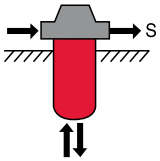
RKM Series

Multi-functional Filters

145 psi • up to 210 gpm



Features

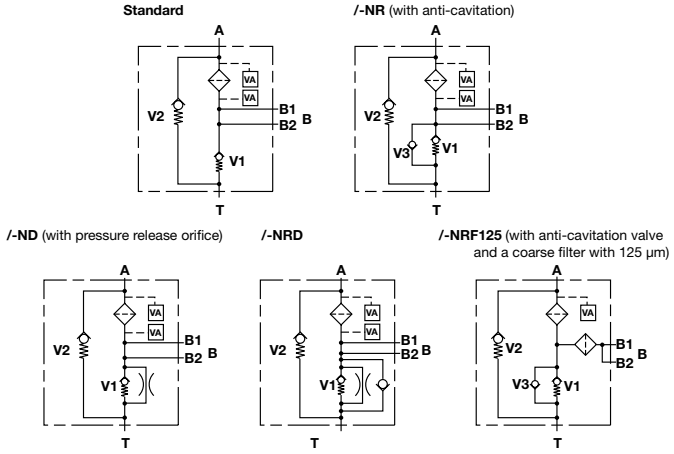
- RKM is a combination open loop return and closed loop suction boost filter in one housing.
- The return line flow of the operating hydraulics is fed to the filter via port A *(inlet)* and is cleaned by the filter element *(full flow return line filtration)*. A pressure (standard = 7 psi) is applied by the back-pressure valve V1. This insures that the filtered, precharged return line flow is available to the hydrostatic feed pump via ports B *(full flow suction boost filtration)*. Excess fluid is drained via the back-pressure valve to the tank *(port T)*.
- A bypass valve V2 *(standard = 36 psi)* is incorporated in the filter housing to relieve excessive back-pressures in the element *(important on cold starts)*. Flow from the tank can be drawn via the anti-cavitation valve V3 to the suction side for a short time *(emergency function)*.
- Full flow finest filtration *(10 µm, 15 µm absolute)* of the return line and hydrostatic feed pump extends the service life of your components.
- Outstanding cold start characteristics due to the precharge via the back pressure valve *(standard = 7 psi)*.
- Due to the advanced RKM element technology and specially developed bypass valves, the lowest back-pressures can be achieved across the filter even at very low temperatures.
- One tank cutout for up to 6 suction and 3 return lines.
- Aluminum alloy is water tolerant - anodization is not required for water based fluids (HWBF).
- RKM elements do not incorporate bypass in the end cap —the bypass is located in the RKM housing.

Applications

Agricultural

Construction

Hydraulic Symbol



Technical Specifications

Mounting Method	100	2 mounting holes
	201 - 800	4 mounting holes
Port Connection	Return / Suction	
100	SAE-8 / SAE-8	
	SAE-12 / SAE-12	
	SAE-16 / SAE-16	
201/251	SAE-20 / 2 x SAE-16	
300	SAE 1 1/2" CS, Code 61-Split Flange (SF)	
	/ 2 x SAE 1 1/4" CS, Code 61-Split Flange (SF)	
350	SAE-24 / SAE-16	
400/800	R1–2" SAE flange / Cust. specified or	
	R1–2 1/2" SAE flange / Cust. specified	
Flow Direction	Inlet: Side	Outlet: Side & bottom
Construction Materials		
Head	Aluminum	
Housing/Bowl	Steel (100/201/251/350/400/800)	
	Polyamide (300)	
Lid	Polyamide (100/201/251/350)	
	Aluminum (300/400/800)	
Flow Capacity		
100	26 gpm (100 lpm)	
201	52 gpm (200 lpm)	
251	66 gpm (250 lpm)	
300	79 gpm (300 lpm)	
350	92 gpm (350 lpm)	
400	105 gpm (400 lpm)	
800	211 gpm (800 lpm)	
Housing Pressure Rating		
Max. Allowable Working Pressure*		145 psi (10 bar)
Fatigue Pressure		Contact HYDAC
Burst Pressure		Contact HYDAC
Element Collapse Pressure Rating		
MM	145 psid (10 bar)	
Fluid Temp. Range	14°F to 212°F (-10°C to 100°C)	
Consult HYDAC for applications below 14°F (-10°C)		
Fluid Compatibility		
Compatible with all hydrocarbon based, synthetic, water glycol, oil/water emulsion, and high water based fluids when the appropriate seals are selected.		
Indicator Trip Pressure		
P = 29 psi (2 bar) -10% *(standard)*		
P = 72 psi (5 bar) -10% *(optional)*		
Bypass Valve Cracking Pressure		
ΔP = 36 psid (2.5 bar) +10% *(standard)*		
ΔP = 87 psid (6 bar) +10% *(optional)*		
Back Pressure Valve Cracking Pressure		
ΔP = 7 psid (0.5 bar) +10% *(standard)*		
ΔP = 43 psid (3 bar) +10% *(optional)*		

*Note: All RKM Filters MAWP reduce to 7 bar (101.5 psi) when using the following "VR" and "VMF" indicators: B, BM, E, ES, GC, LE, LZ

Model Code

RKM MM 300 B T F 10 E 1 . X / 12 V NR

Filter Type
RKM = Low pressure multifunction

Element Media
MM = Mobilemicron® *(Low Collapse)*

Size
100, 201, 251, 300, 350, 400, 800

Operating Pressure
B = 145 psi
V = 101.5 psi (7 bar) *(*Note previous page)*

Type of Port / Size of Suction Line Port
T = 2 x CS 1 1/4" Code 61 Split Flange *(size 300 only)*
V = 2 x 1" Threaded *(sizes 201 & 251 only)*
X = 1 x 1" Threaded *(size 100 & 350 only)*
Y = 1 x 3/4" Threaded *(size 100 only)*
Z = According to customer specification
For sizes 100 Multiport, 201/251 Multiport & 400/800 - see next page

Type of Port / Size of Return Line Port
C = 3/4" Threaded *(size 100 only)*
D = 1" Threaded *(size 100 only)*
E = 1 1/4" Threaded *(sizes 201 & 251 only)*
F = CS 1 1/2" Code 61 *(size 300 only)*
G = 1 1/2" Threaded *(size 350 only)*
Z = According to customer specification
For sizes 400/800, see below. Other port sizes on request.
For sizes 100 multi-port, 201/251 multi-port & 400/800, port configuration will be specified within the Supplementary Details part of the model code. Use "Z" here when those options are chosen.

Filtration Rating *(microns)*
8, 10, 15 = MM

Type of Static Clogging Indicator
A, E, F

Type Code
0 = no indicator
1-8 = see Clogging Indicator Locations *(next page)*

Modification Number *(the latest version is always supplied)*

Port Configuration
0 = G/BSPP straight thread ports
12 = SAE O-Ring Boss straight thread ports

Seals
(omit) = Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)

Supplementary Details
(omit) = standard *(without anti-cavitation valve; seals in NBR, bypass valve 2.5 bar, back-pressure valve 0.5 bar)*
EV = air bleed valves *(installed in filter lid)*
NR = with anti-cavitation valve
ND = with pressure release orifice
NRD = with anti-cavitation valve and with pressure release valve orifice
NRF125 = with anti-cavitation valve and coarse filter strainer 125 µm
UT = horizontally mounted version *(when mounted below fluid level)*
XXXXX = multi-port option *(sizes 100, 201, 251; see multi-port configuration tables on next page for alphanumeric coding)*
XXXXXXXXX = multi-port option *(standard for sizes 400, 800; see multi-port configuration tables on next page for alphanumeric coding)*
SFREE = Element specially designed to minimize electrostatic charge generation

Replacement Element Model Code

0300 RK 010 MM / V

Size
0100, 0201, 0251, 0300,
0350, 0400, 0800

Type
RK

Filtration Rating *(micron)*
8, 10, 15 = MM

Supplementary Details
Seals
(omit) = Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)
SFREE = *(Same as above)*

Clogging Indicator Model Code

VMF 2 E . X / V

Indicator Prefix
VMF = Mobile Filters
VM = Differential pressure indicators
(size 350 - 1.0 position only)

Trip Pressure
2 = 29 psid (2 bar) *(return filters)*
1.7 = 25 psid (1.7 bar) *(optional)*
Note: 15 psid (1 bar) & 3 psid (0.2 bar) also available

Type of Indicator
A = No indicator, plugged port
E = Pressure gauge
F = Pressure switch

Modification Number

Supplementary Details
Seals
(omit)= Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)

(For additional details and options, see Section H - Clogging Indicators.)

Model Codes Containing RED are non-stock items — Minimum quantities may apply – Contact HYDAC for information and availability

Port Configuration - RKM 100, 201, 251 Multiport Head and RKM 400 / 800

Since there are numerous options for machining the ports on the multiport head and the head of the RKM 400 / 800, the general code BZZ is selected here. In order to determine the position and size of the ports, a 5-digit or a 9-digit code is added as a Supplementary Detail. This is determined using the table below. Unused ports are indicated by a “0”.

R = Return line port; S = Suction port

Port Configuration RKM 100 Multiport

Position in code	1	2	3	4	5
Connection	R1	R2	R3	S1	S2
SAE-8		(B)	(B)	B	B
SAE-12	(C)	C	C	(C)	(C)
SAE-16	D				
Port plugged	0	0	0	0	0
Special port	Z	Z	Z	Z	Z

Example: RKM MM 100 BZZ 15 W 1.0 /-CBBCC

Port Configuration RKM 201 / 251 Multiport

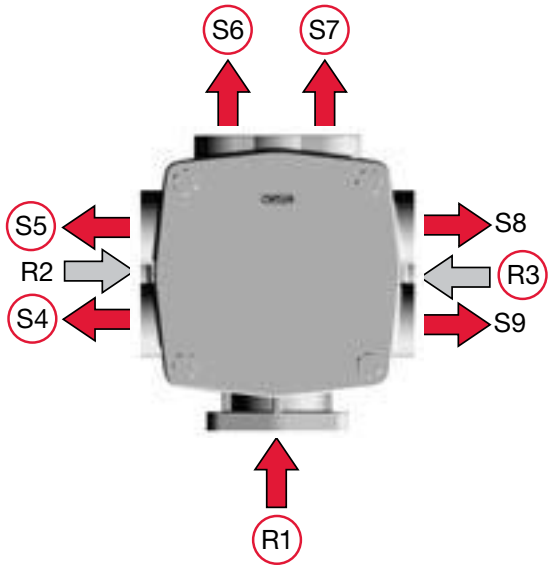
Position in code	1	2	3	4	5
Connection	R1	R2	R3	S1	S2
SAE-12		(C)	(C)	C	C
SAE-16	D	D	D	(D)	(D)
SAE-20	(E)				
Port plugged	0	0	0	0	0
Special port	Z	Z	Z	Z	Z

Example: RKM MM 201 BZZ 15 W 1.0 /-ECCDD

Port Configuration RKM 400 / 800

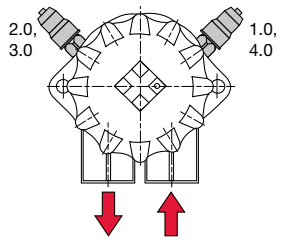
Position in code	1	2	3	4	5	6	7	8	9
Connection	R1	R2	R3	S4	S5	S6	S7	S8	S9
SAE 2” FLG	(1)								
SAE 2 1/2” FLG	2								
SAE-16		1	1	A	A	1	1	A	A
SAE-20		2	(2)	B	B	(2)	(2)	B	B
SAE-24		3	3	(C)	(C)	3	3	C	C
Port plugged		(0)	0	0	0	0	0	(0)	(0)
Special port		Z	Z	Z	Z	Z	Z	Z	Z

Example: RKM MM 400 BZZ 15 A 1.0 /-102CC2200



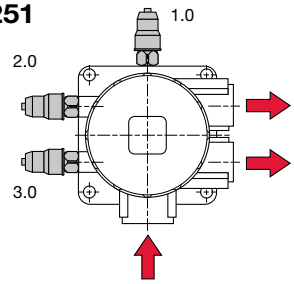
Clogging Indicator Locations

Size 100



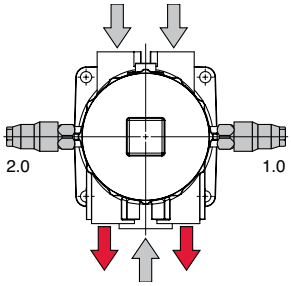
Type Code	Mounting Position of the Clogging Indicator	Type of Clogging Indicator	Measuring
1.0	on the filter inlet – right-hand side, bottom	return line	before the filter element
2.0	on the filter inlet – left-hand side, bottom	return line	before the filter element
3.0	on the filter outlet – right-hand side, top	vacuum	after the filter element
4.0	on the filter outlet – left-hand side, top	vacuum	after the filter element

Size 201/251



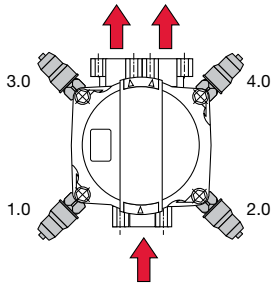
Type Code	Mounting Position of the Clogging Indicator	Type of Clogging Indicator	Measuring
1.0	on the filter inlet – opposite side	return line	before the filter element
2.0	on the filter inlet – left-hand side	return line	before the filter element
3.0	on the filter outlet – right-hand side	vacuum	after the filter element

Size 201/251/-MP1



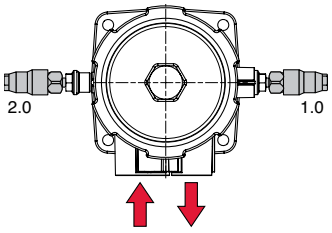
Type Code	Mounting Position of the Clogging Indicator	Type of Clogging Indicator	Measuring
1.0	on the filter outlet – right-hand side	return line	before the filter element
2.0	on the filter outlet – left-hand side	return line	before the filter element

Size 300



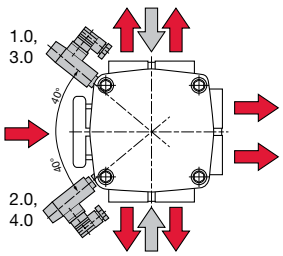
Type Code	Mounting Position of the Clogging Indicator	Type of Clogging Indicator	Measuring
1.0	on the filter inlet – left-hand side	return line	before the filter element
2.0	on the filter inlet – right-hand side	return line	before the filter element
3.0	on the filter outlet – left-hand side	vacuum	after the filter element
4.0	on the filter outlet – right-hand side	vacuum	after the filter element

Size 350



Type Code	Mounting Position of the Clogging Indicator	Type of Clogging Indicator	Measuring
1.0	on the filter inlet – right-hand side	differential pressure	before and after element
2.0	on the filter inlet – left-hand side	return line	before and after element

Size 400 / 800



Type Code	Mounting Position of the Clogging Indicator	Type of Clogging Indicator	Measuring
1.0	on the filter inlet – left-hand side, bottom	return line	before the filter element
2.0	on the filter inlet – right-hand side, bottom	return line	before the filter element
3.0	on the filter inlet – left-hand side, top	vacuum	after the filter element
4.0	on the filter inlet – right-hand side, top	vacuum	after the filter element

For other configurations, please contact HYDAC

HYDAC RKM: Two Filters in One.

A design that saves money.

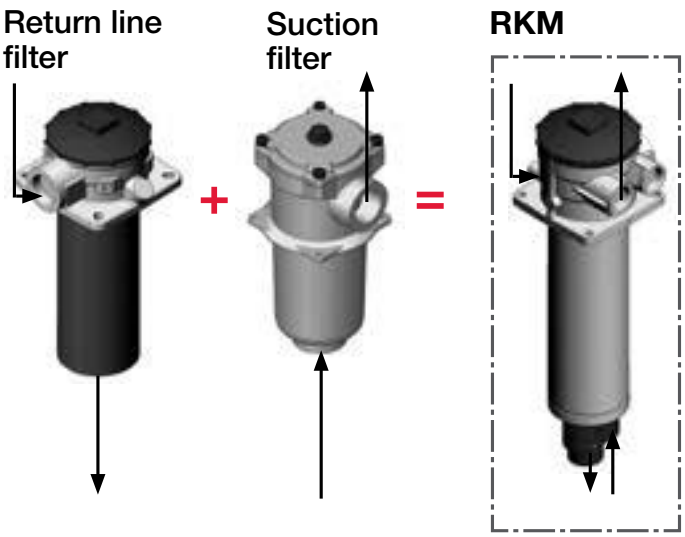
By using a HYDAC Return Line & Suction Boost Filter RKM you will benefit from:

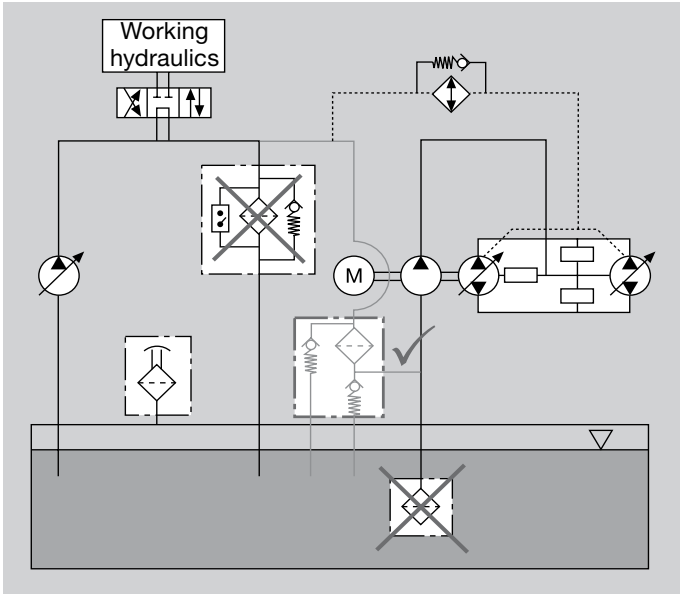
- Space saving
  Just one filter required instead of two
- Easy maintenance
  Half the time required for installation and maintenance
- Cost saving
  Lower investment, storage and service costs
- Increased operating safety
  Cavitation at the pump is reliably prevented and finely filtered oil is supplied even in the suction line.

One filter.
Two functions.
All the advantages.

The RKM combines the advantages of a return line filter with those of a suction filter in a single product!

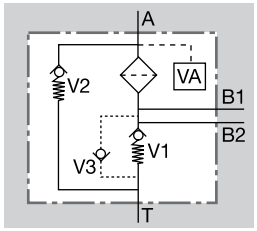
Return line & suction boost filters are particularly suitable for use in machines with two or more circuits, such as mobile working machines with hydrostatic traction drives (wheel loaders, forklifts).





Application example for the RKM in mobile machines.

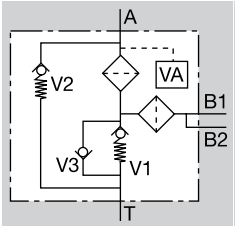
Function.



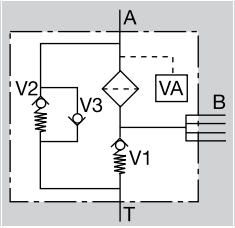
The return line flow QR is supplied to the element via one or more inlets "A". Once the element has been subjected to flow from the outside to the inside, the back-pressure valve "V1" in the element builds 0.5 bar positive pressure. Particularly in cold start conditions this positive pressure supports the suction characteristics of the pump(s) connected to “B” (e.g. boost pumps). This considerably reduces the risk of cavitation.

To ensure that the return line volume in operating conditions is always greater than the volume which is supplied on the suction side the surplus volume drains to tank via “T”. The bypass valve "V2" is fitted to relieve excessive backpressure. Part of the flow then drains directly to tank, bypassing the element. This configuration of valves ensures that only finely filtered oil reaches the suction port during operation*. The gradual increase of the valve characteristics contributes to keeping the back pressure in the return lines sufficiently low, even with high viscosity levels. With optional valve “V3”, oil can be drawn from the tank for short periods*, e.g. for initial filling and for venting.

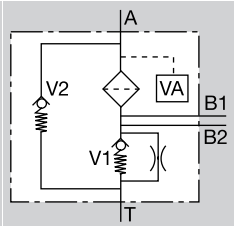
Further options:



Anti-cavitation valve* with coarse strainer
for filtered oil also in anti-cavitation mode

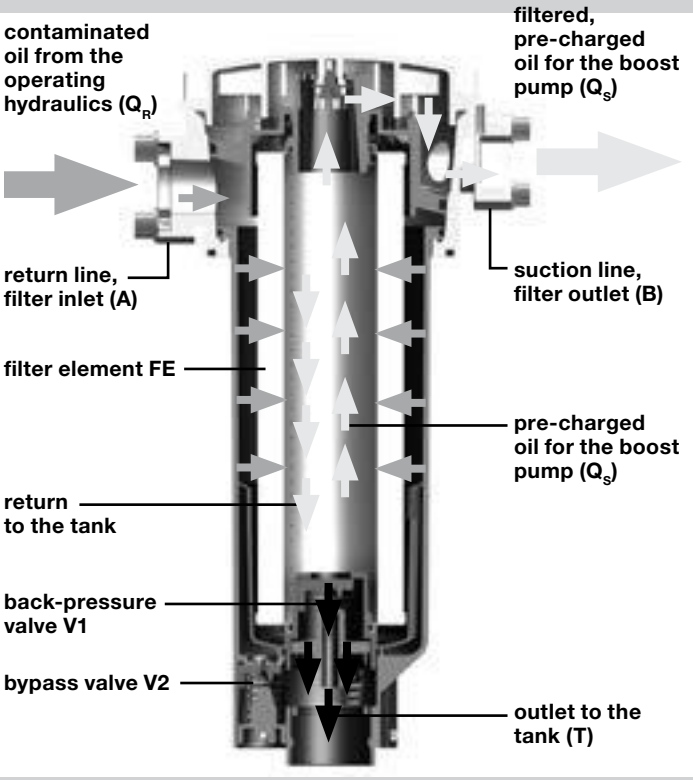


Anti-cavitation valve* in the element bypass valve “V2”
for finely filtered oil also in anti-cavitation mode



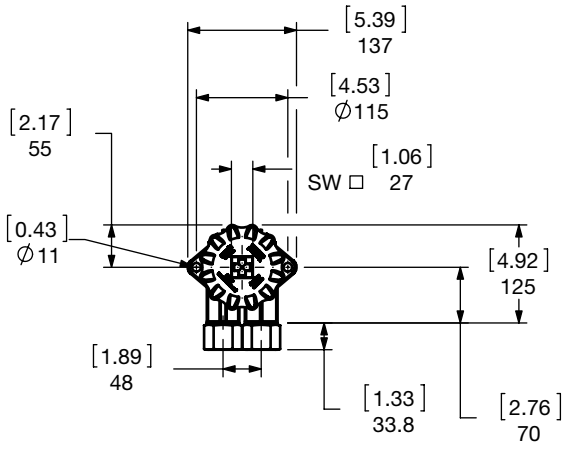
Throttle in back pressure valve “V1”
for reducing pressure and draining oil

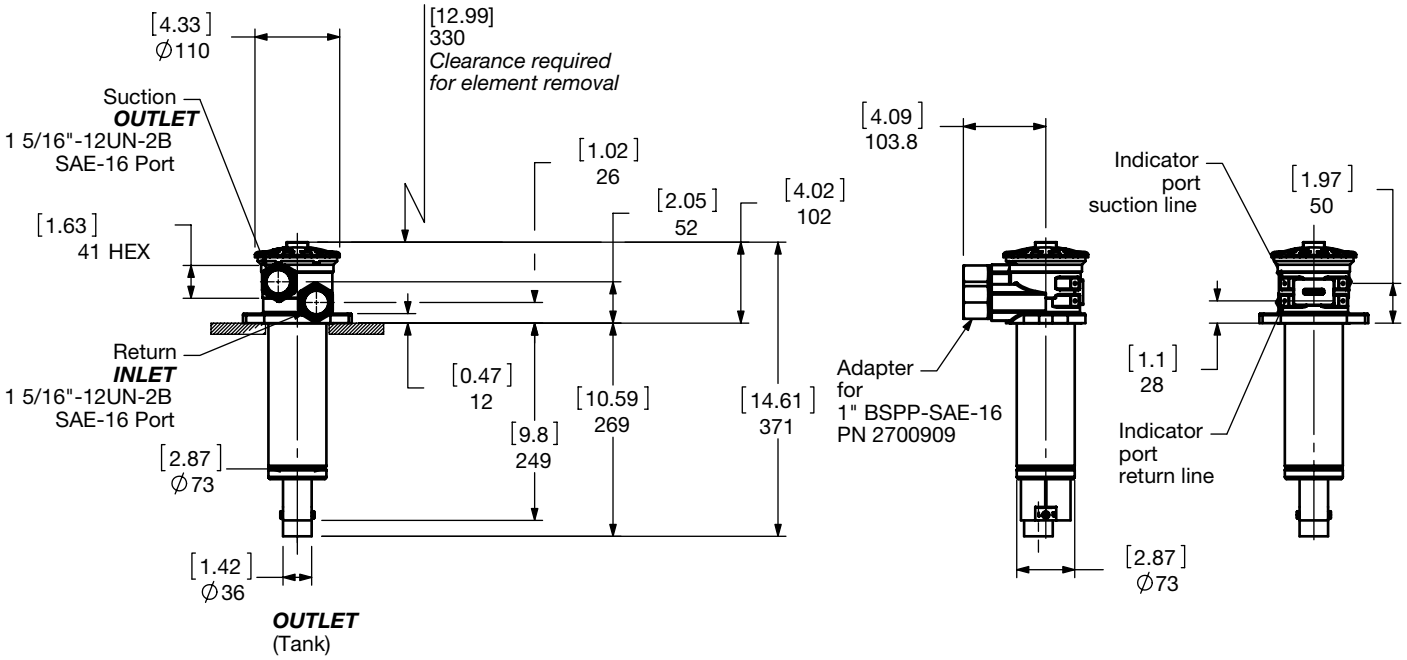
*not for RKM 355
VA = clogging indicator

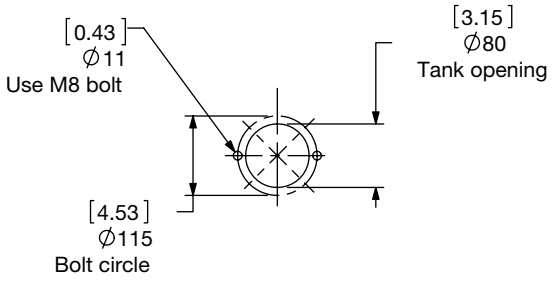


Function of the RKM.

Dimensions
RKM 100





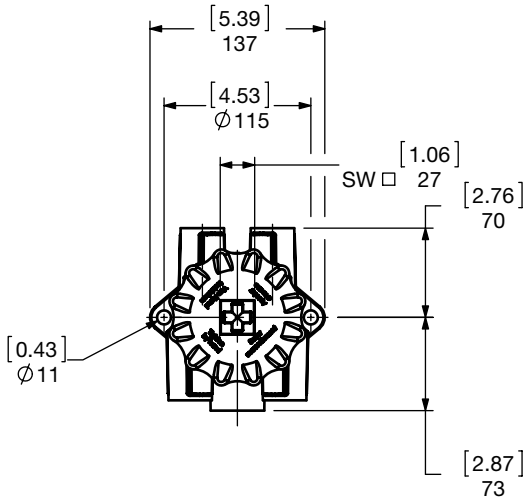


Mounting Pattern

Size	100
Weight (lbs.)	3.8

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

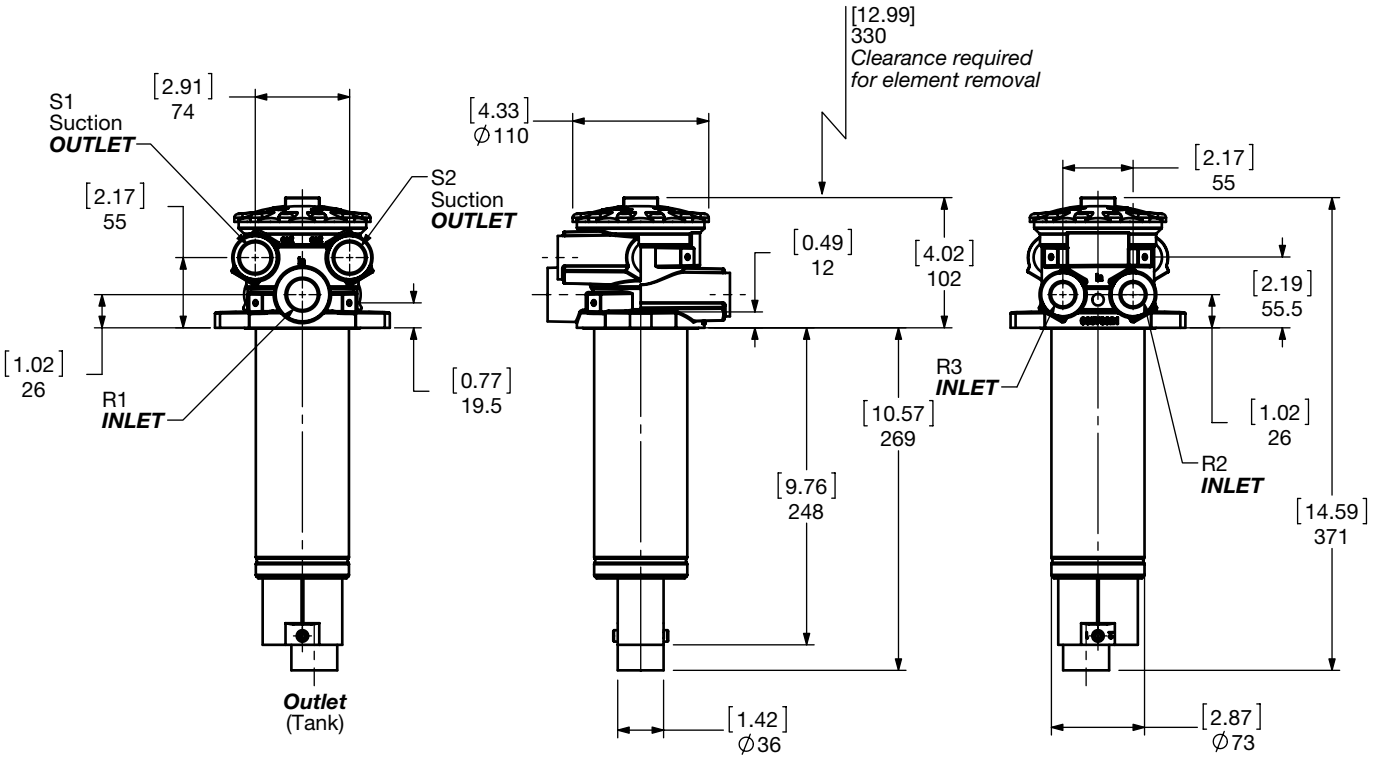
Dimensions
RKM 100 Multiport

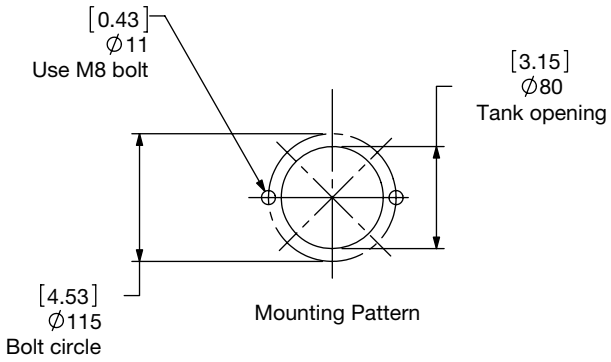


Port Configuration RKM 100 Multiport

Position in code	1	2	3	4	5
Connection	R1	R2	R3	S1	S2
SAE-8		B	B	B	B
SAE-12	C	C	C	C	C
SAE-16	D				
Port plugged	0	0	0	0	0
Special port	Z	Z	Z	Z	Z

Example: RKM MM 100 BZZ 15 W 1.0 /-CBBCC

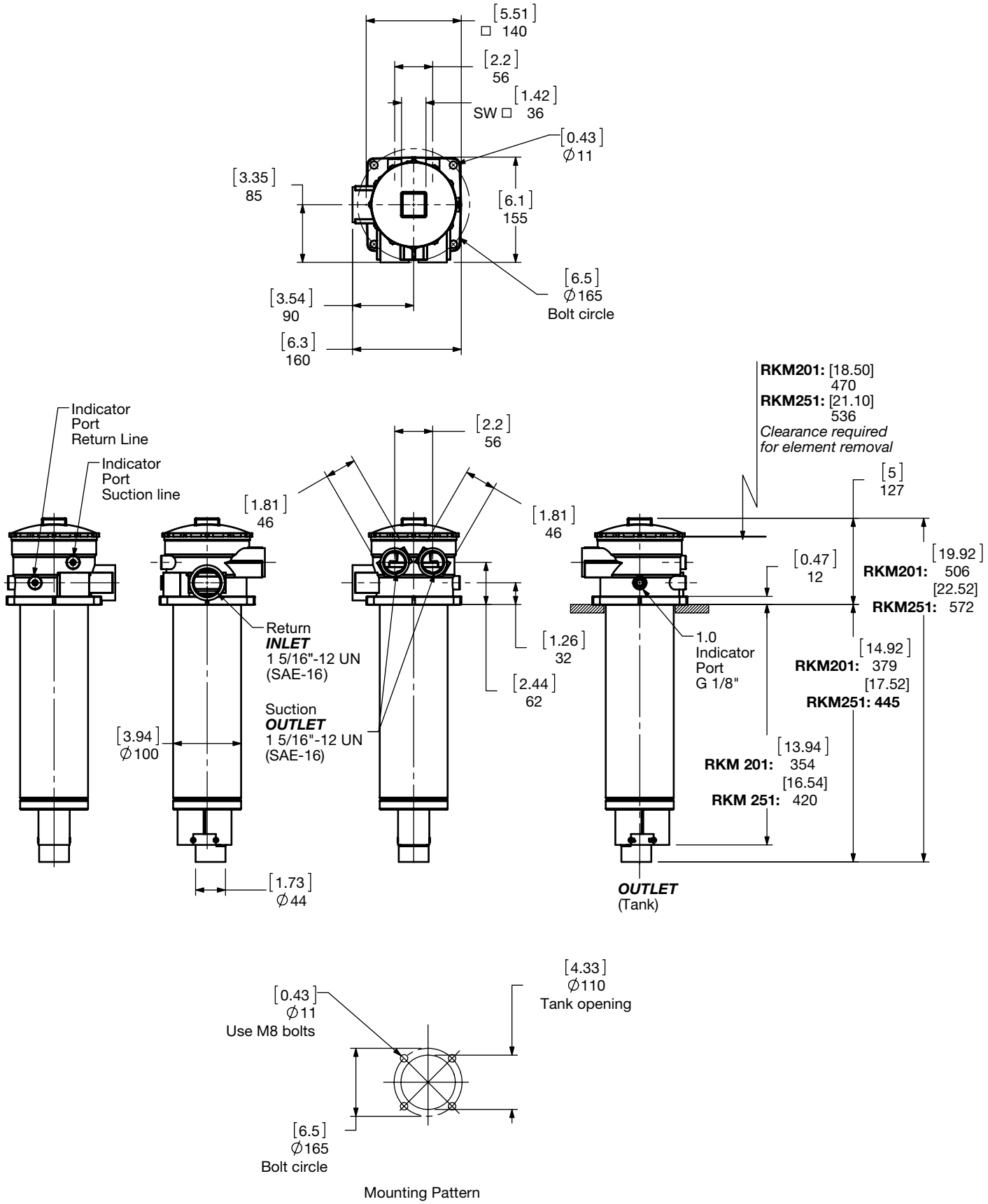




Size	100
Weight (lbs.)	4.5

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

Dimensions
RKM 201 / 251

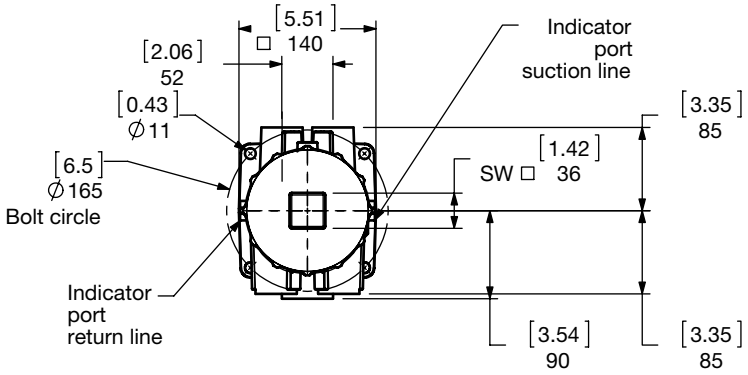


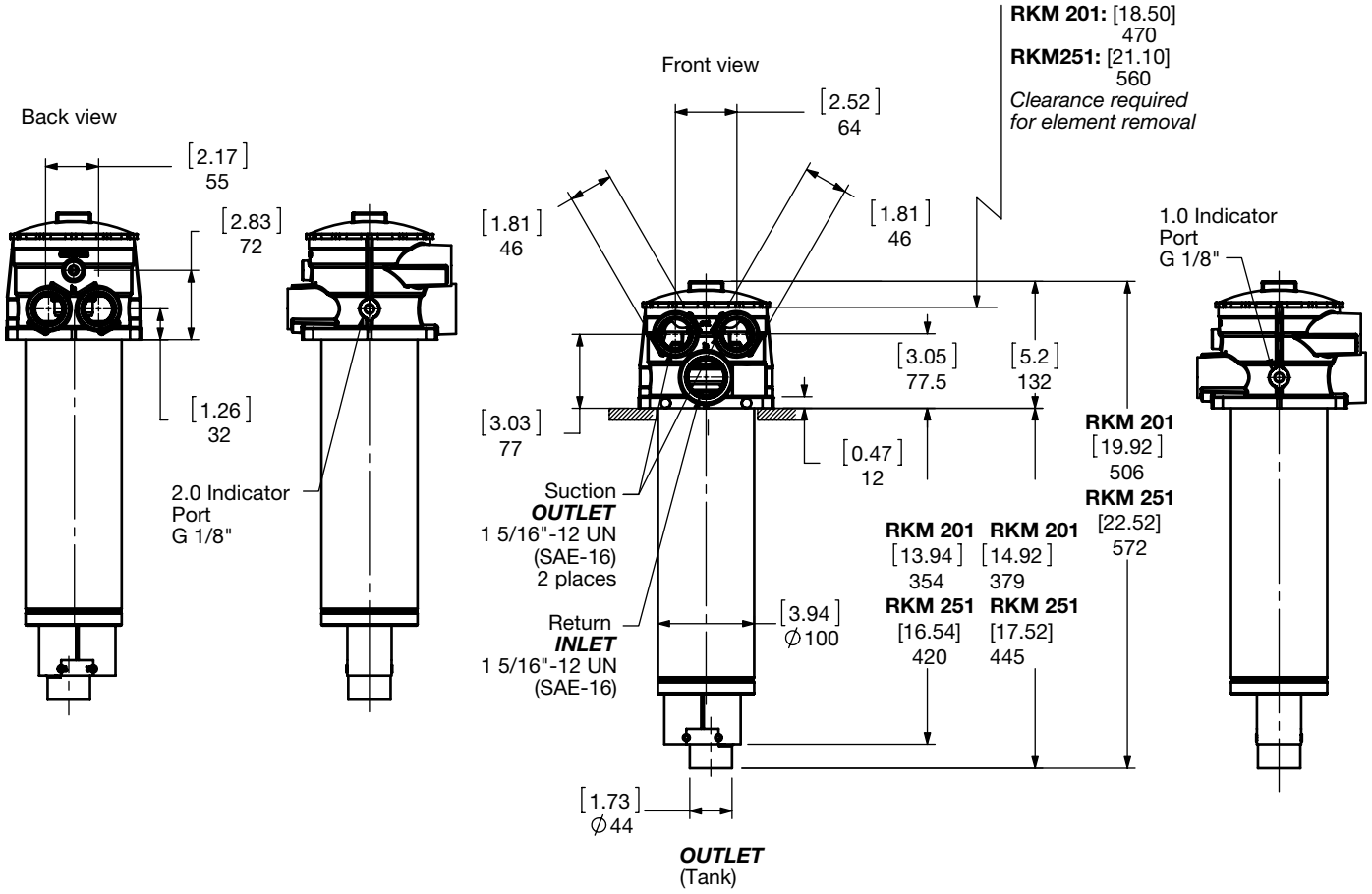
Mounting Pattern

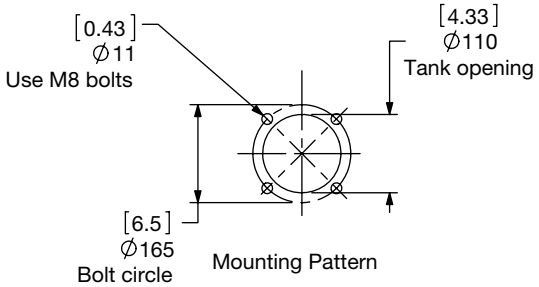
Size	201	251
Weight (lbs.)	8.2	9

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

Dimensions
RKM 201 / 251 Multiport







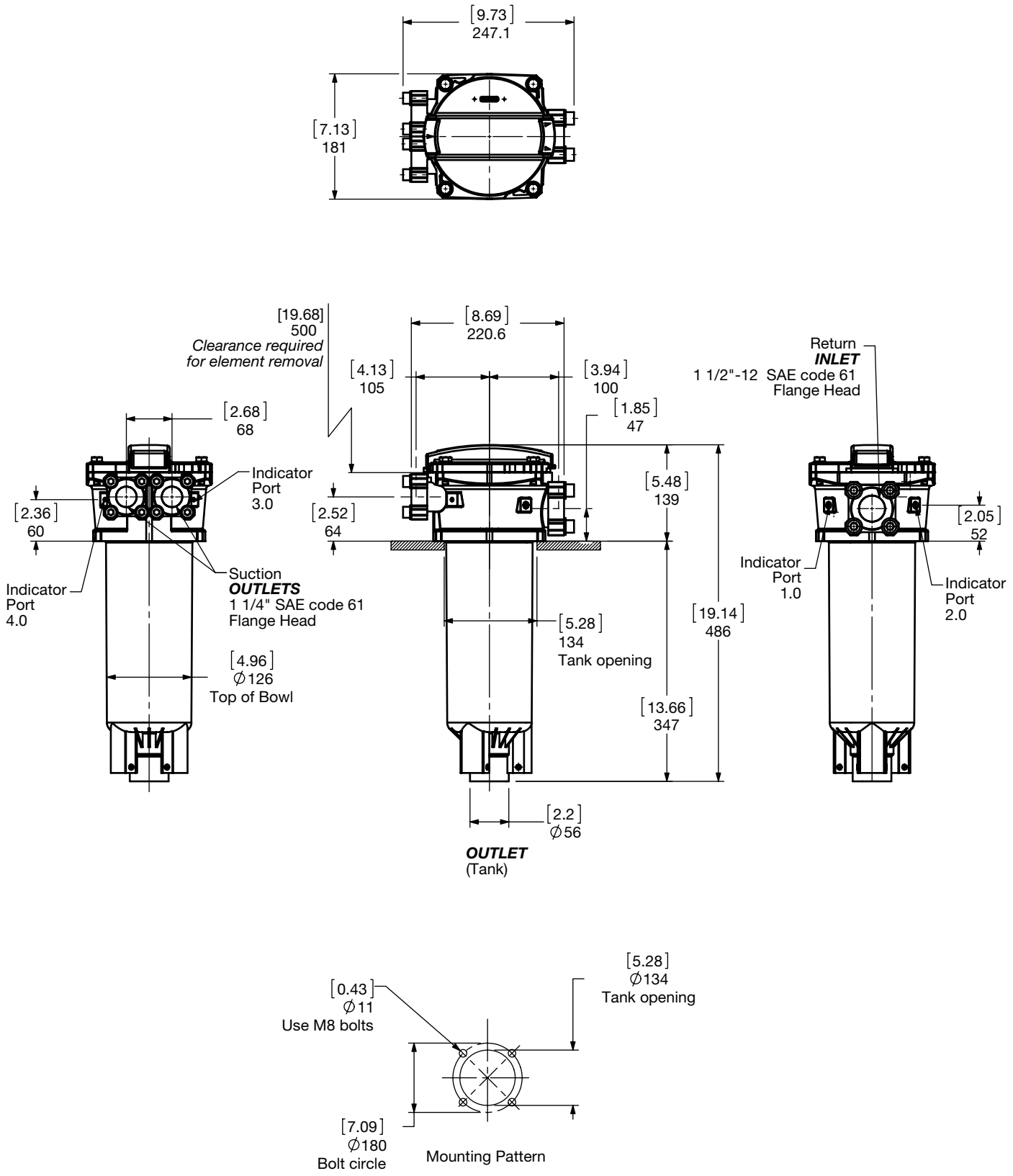
Port Configuration RKM 201 / 251 Multiport

Position in code	1	2	3	4	5
Connection	R1	R2	R3	S1	S2
SAE-12		(C)	(C)	C	C
SAE-16	D	D	D	(D)	(D)
SAE-20	(E)				
Port plugged	0	0	0	0	0
Special port	Z	Z	Z	Z	Z

Size	201	251
Weight (lbs.)	9.3	10

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

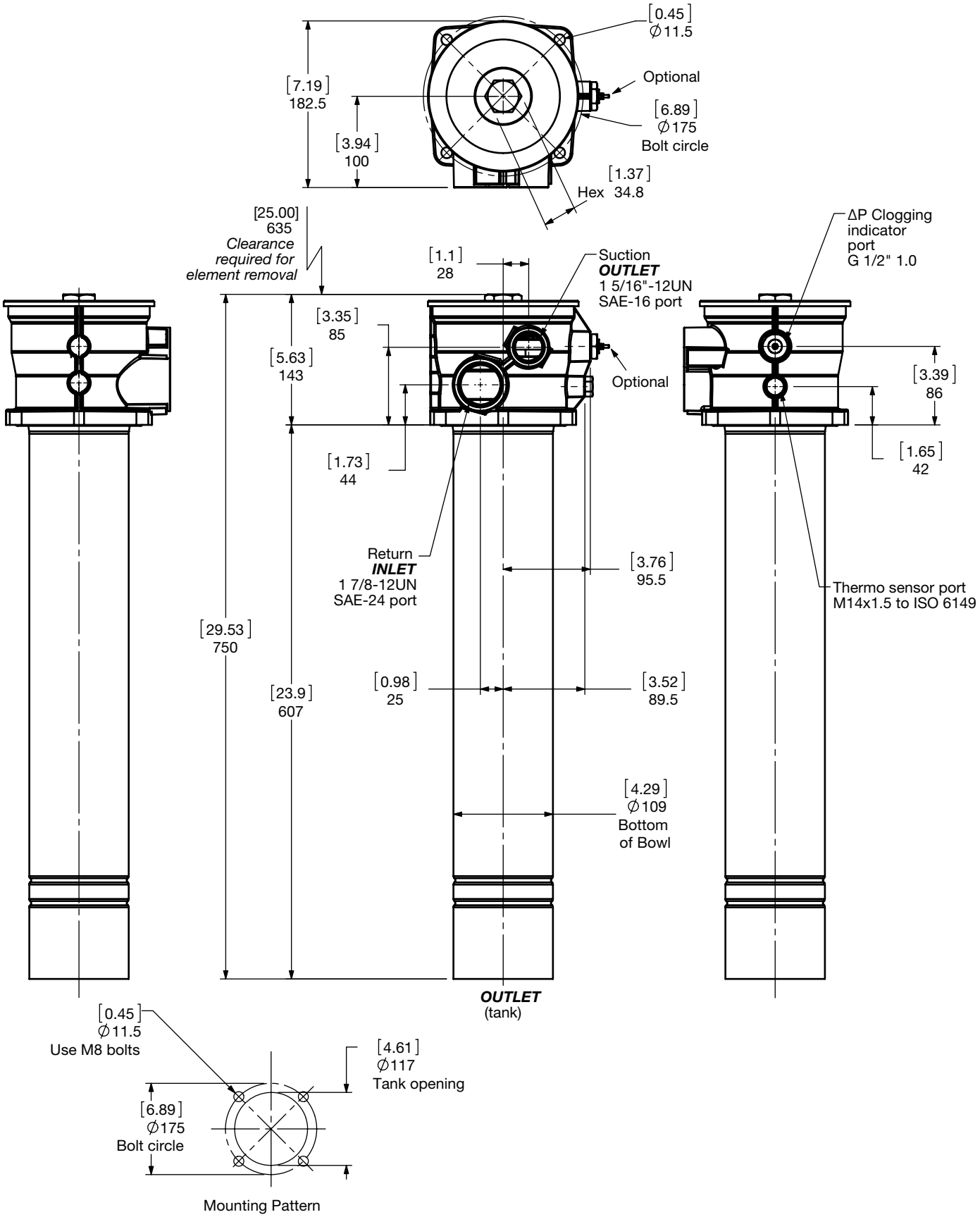
Dimensions
RKM 300



Size	300
Weight (lbs.)	10.2

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

Dimensions
RKM 350



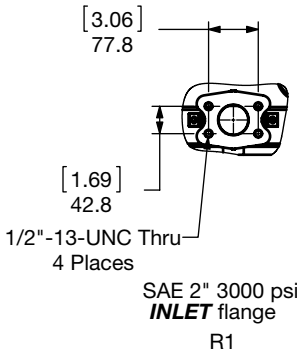
Size	350
Weight (lbs.)	13.9

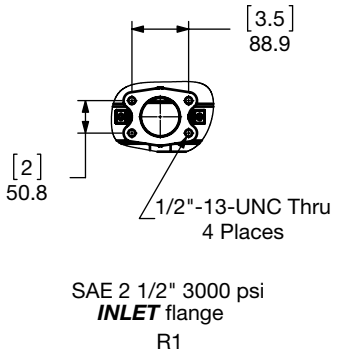
Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

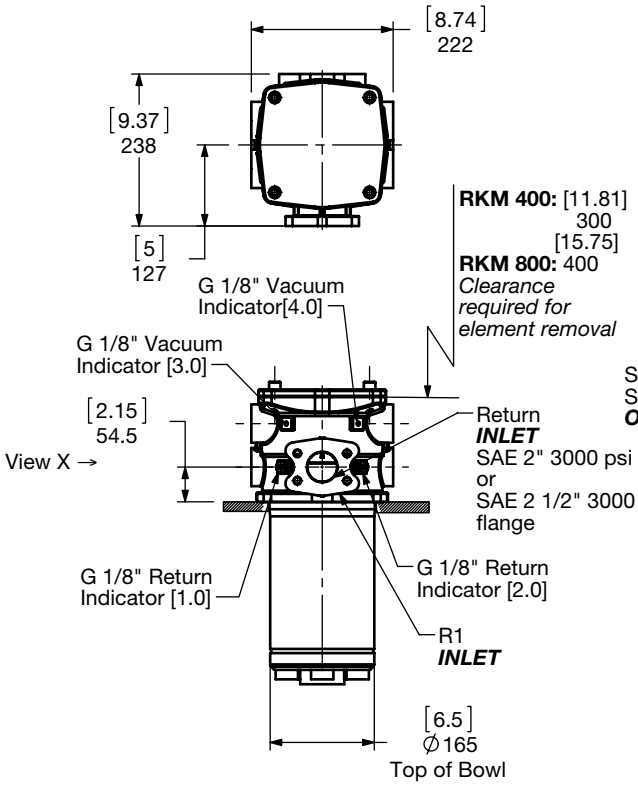
Dimensions
RKM 400 / 800

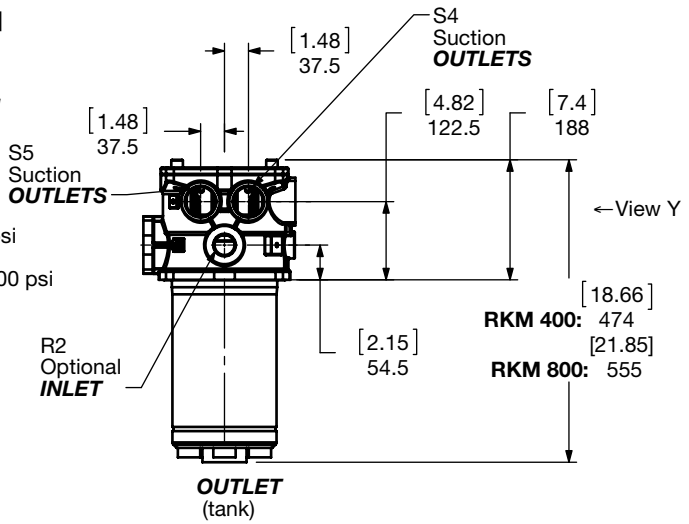
Port Configuration RKM 400 / 800

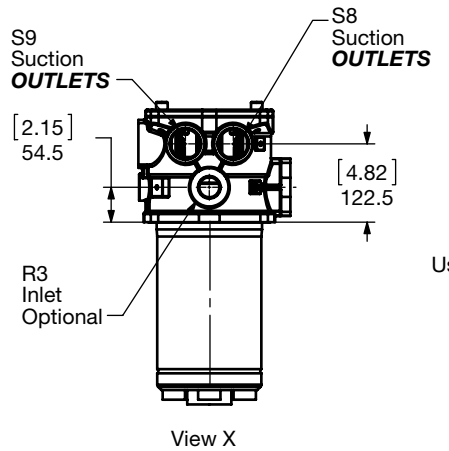
Position in code	1	2	3	4	5	6	7	8	9
Connection	R1	R2	R3	S4	S5	S6	S7	S8	S9
SAE 2” FLG	(1)								
SAE 2 1/2” FLG	2								
SAE-16		1	1	A	A	1	1	A	A
SAE-20		2	(2)	B	B	(2)	(2)	B	B
SAE-24		3	3	(C)	(C)	3	3	C	C
Port plugged		(0)	0	0	0	0	0	(0)	(0)
Special port		Z	Z	Z	Z	Z	Z	Z	Z

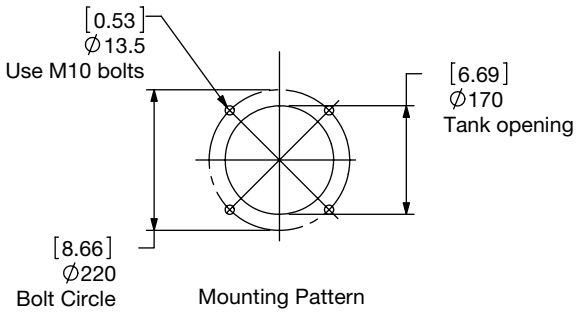


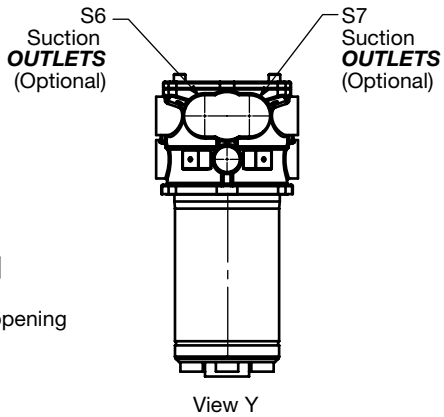












Size	400	800
Weight (lbs.)	14.4	16.6

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

Sizing Information

Total pressure loss through the filter is as follows:

Assembly ΔP = Housing ΔP + Element ΔP

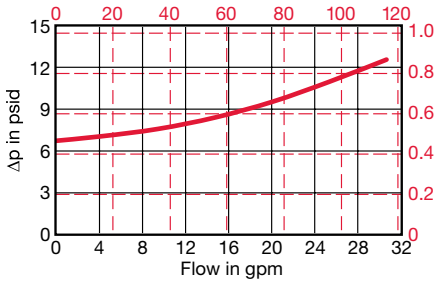
Housing Curve:

Pressure loss through housing is as follows:

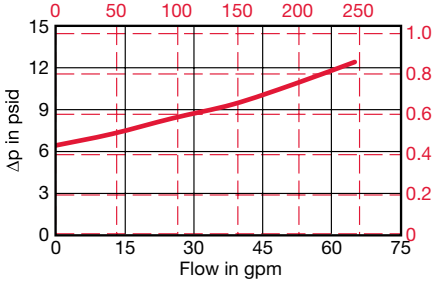
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! *(see "Sizing HYDAC Filter Assemblies" in Section B - Overview)*

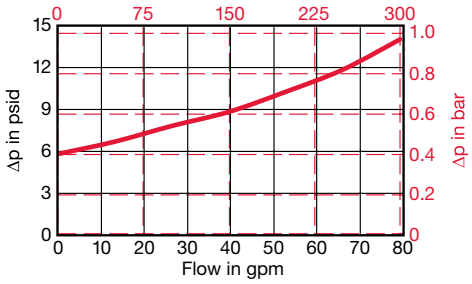
RKM 100



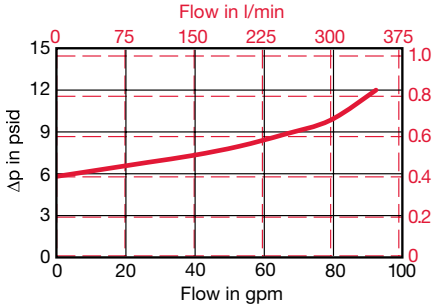
RKM 201 / 201 MP



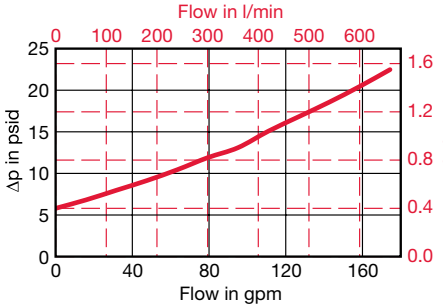
RKM 251 / 251 MP



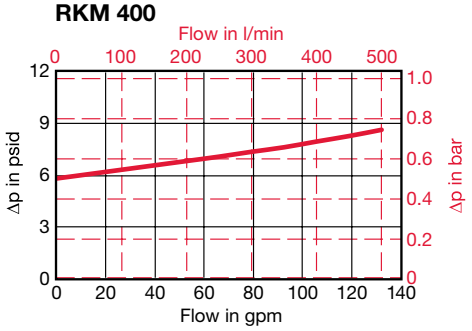
RKM 300



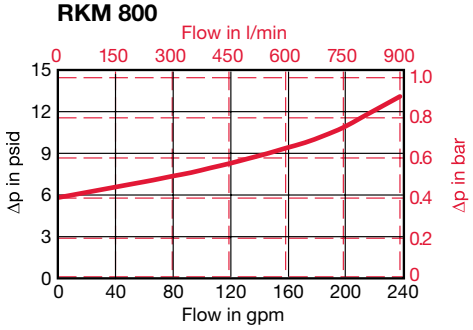
RKM 350



RKM 400



RKM 800



Element K Factors

$$\Delta P \text{ Elements} = \underset{\text{(From Tables Below)}}{\text{Elements (K) Flow Factor}} \times \text{Flow Rate (gpm)} \times \frac{\text{Actual Viscosity (SUS)}}{141 \text{ SUS}} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Mobilemicron RK	...RK...MM		
Size	8 µm	10 µm	15 µm
0100 RK XXX MM	0.095	0.095	0.061
0201 RK XXX MM	0.041	0.041	0.026
0251 RK XXX MM	0.032	0.032	0.020
0300 RK XXX MM	0.034	0.034	0.021
0350 RK XXX MM	0.016	0.016	0.011
0400 RK XXX MM	0.031	0.031	0.019
0800 RK XXX MM	0.024	0.024	0.015

All Element K Factors in psi / gpm.

Notes