



O-ring Seal Metering Orifices Print-Friendly Chart for Flow View™ Flow Indicators and ORS Manifolds

STEP 1 Determine Flow Rate in US Gallons/minute:

$$\text{US GPM} = \frac{\text{US GPA} \times \text{Speed (MPH)} \times \text{Outlet Spacing (IN)} \times \text{Conversion Factor}}{5940}$$

STEP 2 Combine the flow rates of all outlets connected to a column

US GPM x # of outlets per column

For example, flow column is split to two outlets, so flow rate is 2x US GPM rate.

STEP 3 Select the metering orifice for the desired flow rate (US GPM) and pressure (PSI) below.



e.g. #21500-V01

Conversion Factor (for liquid density)		
Weight (lbs/Gal)	Specific Gravity	Conversion Factor
7.00	0.84	0.92
8.34 (water)	1.00	1.00
9.00	1.08	1.04
10.00	1.20	1.10
10.65	1.28	1.13
11.00	1.32	1.15
12.00	1.44	1.20
14.00	1.68	1.30

Part # Number	Pressure (PSI)					
	5	10	15	20	30	40
21009-00	0.00	0.01	0.01	0.01	0.01	0.01
21011-00	0.01	0.01	0.01	0.01	0.01	0.02
21013-00	0.01	0.01	0.01	0.02	0.02	0.02
21015-00	0.01	0.01	0.02	0.02	0.03	0.03
21018-00	0.01	0.02	0.03	0.03	0.04	0.04
21500-V005	0.02	0.03	0.03	0.04	0.04	0.05
21020-00	0.02	0.03	0.03	0.04	0.05	0.05
21022-00	0.02	0.03	0.04	0.04	0.05	0.06
21500-V007	0.02	0.03	0.04	0.05	0.06	0.07
21025-00	0.03	0.04	0.05	0.06	0.07	0.08
21026-00	0.03	0.04	0.05	0.06	0.07	0.09
21027-00	0.32	0.46	0.56	0.65	0.79	0.91
21028-00	0.03	0.05	0.06	0.07	0.09	0.10
21500-V01	0.04	0.05	0.06	0.07	0.09	0.10
21029-00	0.04	0.05	0.07	0.08	0.09	0.11
21031-00	0.04	0.06	0.07	0.09	0.11	0.12
21500-V015	0.05	0.07	0.09	0.10	0.13	0.15
21035-00	0.06	0.08	0.10	0.11	0.14	0.16
21037-00	0.06	0.09	0.11	0.12	0.15	0.17
21039-00	0.07	0.10	0.12	0.13	0.17	0.19
21500-V02	0.07	0.10	0.13	0.14	0.18	0.20
21041-00	0.08	0.11	0.13	0.15	0.19	0.21
21043-00	0.08	0.12	0.14	0.16	0.20	0.23
21500-V025	0.09	0.13	0.16	0.18	0.22	0.25
21046-00	0.09	0.13	0.16	0.19	0.23	0.27
21047-00	0.10	0.14	0.17	0.19	0.24	0.27
21049-00	0.10	0.15	0.18	0.21	0.26	0.29
21500-V03	0.11	0.15	0.18	0.21	0.26	0.30

Part # Number	Pressure (PSI)					
	5	10	15	20	30	40
21051-00	0.11	0.16	0.20	0.23	0.28	0.32
21052-00	0.12	0.17	0.21	0.24	0.29	0.33
21055-00	0.13	0.19	0.23	0.27	0.33	0.38
21500-V04	0.14	0.20	0.24	0.28	0.35	0.40
21060-00	0.16	0.22	0.27	0.32	0.39	0.45
21061-00	0.16	0.23	0.29	0.33	0.40	0.47
21063-00	0.17	0.25	0.30	0.35	0.43	0.49
21500-V05	0.18	0.25	0.31	0.35	0.43	0.50
21064-00	0.18	0.25	0.31	0.36	0.44	0.51
21065-00	0.18	0.26	0.32	0.37	0.45	0.52
21067-00	0.20	0.28	0.34	0.39	0.48	0.56
21500-V06	0.21	0.30	0.37	0.42	0.52	0.60
21070-00	0.22	0.31	0.37	0.43	0.53	0.61
21073-00	0.23	0.33	0.40	0.47	0.57	0.66
21075-00	0.25	0.35	0.42	0.49	0.60	0.69
21078-00	0.27	0.39	0.47	0.54	0.67	0.77
21500-V08	0.28	0.40	0.49	0.57	0.69	0.80
21081-00	0.29	0.41	0.50	0.58	0.71	0.82
21083-00	0.32	0.45	0.55	0.64	0.78	0.90
21086-00	0.33	0.47	0.57	0.66	0.81	0.94
21089-00	0.35	0.49	0.60	0.69	0.85	0.98
21500-V10	0.35	0.50	0.61	0.71	0.87	1.00
21091-00	0.37	0.52	0.64	0.74	0.91	1.05
21093-00	0.39	0.55	0.67	0.77	0.95	1.09
21096-00	0.42	0.59	0.72	0.83	1.02	1.18
21500-V125	0.44	0.62	0.76	0.88	1.08	1.25
21102-00	0.46	0.65	0.80	0.92	1.13	1.30
21104-00	0.48	0.68	0.83	0.96	1.17	1.35

Part # Number	Pressure (PSI)					
	5	10	15	20	30	40
21107-00	0.52	0.73	0.90	1.04	1.27	1.47
21500-V15	0.53	0.75	0.92	1.06	1.30	1.50
21110-00	0.55	0.77	0.95	1.09	1.34	1.55
21113-00	0.58	0.82	1.01	1.16	1.42	1.64
21116-00	0.61	0.86	1.05	1.22	1.49	1.72
21120-00	0.63	0.89	1.09	1.26	1.54	1.78
21125-00	0.69	0.98	1.20	1.39	1.70	1.96
21500-V20	0.71	1.00	1.22	1.41	1.73	2.00
21128-00	0.72	1.02	1.25	1.45	1.77	2.04
21130-00	0.75	1.06	1.30	1.50	1.84	2.12
21136-00	0.84	1.19	1.46	1.68	2.06	2.38
21140-00	0.89	1.26	1.55	1.79	2.19	2.53
21144-00	0.93	1.31	1.61	1.85	2.27	2.62
21147-00	0.95	1.35	1.65	1.90	2.33	2.69
21150-00	1.02	1.44	1.77	2.04	2.50	2.89
21152-00	1.05	1.49	1.82	2.10	2.58	2.98
21156-00	1.10	1.55	1.90	2.20	2.69	3.11
21161-00	1.16	1.63	2.00	2.31	2.83	3.27
21166-00	1.21	1.71	2.10	2.42	2.97	3.43
21172-00	1.33	1.88	2.30	2.66	3.26	3.76
21177-00	1.41	2.00	2.45	2.83	3.46	4.00
21182-00	1.47	2.08	2.55	2.95	3.61	4.17
21187-00	1.56	2.21	2.70	3.12	3.82	4.41
21196-00	1.73	2.45	3.00	3.46	4.24	4.90
21205-00	1.87	2.65	3.25	3.75	4.59	5.30
21213-00	2.02	2.85	3.49	4.03	4.94	5.70
21218-00	2.11	2.98	3.65	4.21	5.16	5.96
21234-00	2.45	3.47	4.25	4.91	6.01	6.94
21250-00	2.83	4.00	4.90	5.66	6.93	8.00

Consult Factory for Orifice sizes/flow rates note shown.

STEP 4 Select the ball and column that best suits your application. (skip to step 5 for non-flow indicator/ORS Manifold applications)

Ball Floats*		Operational Flow Rate Ranges for Flow Indicator Columns (US gpm)		
Ball Color/Material	PART#	Ultra Low Flow Column (0.01 - 0.24 US gpm)	Low Flow Column (0.05 - 0.65 US gpm)	Standard Flow Column (0.07 - 2.7 US gpm)
Orange Polypropylene	20460-13	0.01-0.04	0.05-0.12	0.07-0.25
Green Polypropylene	20460-08	0.01-0.04	0.05-0.12	0.07-0.25
Red Celcon	20460-07	0.02-0.06	0.06-0.16	0.10-0.35
Red Glass	20460-06	0.06-0.13	0.12-0.26	0.21-0.72
1/2" Stainless Steel	20460-05	0.13-0.24	0.18-0.26	0.40-1.70
7/16" Stainless Steel	20460-10	not applicable (ball will get stuck)		1.0-2.70

*Density & Viscosity of liquid can effect operating range. In very dense liquids, balls may float.

Part Numbers for Flow Indicator Column Kits/Bodies		
Column Description	Manifold Feed Columns	Isolated Feed Columns
Ultra Low Flow Column (0.01 - 0.24 US gpm)	[Buna-N KIT] 20475-00	N/A
	[VITON® KIT] 20475-V0	
	[BODY ONLY] 20475-01	
Low Flow Column (0.05 - 0.65 US gpm)	[Buna-N KIT] 20470-00	-
	[VITON® KIT] 20470-V0	[KIT] 20475-V0
	[BODY ONLY] 20470-01	[Body] 20475-00
Standard Flow Column (0.07 - 2.7 US gpm)	[Buna-N KIT] 20460-00	-
	[VITON® KIT] 20460-V0	[KIT] 20475-V0
	[BODY ONLY] 20460-01	[Body] 20475-00

STEP 5 Select inlet and outlet fittings for each column/manifold.

Refer to Wilger pricelist for full listing of inlets/outlets available.

When picking parts for an assembly, remember:

Isolated feed assemblies require a radiallock cap for each inlet, and an ORS outlet for each column.

Manifold feed assemblies require a feed inlet (or Tee fitting), end cap(s), and an ORS outlets (per column) for each manifold.

*Kits include ball retainer, u-clip(s), O-rings (if appl.) and green PP, red celcon, red glass and 1/2" stainless steel balls.

Useful Reference Conversion Factors

To Convert US Gallons/minute on water to other solutions

1. Find weight or specific gravity of solution in the table below.
2. Multiply desired US gpm or GPA by Conversion Factor.
3. Find calculated US gpm or GPA in flow charts.

Weight of Solution	Specific Gravity	Conversion Factor
7.0 lbs/gallon	0.84	0.92
8.0 lbs/gallon	0.96	0.98
8.34 lbs/gallon (Water)	1.00	1.00
9.0 lbs/gallon	1.08	1.04
10.0 lbs/gallon	1.20	1.10
10.65 lbs/gallon (28% nitrogen)	1.28	1.13
11.0 lbs/gallon	1.32	1.15
12.0 lbs/gallon	1.44	1.20
14.0 lbs/gallon	1.68	1.30

To Convert GPA (on 20" spacing) to other outlet spacing

1. Find desired spacing in table below
2. Multiply GPA in nozzle charts by conversion factor.
3. For other nozzle spacings not listed, divide 20" by desired spacing in inches.

Desired Outlet Spacing (inches)	Conversion Factor
8"	2.50
9"	2.22
10"	2.00
12"	1.67
14"	1.43
15"	1.33
16"	1.25
18"	1.11
19"	1.05
20"	1.00
22"	0.91
24"	0.83
26"	0.77
28"	0.71
30"	0.67
32"	0.63
34"	0.59
36"	0.56
38"	0.53
40"	0.50
50"	0.40
60"	0.33

Unit Conversion Factors

Mile	=	5280 feet (ft)
		1610 meters (m)
US Gallon	=	0.83 Imperial Gallons (imp gal)
		128 fluid ounces (oz)
		4 quarts (qt)
		8 pints (pt)
		3.785 Litres (L)
Imp. Gallon	=	1.2 US Gallons
PSI	=	0.069 Bar
		6.896 Kilopascal (kPa)
US Gallons/Acre	=	9.353 Litres/Hectare (L/ha)
		2.9 oz/1000 square feet
Acre	=	43560 square feet
		4046.7 square meters
		0.405 Hectares
MPH	=	1.609 Kilometers/Hour (km/h)

Other Formulas

Broadcast Per Acre

$$\text{US gallons/minute} = \frac{\text{GPA} \times \text{MPH} \times \text{Nozzle Spacing (inches)}}{5940}$$

$$\text{US gallons/acre} = \frac{5940 \times \text{US gpm per outlet}}{\text{MPH} \times \text{Nozzle Spacing (inches)}}$$

Per 1000 ft²

$$\text{US gallons/minute} = \frac{\text{Gallons/1000 sq ft} \times \text{MPH} \times \text{Nozzle Spacing (inch)}}{136}$$

$$\text{US gallons/1000 ft}^2 = \frac{136 \times \text{GPM/Nozzle}}{\text{MPH} \times \text{Nozzle Spacing (inches)}}$$

Banding

$$\text{US Gallon/minute} = \frac{\text{US GPA} \times \text{MPH} \times \text{Band Width (inches)}}{5940}$$

For questions or other product information, contact Wilger, or visit www.wilger.net