



# Axial - flow full cone nozzles

## Series M4.490/M4.491

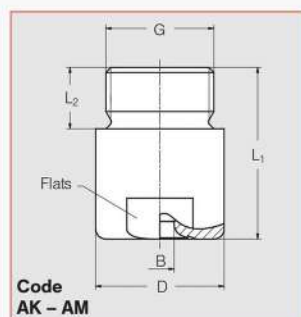
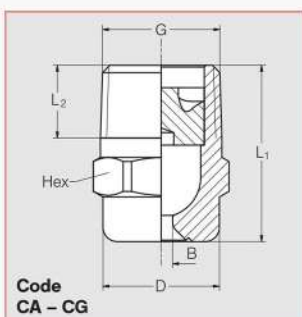
Spray angle	Ordering no.									B Ø [mm]	E Ø [mm]	V̇ [l/min]							Spray diameter D at p=2 bar	
	Type	Mat. no.		Code								p [bar]								
		1Y	30	1/8 BSPT	1/4 BSPT	3/8 BSPT	1/2 BSPT	3/4 BSPP	1 BSPP			p [bar]							H=200 mm	H=500 mm
												0.5	1.0	2.0	3.0	5.0	7.0	10.0		
45°	M4.490.403	○	○	CA	-	-	-	-	-	1.25	1.25	0.57	0.76	1.00	1.18	1.44	1.65	1.90	160	400
	M4.490.523	○	○	CA	-	-	-	-	-	1.70	1.70	1.15	1.52	2.00	2.35	2.89	3.30	3.81	160	400
	M4.490.603	○	○	-	CC	CE	-	-	-	2.00	2.00	1.81	2.39	3.15	3.70	4.54	5.20	6.00	160	400
	M4.490.643	○	○	-	CC	CE*	-	-	-	2.45	2.45	2.30	3.03	4.00	4.70	5.77	6.60	7.61	160	400
	M4.490.683	-	○	-	-	CE*	-	-	-	2.55	2.55	2.87	3.79	5.00	5.88	7.21	8.25	9.52	160	400
	M4.490.703	-	○	-	-	CE	-	-	-	2.65	2.65	3.22	4.24	5.60	6.59	8.08	9.24	10.66	160	400
	M4.490.723	○	○	-	-	CE	-	-	-	2.85	2.85	3.62	4.77	6.30	7.41	9.09	10.40	11.99	160	400
	M4.490.783	-	○	-	-	-	CG	-	-	3.45	3.45	5.17	6.82	9.00	10.58	12.98	14.85	17.12	160	400
	M4.490.843	-	○	-	-	-	CG	-	-	3.80	3.80	7.18	9.47	12.50	14.70	18.03	20.63	23.80	160	400
60°	M4.490.404	○	○	CA	-	-	-	-	-	1.15	1.15	0.57	0.76	1.00	1.18	1.44	1.65	1.90	220	560
	M4.490.444	○	-	CA	-	-	-	-	-	1.25	1.25	0.72	0.95	1.25	1.47	1.80	2.06	2.38	220	560
	M4.490.484	○	○	CA	-	-	-	-	-	1.45	1.45	0.92	1.21	1.60	1.88	2.31	2.64	3.05	220	560
	M4.490.524	○	○	CA	-	-	-	-	-	1.60	1.60	1.15	1.52	2.00	2.35	2.89	3.30	3.81	220	560
	M4.490.564	○	○	CA	-	-	-	-	-	1.80	1.80	1.44	1.89	2.50	2.94	3.61	4.13	4.76	220	560
	M4.490.604	○	○	CA	CC	CE*	-	-	-	2.05	2.05	1.81	2.39	3.15	3.70	4.54	5.20	6.00	220	560
	M4.490.644	○	○	-	CC	CE	-	-	-	2.30	2.30	2.30	3.03	4.00	4.70	5.77	6.60	7.61	220	560
	M4.490.684	○	○	-	CC	CE	-	-	-	2.60	2.60	2.87	3.79	5.00	5.88	7.21	8.25	9.52	220	560
	M4.490.724	○	○	-	CC	CE	-	-	-	2.95	2.80	3.62	4.77	6.30	7.41	9.09	10.40	11.99	220	560
	M4.490.764	○	○	-	-	CE	-	-	-	3.25	3.25	4.59	6.06	8.00	9.41	11.54	13.20	15.22	220	560
	M4.490.804	○	○	-	-	CE	-	-	-	3.70	3.70	5.74	7.58	10.00	11.76	14.43	16.51	19.02	220	560
	M4.490.844	○	○	-	-	-	CG	-	-	4.05	4.05	7.18	9.47	12.50	14.70	18.03	20.63	28.80	220	560
	M4.490.884	○	○	-	-	-	CG	-	-	4.65	4.65	9.19	12.13	16.00	18.82	28.03	26.41	30.46	220	560
	M4.490.924	○	○	-	-	-	-	AK	-	5.20	5.20	11.49	15.16	20.00	23.52	28.85	33.01	38.07	220	560
	M4.490.964	○	○	-	-	-	-	AK	-	5.80	5.80	14.39	18.95	25.00	29.40	36.07	41.26	47.59	220	560
	M4.491.044	○	○	-	-	-	-	-	AM	7.25	7.25	22.97	30.31	40.00	47.04	57.71	66.02	76.15	220	560
	M4.491.084	○	○	-	-	-	-	-	AM	8.15	8.15	28.72	37.89	50.00	58.80	72.14	82.53	95.18	220	560

This series provides a non-clogging nozzle design. Stable spray angel, exceptionally even liquid distribution, and large free cross sections. Applications: Cleaning and washing applications, container cleaning, degassing, container cleaning.



Series 490-491 takes part within the axial-flow full cone nozzles. Those nozzles are produced by using state of the art design and simulation methods. This series is replaceable with series

Nozzles of series 490/491 replace series 460/461 which are still available on request.



Code	Dimensions [mm]				Hex/Flats	Weight brass
	G	L <sub>1</sub>	L <sub>2</sub>	D		
CA	1/8 BSPT	18.0	6.5	10.0	11	13 g
CC	1/4 BSPT	22.0	10.0	13.0	14	16 g
CE	3/8 BSPT	24.5	10.0	16.0	17	30 g
CG	1/2 BSPT	32.5	13.0	21.0	22	60 g
AK	3/4 BSPP	42.0	15.0	32.0	27	190 g
AM	1 BSPP	56.0	17.0	40.0	36	350 g

# Axial - flow full cone nozzles

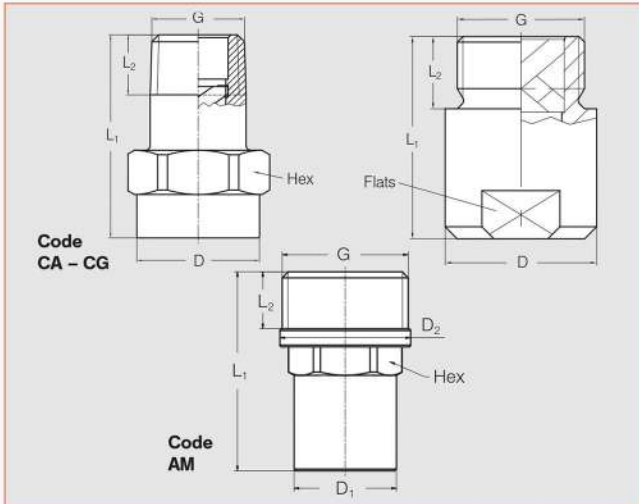
## Series M46.460/M46.461

Spray angle $\Delta$	Ordering no.								B Ø [mm]	E Ø [mm]	$\dot{V}$ [l/min]							Spray diameter D at p=2 bar	
	Type	Mat. no. <b>5E</b>	Code								p [bar]								
			PVDF	1/8 BSPT	1/4 BSPT	3/8 BSPT	1/2 BSPT	3/4 BSPP			1 BSPP	0.5	1.0	2.0	3.0	5.0	7.0	10.0	H=200 mm
120°	M46.460.368	○	CA	-	-	-	-	-	0.95	0.45	0.32	0.45	0.63	0.77	0.89	1.00	1.41	680	1220
	M46.460.408	○	CA	-	-	-	-	-	1.20	0.85	0.57	0.76	1.00	1.18	1.44	1.65	1.90	680	1220
	M46.460.488	○	CA	-	-	-	-	-	1.50	1.00	0.92	1.21	1.60	1.88	2.31	2.64	3.05	680	1220
	M46.460.528	○	CA	-	-	-	-	-	1.65	1.20	1.15	1.52	2.00	2.35	2.89	3.20	3.81	680	1220
	M46.460.608	○	CA	-	-	-	-	-	2.10	1.40	1.81	2.39	3.15	3.70	4.54	5.20	6.00	680	1220
	M46.460.648	○	-	CC	-	-	-	-	2.45	1.60	2.30	3.03	4.00	4.70	5.77	6.60	7.61	680	1330
	M46.460.728	○	-	-	CE	-	-	-	3.10	1.90	3.62	4.77	6.30	7.41	9.09	10.40	11.99	680	1330
	M46.460.748	○	-	-	CE	-	-	-	3.30	1.90	4.08	5.38	7.10	8.35	10.24	11.72	13.52	680	1330
	M46.460.768	○	-	-	CE	-	-	-	3.50	1.90	4.59	6.44	8.00	9.41	11.54	13.20	15.22	680	1330
	M46.460.808	○	-	-	CE	-	-	-	3.80	2.40	5.74	7.58	10.00	11.76	14.43	16.51	19.04	680	1330
	M46.460.848	○	-	-	CE	-	-	-	4.20	2.70	7.18	9.47	12.50	14.70	18.03	20.63	23.80	680	1330
	M46.460.888	○	-	-	-	CG	-	-	4.60	3.10	9.94	12.13	16.00	18.82	23.08	26.41	30.46	680	1330
	M46.460.968	○	-	-	-	CG	-	-	5.90	4.10	14.36	18.95	25.00	29.40	36.07	41.26	47.59	680	1330
M46.461.048	○	-	-	-	-	CK*	-	7.60	4.90	22.97	30.31	40.00	47.04	57.71	66.02	76.15	680	1330	

**Example**            **Type**    +   **Material no.**    +   **Code** = **Ordering no.**  
**for ordering:** M46.460.408 + 5E                    + CA = M46.460.408.5E.CA

# Tongue - type nozzles

## Series M46.460/M46.461



Code	Dimensions[mm]					Hex/ Flats
	G	L <sub>1</sub>	L <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	
<b>CA</b>	1/8 BSPT	22.0	6.5	13.0	-	14
<b>CC</b>	1/4 BSPT	22.0	9.7	13.0	-	14
<b>CE</b>	3/8 BSPT	30.0	10.0	17.0	-	17
<b>CG</b>	1/2 BSPT	43.5	13.2	22.0	-	22
<b>AK</b>	3/4 BSPP	42.0	15.0	31.5	-	27
<b>AM</b>	1 BSPP	52.5	15.0	27.0	34.5	27

Spray angle	Ordering no.								B ∅ [mm]	E ∅ [mm]	$\dot{V}$ [l/min]							Spray diameter D at p=2 bar	
	Type	Mat. no.		Code							p [bar]							H=	
		1Y	30	1/8 BSPT	1/4 BSPT	3/8 BSPT	1/2 BSPT	3/4 BSPP			0.5	1.0	2.0	3.0	5.0	7.0	10.0	200 mm	500 mm
		316L SS	Brass																
60°	M46.460.524	○	CA	-	-	-	-	-	1.60	1.60	1.00	1.41	2.00	2.45	2.83	3.16	4.47	220	560
	M46.460.644	○	-	CC	-	-	-	-	2.40	1.90	2.30	3.03	4.00	4.70	5.77	6.60	7.61	220	560
	M46.460.724	○	-	CC	-	-	-	-	2.80	2.10	3.15	4.45	6.30	7.72	8.91	9.96	14.09	220	560
	M46.460.964	○	-	-	-	-	-	AK	-	5.80	4.90	14.36	18.95	25.00	29.40	36.07	41.26	47.59	220
90°	M46.460.326	○	CA	-	-	-	-	-	0.80	0.55	0.23	0.30	0.40	0.47	0.58	0.66	0.76	380	860
	M46.460.406	○	CA	-	-	-	-	-	1.20	0.85	0.57	0.76	1.00	1.18	1.44	1.65	1.90	380	860
	M46.460.486	○	CA	-	-	-	-	-	1.45	1.20	0.92	1.21	1.60	1.88	2.31	2.64	3.05	380	860
	M46.460.526	○	CA	-	-	-	-	-	1.65	1.30	1.15	1.52	2.00	2.35	2.89	3.30	3.81	380	860
	M46.460.606	○	CA	-	CE	-	-	-	2.05	1.45	1.81	2.39	3.15	3.70	4.54	5.20	6.00	380	860
	M46.460.646	○	-	CC	-	-	-	-	2.30	1.80	2.30	3.03	4.00	4.70	5.77	6.60	7.61	390	960
	M46.460.726	○	-	-	CE	-	-	-	2.95	2.00	3.62	4.77	6.30	7.41	9.09	10.40	11.99	390	960
	M46.460.746	○	-	-	CE	-	-	-	3.30	1.90	4.08	5.38	7.10	8.35	10.24	11.72	13.52	390	960
	M46.460.766	○	-	-	CE	-	-	-	3.30	2.40	4.59	6.06	8.00	9.41	11.54	13.20	15.22	390	960
	M46.460.806	○	-	-	CE	-	-	-	3.70	2.70	5.74	7.58	10.00	11.76	14.43	16.51	19.04	390	960
	M46.460.846	○	-	-	CE	-	-	-	4.05	3.20	7.18	9.47	12.50	14.70	18.03	20.63	23.80	390	960
	M46.460.886	○	-	-	CE	CG	-	-	4.70	3.10	9.19	12.13	16.00	18.82	23.08	26.41	30.46	390	960
	M46.460.926	○	-	-	-	CG	-	-	5.10	2.80	10.00	14.14	20.00	24.49	28.28	31.62	44.72	390	960
	M46.460.956	○	-	-	-	CG	-	-	5.10	2.80	10.00	14.14	20.00	24.49	28.28	31.62	44.72	390	960
	M46.460.966	○	-	-	-	CG	-	-	5.80	3.80	14.36	18.95	25.00	29.40	36.07	41.26	47.59	390	960
	M46.461.006	○	-	-	-	CG	-	-	6.40	3.80	18.09	23.87	31.50	37.05	45.45	51.99	59.97	390	960
	M46.461.046	○	-	-	-	-	CK*	-	7.20	5.30	22.97	30.31	40.00	47.04	57.71	66.02	76.15	390	960
	M46.461.068	○	-	-	-	-	-	AM	8.40	5.00	25.00	35.36	50.00	61.24	70.71	79.06	111.80	390	960

**Example** Type + Material no. + Code = Ordering no.  
**for ordering:** M46.460.644 + 1Y + CC = M46.460.644.5E.CC