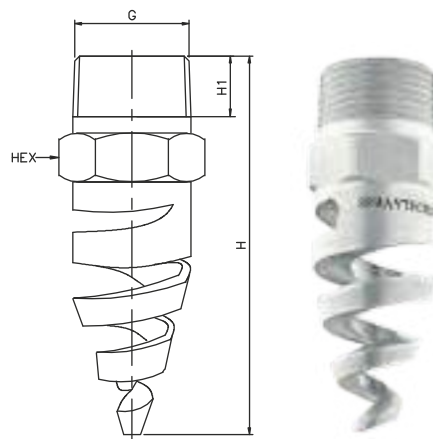


# DF Series Spiral Full Cone Spray Nozzles

**DF**

- Characteristic** : The absence of any internal parts make these nozzles non-clogging.
- Design** : One piece construction, non clogging type.
- Application** : Gas Washing, Cooling Towers , Fire Fighting Systems.
- Flow Rate** : 5 LPM TO 3410 LPM
- Pressure** : 2.0 Kg/cm<sup>2</sup> or Specified
- Spray Angle** : 60° To 180°
- End Connection** : 1/4" TO 4" BSP/ BSPT / NPT
- M.O.C.** : SS. 316, 304, BRASS, PVDF, PVC, PP, Teflon®



The helix spiral full cone nozzles combine small nozzle sizes with wide flow openings.

60° SPRAY ANGLE	CONNECTION END										ORIFICE SIZE (mm)	FLOW CAPACITY IN LPM AT DIFFERENT PRESSURE						G/A DIMENSION. MM				
	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"	3"	4"			PRESSURE [BAR]						CONN.	H	H1	HEX	
MODEL NO.	BSP	BSP	BSP	BSP	BSP	BSP	BSP	BSP	BSP	BSP		0.5	1.0	2.0	3.0	5.0	7.0	10.0				
DF14.475	●										2.4	2.37	3.36	4.75	5.82	7.51	8.89	10.62	1/4"	48	10	14
DF14.650	●										2.8	3.25	4.60	6.50	7.96	10.28	12.16	14.53	Weight (Metals) = 27.0 gms. Approx			
DF14.800	●										3.1	4.00	5.66	8.00	9.80	12.65	14.97	17.89	3/8"	58	10	17
DF24.100	●	●									3.5	5.00	7.07	10.00	12.25	15.81	18.71	22.36	Weight (Metals) = 53.7 gms. Approx			
DF24.125	●	●									3.9	6.25	8.84	12.50	15.31	19.76	23.39	27.95	1/2"	76	13.2	22
DF24.160	●	●									4.4	8.00	11.31	16.00	19.60	25.30	29.93	35.78	Weight (Metals) = 80.0 gms. Approx			
DF24.180	●	●									4.6	9.00	12.73	18.00	22.05	28.46	33.67	40.25	3/4"	86	14.5	27
DF24.200	●	●									4.9	10.00	14.14	20.00	24.49	31.62	37.42	44.72	Weight (Metals) = 170.0 gms. Approx			
DF24.225		●									5.2	11.25	15.91	22.50	27.56	35.58	42.09	50.31	1"	108	16.8	36
DF24.250		●									5.5	12.50	17.68	25.00	30.62	39.53	46.77	55.90	Weight (Metals) = 323.0 gms. Approx			
DF24.320		●									6.2	16.00	22.63	32.00	39.19	50.60	59.87	71.55	1 1/2"	138	19.1	51
DF24.400		●									7.0	20.00	28.28	40.00	48.99	63.25	74.83	89.44	Weight (Metals) = 634.0 gms. Approx			
DF24.520		●									7.9	26.00	36.77	52.00	63.69	82.22	97.28	116.28	2"	148	23.4	64
DF24.650			●								8.9	32.5	45.96	65.00	79.61	102.77	121.60	145.34	Weight (Metals) = XX gms. Approx			
DF24.800			●								9.8	40.00	56.57	80.00	97.98	126.49	149.67	178.89	3"	216	29.8	89
DF34.100			●								11.0	50.00	70.71	100.0	122.47	158.11	187.08	223.61	Weight (Metals) = XX gms. Approx			
DF34.118			●								12.0	59.00	83.44	118.0	144.52	186.57	220.76	263.86				
DF34.130				●							12.6	65.00	91.92	130.0	159.22	205.55	243.21	290.69				
DF34.160				●							13.9	80.00	113.14	160.0	195.96	252.98	299.33	357.77				
DF34.200					●						15.6	100	141.42	200.0	244.95	316.23	374.17	447.21				
DF34.227					●						16.6	113.5	160.51	227.0	278.02	358.92	424.68	507.59				
DF34.250					●						17.4	125	176.78	250.0	306.19	395.19	467.71	559.02				
DF34.300					●						19.0	150	212.13	300	367.42	474.34	561.25	670.82				
DF34.337					●						20.2	168.5	238.29	337.0	412.74	532.84	630.47	753.55				
DF34.400						●					22.0	200	282.84	400.0	489.90	632.46	748.33	894.43				
DF34.500						●					24.6	250	353.55	500.0	612.37	790.57	935.41	1118.03				
DF34.625						●					27.5	312.5	441.94	625.0	765.47	988.21	1169.27	1397.54				
DF34.710						●					29.3	355	502.05	710.0	869.57	1122.61	1328.29	1587.61				
DF34.800						●					31.1	400	565.69	800.0	979.80	1264.91	1496.66	1788.85				
DF44.1000							●				34.8	500	707.11	1000	1224.74	1581.14	1870.83	2236.07				
DF44.1250							●				38.9	625	883.88	1250	1530.93	1976.42	2338.54	2795.08				
DF46.1600								●			44.0	800	1131	1600	1959.59	2529.82	2993.33	3577.71				
DF44.2000									●		49.2	1000	1414	2000	2449.49	3162.28	3741.66	4472.14				
DF44.2500									●		55.1	1250	1767	2500	3061.86	3952.85	4677.07	5590.17				
DF46.3125									●		61.6	1562.5	2209	3125	3827.33	4941.06	5846.34	6987.71				

End Connection : X – BSP, Y - BSPT, Z – NPT Available.

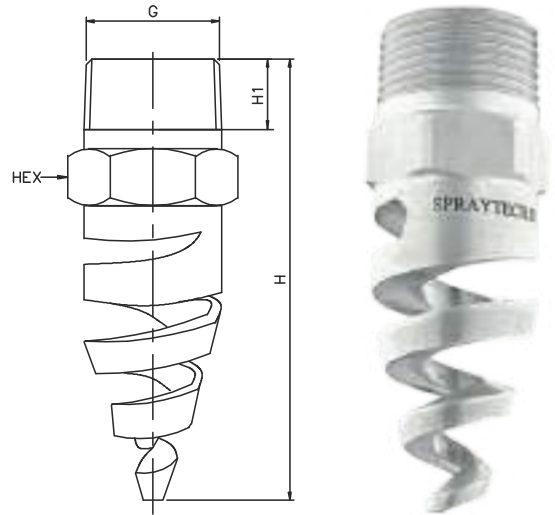
# DF Series Spiral Full Cone Spray Nozzles

90° SPRAY ANGLE	CONNECTION END										FLOW CAPACITY IN LPM AT DIFFERENT PRESSURE							G/A DIMENSION. MM			
	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"	3"	4"	ORIFICE SIZE (mm)	PRESSURE [BAR]							CONN.	H	H1	HEX
MODEL NO.	BSP	BSP	BSP	BSP	BSP	BSP	BSP	BSP	BSP		0.5	1.0	2.0	3.0	5.0	7.0	10.0				
DF16.475	●									2.4	2.37	3.36	4.75	5.82	7.51	8.89	10.62	1/4"	48	10	14
DF16.650	●									2.8	3.25	4.60	6.50	7.96	10.28	12.16	14.53	Weight (Metals) = 27.0 gms. Approx			
DF16.800	●									3.1	4.00	5.66	8.00	9.80	12.65	14.97	17.89	3/8"	58	10	17
DF26.100	●	●								3.5	5.00	7.07	10.00	12.25	15.81	18.71	22.36	Weight (Metals) = 53.7 gms. Approx			
DF26.125	●	●	●							3.9	6.25	8.84	12.50	15.31	19.76	23.39	27.95	1/2"	76	13.2	22
DF26.160	●	●	●	●						4.4	8.00	11.31	16.00	19.60	25.30	29.93	35.78	Weight (Metals) = 80.0 gms. Approx			
DF26.180	●	●	●	●	●					4.6	9.00	12.73	18.00	22.05	28.46	33.67	40.25	3/4"	86	14.5	27
DF26.200	●	●	●	●	●	●				4.9	10.00	14.14	20.00	24.49	31.62	37.42	44.72	Weight (Metals) = 170.0 gms. Approx			
DF26.225	●	●	●	●	●	●	●			5.2	11.25	15.91	22.50	27.56	35.58	42.09	50.31	1"	108	16.8	36
DF26.250	●	●	●	●	●	●	●	●		5.5	12.50	17.68	25.00	30.62	39.53	46.77	55.90	Weight (Metals) = 323.0 gms. Approx			
DF26.320	●	●	●	●	●	●	●	●	●	6.2	16.00	22.63	32.00	39.19	50.60	59.87	71.55	1 1/2"	138	19.1	51
DF26.400	●	●	●	●	●	●	●	●	●	7.0	20.00	28.28	40.00	48.99	63.25	74.83	89.44	Weight (Metals) = 634.0 gms. Approx			
DF26.520	●	●	●	●	●	●	●	●	●	7.9	26.00	36.77	52.00	63.69	82.22	97.28	116.28	2"	148	23.4	64
DF26.650	●	●	●	●	●	●	●	●	●	8.9	32.5	45.96	65.00	79.61	102.77	121.60	145.34	Weight (Metals) = XX gms. Approx			
DF26.800	●	●	●	●	●	●	●	●	●	9.8	40.00	56.57	80.00	97.98	126.49	149.67	178.89	3"	216	29.8	89
DF36.100	●	●	●	●	●	●	●	●	●	11.0	50.00	70.71	100.0	122.47	158.11	187.08	223.61	Weight (Metals) = XX gms. Approx			
DF36.118	●	●	●	●	●	●	●	●	●	12.0	59.00	83.44	118.0	144.52	186.57	220.76	263.86				
DF36.130	●	●	●	●	●	●	●	●	●	12.6	65.00	91.92	130.0	159.22	205.55	243.21	290.69				
DF36.160	●	●	●	●	●	●	●	●	●	13.9	80.00	113.14	160.0	195.96	252.98	299.33	357.77				
DF36.200	●	●	●	●	●	●	●	●	●	15.6	100	141.42	200.0	244.95	316.23	374.17	447.21				
DF36.227	●	●	●	●	●	●	●	●	●	16.6	113.5	160.51	227.0	278.02	358.92	424.68	507.59				
DF36.250	●	●	●	●	●	●	●	●	●	17.4	125	176.78	250.0	306.19	395.19	467.71	559.02				
DF36.300	●	●	●	●	●	●	●	●	●	19.0	150	212.13	300	367.42	474.34	561.25	670.82				
DF36.337	●	●	●	●	●	●	●	●	●	20.2	168.5	238.29	337.0	412.74	532.84	630.47	753.55				
DF36.400	●	●	●	●	●	●	●	●	●	22.0	200	282.84	400.0	489.90	632.46	748.33	894.43				
DF36.500	●	●	●	●	●	●	●	●	●	24.6	250	353.55	500.0	612.37	790.57	935.41	1118.03				
DF36.625	●	●	●	●	●	●	●	●	●	27.5	312.5	441.94	625.0	765.47	988.21	1169.27	1397.54				
DF36.710	●	●	●	●	●	●	●	●	●	29.3	355	502.05	710.0	869.57	1122.61	1328.29	1587.61				
DF36.800	●	●	●	●	●	●	●	●	●	31.1	400	565.69	800.0	979.80	1264.91	1496.66	1788.85				
DF46.1000	●	●	●	●	●	●	●	●	●	34.8	500	707.11	1000	1224.74	1581.14	1870.83	2236.07				
DF46.1250	●	●	●	●	●	●	●	●	●	38.9	625	883.88	1250	1530.93	1976.42	2338.54	2795.08				
DF46.1600	●	●	●	●	●	●	●	●	●	44.0	800	1131	1600	1959.59	2529.82	2993.33	3577.71				
DF46.2000	●	●	●	●	●	●	●	●	●	49.2	1000	1414	2000	2449.49	3162.28	3741.66	4472.14				
DF46.2500	●	●	●	●	●	●	●	●	●	55.1	1250	1767	2500	3061.86	3952.85	4677.07	5590.17				
DF46.3125	●	●	●	●	●	●	●	●	●	61.6	1562.5	2209	3125	3827.33	4941.06	5846.34	6987.71				

120° SPRAY ANGLE	CONNECTION END										FLOW CAPACITY IN LPM AT DIFFERENT PRESSURE							G/A DIMENSION. MM			
	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"	3"	4"	ORIFICE SIZE (mm)	PRESSURE [BAR]							CONN.	H	H1	HEX
MODEL NO.	BSP	BSP	BSP	BSP	BSP	BSP	BSP	BSP	BSP		0.5	1.0	2.0	3.0	5.0	7.0	10.0				
DF18.475	●									2.4	2.37	3.36	4.75	5.82	7.51	8.89	10.62	1/4"	48	10	14
DF18.650	●									2.8	3.25	4.60	6.50	7.96	10.28	12.16	14.53	Weight (Metals) = XX gms. Approx			
DF18.800	●									3.1	4.00	5.66	8.00	9.80	12.65	14.97	17.89	3/8"	58	10	17
DF28.100	●	●								3.5	5.00	7.07	10.00	12.25	15.81	18.71	22.36	Weight (Metals) = XX gms. Approx			
DF28.125	●	●	●							3.9	6.25	8.84	12.50	15.31	19.76	23.39	27.95	1/2"	76	13.2	22
DF28.160	●	●	●	●						4.4	8.00	11.31	16.00	19.60	25.30	29.93	35.78	Weight (Metals) = XX gms. Approx			
DF28.180	●	●	●	●	●					4.6	9.00	12.73	18.00	22.05	28.46	33.67	40.25	3/4"	86	14.5	27
DF28.200	●	●	●	●	●	●				4.9	10.00	14.14	20.00	24.49	31.62	37.42	44.72	Weight (Metals) = XX gms. Approx			
DF28.225	●	●	●	●	●	●	●			5.2	11.25	15.91	22.50	27.56	35.58	42.09	50.31	1"	108	16.8	36
DF28.250	●	●	●	●	●	●	●	●		5.5	12.50	17.68	25.00	30.62	39.53	46.77	55.90	Weight (Metals) = XX gms. Approx			
DF28.320	●	●	●	●	●	●	●	●	●	6.2	16.00	22.63	32.00	39.19	50.60	59.87	71.55	1 1/2"	138	19.1	51
DF28.400	●	●	●	●	●	●	●	●	●	7.0	20.00	28.28	40.00	48.99	63.25	74.83	89.44	Weight (Metals) = XX gms. Approx			
DF28.520	●	●	●	●	●	●	●	●	●	7.9	26.00	36.77	52.00	63.69	82.22	97.28	116.28	2"	148	23.4	64
DF28.650	●	●	●	●	●	●	●	●	●	8.9	32.5	45.96	65.00	79.61	102.77	121.60	145.34	Weight (Metals) = XX gms. Approx			
DF28.800	●	●	●	●	●	●	●	●	●	9.8	40.00	56.57	80.00	97.98	126.49	149.67	178.89	3"	216	29.8	89
DF38.100	●	●	●	●	●	●	●	●	●	11.0	50.00	70.71	100.0	122.47	158.11	187.08	223.61	Weight (Metals) = XX gms. Approx			
DF38.118	●	●	●	●	●	●	●	●	●	12.0	59.00	83.44	118.0	144.52	186.57	220.76	263.86				
DF38.130	●	●	●	●	●	●	●	●	●	12.6	65.00	91.92	130.0	159.22	205.55	243.21	290.69				
DF38.160	●	●	●	●	●	●	●	●	●	13.9	80.00	113.14	160.0	195.96	252.98	299.33	357.77				
DF38.200	●	●	●	●	●	●	●	●	●	15.6	100	141.42	200.0	244.95	316.23	374.17	447.21				
DF38.227	●	●	●	●	●	●	●	●	●	16.6	113.5	160.51	227.0	278.02	358.92	424.68	507.59				
DF38.250	●	●	●	●	●	●	●	●	●	17.4	125	176.78	250.0	306.19	395.19	467.71	559.02				
DF38.300	●	●	●	●	●	●	●	●	●	19.0	150	212.13	300	367.42	474.34	561.25	670.82				
DF38.337	●	●	●	●	●	●	●	●	●	20.2	168.5	238.29	337.0	412.74	532.84	630.47	753.55				
DF38.400	●	●	●	●	●	●	●	●	●	22.0	200	282.84	400.0	489.90	632.46	748.33	894.43				
DF38.500	●	●	●	●	●	●	●	●	●	24.6	250	353.55	500.0	612.37	790.57	935.41	1118.03				
DF38.625	●	●	●	●	●	●	●	●	●	27.5	312.5	441.94	625.0	765.47	988.21	1169.27	1397.54				
DF38.710	●	●	●	●	●	●	●	●	●	29.3	355	502.05	710.0	869.57	1122.61	1328.29	1587.61				
DF38.800	●	●	●	●	●	●	●	●	●	31.1	400	565.69	800.0	979.80	1264.91	1496.66	1788.85				
DF48.1000	●	●	●	●	●	●	●	●	●	34.8	500	707.11	1000	1224.74	1581.14	1870.83	2236.07				
DF48.1250	●	●	●	●	●	●	●	●	●	38.9	625	883.88	1250	1530.93	1976.42	2338.54	2795.08				
DF48.1600	●	●	●	●	●	●	●	●	●	44.0	800	1131	1600	1959.59	2529.82	2993.33	3577.71				
DF48.2000	●	●	●	●	●	●	●	●	●	49.2	1000	1414	2000	2449.49	3162.28	3741.66	4472.14			</	

# DF Series Spiral Full Cone Spray Nozzles

- Characteristic** : Absence of any internal parts make these nozzles non-clogging.
- Design** : One piece construction, non clogging type.
- Application** : Gas Scrubbing, Washing, Cooling Towers , Fire Fighting Systems.
- Flow Rate** : 5 LPM TO 3410 LPM
- Pressure** : 2.0 Kg/cm<sup>2</sup> or Specified
- Spray Angle** : 60° To 180°
- End Connection** : 1/4" TO 4" BSP/ BSPT / NPT
- M.O.C.** : SS. 316, 304, BRASS, PVDF, PVC, PP, Teflon®



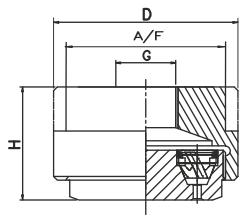
180° SPRAY ANGLE	CONNECTION END							ORIFICE SIZE (mm)	FLOW CAPACITY IN LPM AT DIFFERENT PRESSURE							G/A DIMENSION. MM			
	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"		PRESSURE [BAR]							CONN.	H	H1	HEX
MODEL NO.	BSP	BSP	BSP	BSP	BSP	BSP	BSP	0.5	1.0	2.0	3.0	5.0	7.0	10.0	1/4"	1/2"	3/4"	1"	
DF19.475	●							2.4	2.37	3.36	4.75	5.82	7.51	8.89	10.62				
DF19.650	●							2.8	3.25	4.60	6.50	7.96	10.28	12.16	14.53				
DF19.800	●							3.1	4.00	5.66	8.00	9.80	12.65	14.97	17.89				
DF29.100	●	●						3.5	5.00	7.07	10.00	12.25	15.81	18.71	22.36				
DF29.125	●	●						3.9	6.25	8.84	12.50	15.31	19.76	23.39	27.95				
DF29.160	●	●						4.4	8.00	11.31	16.00	19.60	25.30	29.93	35.78				
DF29.180	●	●						4.6	9.00	12.73	18.00	22.05	28.46	33.67	40.25				
DF29.200	●	●						4.9	10.00	14.14	20.00	24.49	31.62	37.42	44.72				
DF29.225		●						5.2	11.25	15.91	22.50	27.56	35.58	42.09	50.31				
DF29.250		●						5.5	12.50	17.68	25.00	30.62	39.53	46.77	55.90				
DF29.320		●						6.2	16.00	22.63	32.00	39.19	50.60	59.87	71.55				
DF29.400		●						7.0	20.00	28.28	40.00	48.99	63.25	74.83	89.44				
DF29.520		●						7.9	26.00	36.77	52.00	63.69	82.22	97.28	116.28				
DF29.650			●					8.9	32.5	45.96	65.00	79.61	102.77	121.60	145.34				
DF29.800			●					9.8	40.00	56.57	80.00	97.98	126.49	149.67	178.89				
DF39.100			●					11.0	50.00	70.71	100.0	122.47	158.11	187.08	223.61				
DF39.118			●					12.0	59.00	83.44	118.0	144.52	186.57	220.76	263.86				
DF39.130				●				12.6	65.00	91.92	130.0	159.22	205.55	243.21	290.69				
DF39.160				●				13.9	80.00	113.14	160.0	195.96	252.98	299.33	357.77				
DF39.200					●			15.6	100	141.42	200.0	244.95	316.23	374.17	447.21				
DF39.227					●			16.6	113.5	160.51	227.0	278.02	358.92	424.68	507.59				
DF39.250					●			17.4	125	176.78	250.0	306.19	395.19	467.71	559.02				
DF39.300					●			19.0	150	212.13	300.0	367.42	474.34	561.25	670.82				
DF39.337					●			20.2	168.5	238.29	337.0	412.74	532.84	630.47	753.55				
DF39.400						●		22.0	200	282.84	400.0	489.90	632.46	748.33	894.43				
DF39.500						●		24.6	250	353.55	500.0	612.37	790.57	935.41	1118.03				
DF39.625						●		27.5	312.5	441.94	625.0	765.47	988.21	1169.27	1397.54				
DF39.710							●	29.3	355	502.05	710.0	869.57	1122.61	1328.29	1587.61				
DF39.800							●	31.1	400	565.69	800.0	979.80	1264.91	1496.66	1788.85				
DF49.1000							●	34.8	500	707.11	1000	1224.74	1581.14	1870.83	2236.07				
DF49.1250							●	38.9	625	883.88	1250	1530.93	1976.42	2338.54	2795.08				

End Connection : X – BSP, Y - BSPT, Z – NPT Available.

# DG Series Multiple Full Cone Spray Nozzles



Multiple spray nozzles, consisting of seven fine atomizing hollow cone nozzles, provide a fog-like full cone pattern with relatively high flow volumes. The overlapping hollow cone nozzles produce a 130° full cone spray pattern of very fine droplets that cannot be achieved by a single orifice spray nozzle of the same flow rate size. The resulting increased droplet surface area of the atomized liquid provides greater efficiency in gas treatment and cooling application ideal for reaction towers which do not use packing.



**Spray Angle 75°**

**Characteristic :**

This type of nozzle gives fine atomization with the aid of several hollow cones spraying into one another.

**Applications :**

- Cooling Of Gaseous And Solid Material
- In Desuperheaters
- Chlorine Precipitation
- For Improving The Chemical Reaction By Means Of Enlarging the Contact Surface

75° SPRAY ANGLE	CONNECTION END		ORIFICE SIZE (mm)	FLOW CAPACITY IN LPM AT DIFFERENT PRESSURE VALUES							G/A DIMENSION. MM			
	1/2"	3/4"		PRESSURE [BAR]							CONN.	H	D	A/F
MODEL NO.	BSP BSPT NPT	BSP BSPT NPT		0.5	1.0	2.0	3.0	5.0	7.0	10.0				
DG15.150	●		0.5	0.75	1.06	<b>1.50</b>	1.84	2.37	2.81	3.35	1/2"	30	50	46
DG15.200	●		0.5	1.00	1.41	<b>2.00</b>	2.45	3.16	3.74	4.47	Weight (Metals) = 216.0 gms. Approx			
DG15.300	●		1.0	1.50	2.12	<b>3.00</b>	3.67	4.74	5.61	6.71	3/4"	46	75	65
DG15.400	●		1.5	2.00	2.83	<b>4.00</b>	4.90	6.32	7.48	8.94	Weight (Metals) = 716.0 gms. Approx			
DG15.475	●		1.5	2.37	3.36	<b>4.75</b>	5.82	7.51	8.89	10.62				
DG15.650	●		2.0	3.25	4.60	<b>6.50</b>	7.96	10.28	12.16	14.53				
DG15.800	●	●	2.2	4.00	5.66	<b>8.00</b>	9.80	12.65	14.97	17.89				
DG25.100	●	●	2.5	5.00	7.07	<b>10.00</b>	12.25	15.81	18.71	22.36				
DG25.125	●	●	2.8	6.25	8.84	<b>12.50</b>	15.31	19.76	23.39	27.95				
DG25.160		●	3.2	8.00	11.31	<b>16.00</b>	19.60	25.30	29.93	35.78				
DG25.200		●	3.5	10.00	14.14	<b>20.00</b>	24.49	31.62	37.42	44.72				
DG25.225		●	3.8	11.25	15.91	<b>22.50</b>	27.56	35.58	42.09	50.31				
DG25.250		●	4.0	12.50	17.68	<b>25.00</b>	30.62	39.53	46.77	55.90				
DG25.320		●	4.5	16.00	22.63	<b>32.00</b>	39.19	50.60	59.87	71.55				
DG25.400		●	5.0	20.00	28.28	<b>40.00</b>	48.99	63.25	74.83	89.44				
DG25.520		●	5.7	26.00	36.77	<b>52.00</b>	63.69	82.22	97.28	116.28				