 to 50 percent. This means that doubling the size of the filter will increase the total throughput between cartridge changeouts by as much as three times.**



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