

Square Mixed Flow Fans (MFQ)

Features and Benefits

- Motors protected to IP44
- Motor insulation Class 'B'
- Maximum operating temperature +40°C
- Standard Thermal Overload Protection
- Sizes 400 to 500 3 phase are supplied with 2 speed motors as standard
- Ductmate flanging
- All models speed controllable
- Manufacture controlled to BS EN ISO 9001
- Performance tested to BS 848 parts 1 & 2

The square mixed flow range has been specially designed for systems with high performance and low sound levels in mind. Ideal for commercial and industrial premises. The MFQ range places the emphasis on fast installation, reliable performance and easy access for maintenance.

The range offers almost two and a half times the pressure development of conventional axial fans and is an ideal cost effective alternative to two stage axial arrangements. The range is dimensionally compact, saving weight and installation costs.

Available in five sizes with a duty range from 0.632m³/s to 3.673m³/s (2275m³/h to 13,222m³/h), develops pressures up to 450 Pa.

Mixed Flow Impeller and Casing

The 355, 400 & 450mm diameter high efficiency backward curved mixed flow impeller is manufactured in moulded polyamide. All other sizes of impeller are constructed in aluminium. All impellers offer non-overloading characteristics and are dynamically balanced for maximum efficiency. The casing is manufactured in sheet steel with Ductmate flanges at both ends.

The full range of MFQ fans is also available, finished with optional C.R.P. (Chlorinated Rubber Paint), ensuring the unit is fully weatherproofed and suitable for external mounting. All weatherproofed units are manufactured to order. Note the standard product codes are suffixed with 'WP' eg MFQ350/4/1WP.

Motors



A proven external rotor motor and mixed flow impeller assembly has been specially selected for its performance and non-overloading characteristics. The assembly is dynamically balanced to VDI 2060. The motors in this range are rated at IP44 according to BS EN 60529. Ball bearings are greased for life and are designed to run at any angle. Insulation is Class B (from -30°C to +40°C).

3 Phase units, sizes 400 to 560 have 2 speed pole change DELTA/STAR connection motors as standard.

Electrical

Single phase 220-240V 50 Hz. Capacitor start and run. Capacitors are located in the terminal box. Three phase 380-415V 50Hz. All motors are fitted with Standard Thermal Overload Protection (S.T.O.P.). Most models are available with 4 and 6 pole motors.

Performance and Sound

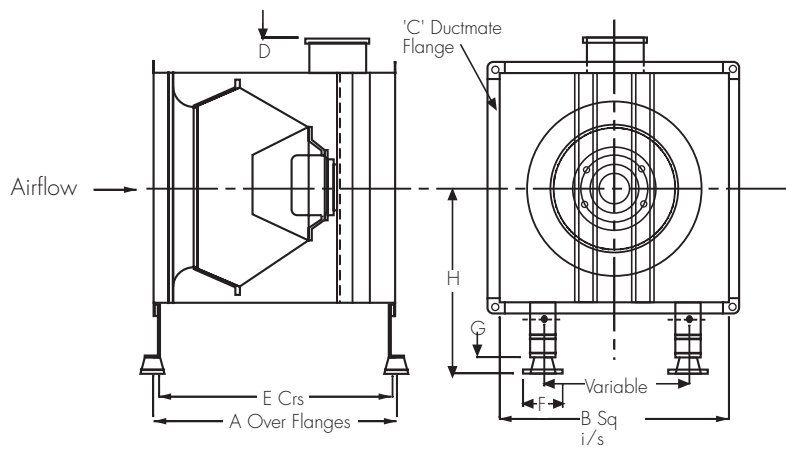
Tested to BS 848 Parts 1 & 2. Published dB(A) figures are free field sound pressure levels at 3m with spherical propagation at a reference level of 2 x 10⁻⁵Pa (20 micro-Pascal). The inlet, outlet and breakout sound power level spectra figures are dB with a reference of 10⁻¹² Watts (1 pico-watt).

Quality Assurance

Design and manufacture is in accordance with BS EN ISO 9001.



Fan Dimensions (mm)

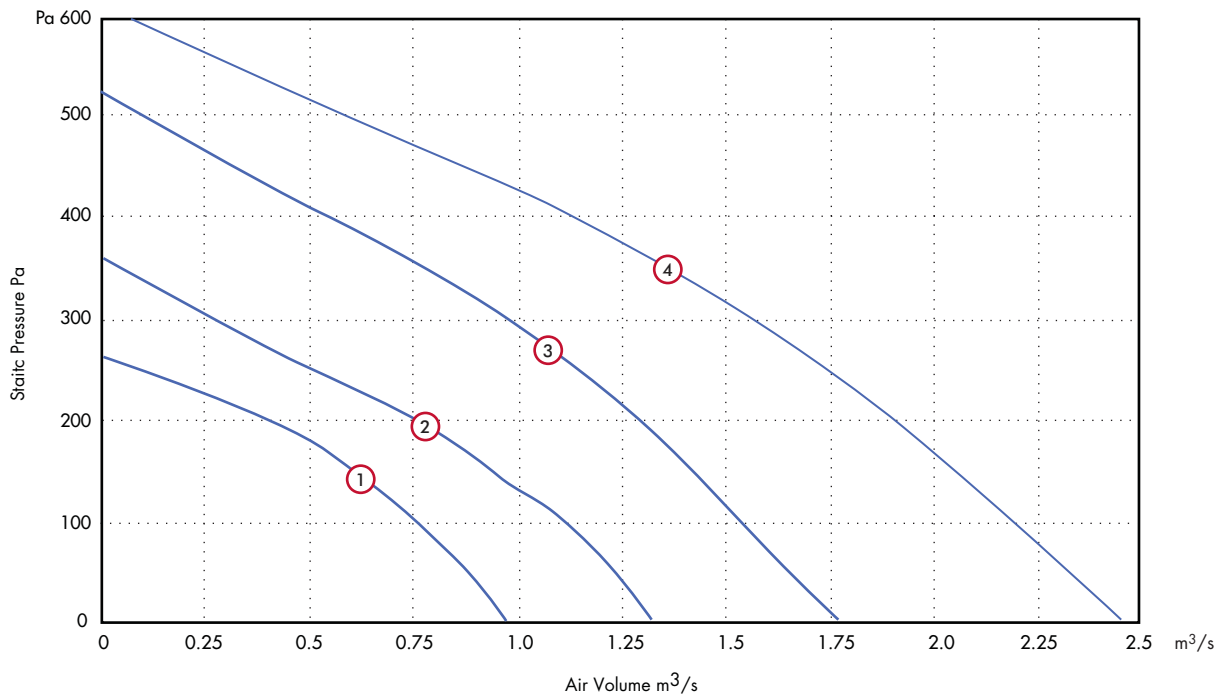


Unit	Duct Size	A	B	C	D	E	F	G	H	Weight kg
350	450 x 450	400	450	25	52	406	62	29	345	22
400	500 x 500	450	500	25	52	456	62	29	370	28
450	550 x 550	485	550	35	52	491	62	29	405	42
500	650 x 650	510	650	35	86	516	102	37	455	73
560	700 x 700	530	700	35	52	536	102	37	480	78

Square Mixed Flow Fans (MFQ)

Performance Curve

350 to 500 dia. - 4 Pole, 1 Phase



Performance Guide

Stock Ref.	Motor Pole	Motor Phase	Motor r.p.m.	Curve Ref.	m³/s at Pa										Motor kW	SC Amps	FLC Amps	dBA @ 3m		
					0	50	75	100	150	200	250	300	350	400					450	
MFQ350/4/1	4	1	1390	1	0.976	0.875	0.82	0.752	0.603	0.394							0.31	3.7	1.35	55
MFQ400/4/1	4	1	1280	2	1.323	1.21	1.15	1.077	0.928	0.746	0.511	0.275	0.025				0.52	5.5	2.2	57
MFQ450/4/1	4	1	1330	3	1.774	1.65	1.595	1.547	1.423	1.3	1.15	0.971	0.768	0.535	0.316		0.96	9.6	4.3	59
MFQ500/4/1	4	1	1310	4	2.438	2.31	2.246	2.182	2.046	1.91	1.74	1.57	1.35	1.13	0.87		1.45	15	6.1	61

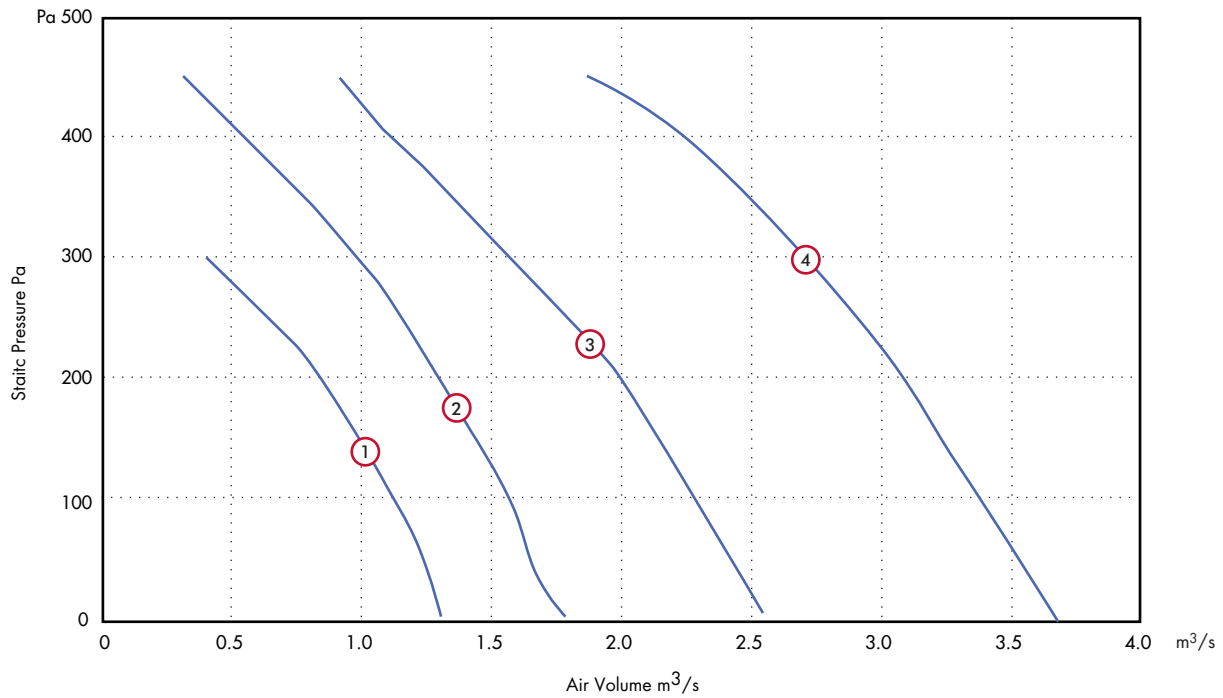
S.C. = STARTING CURRENT
F.L.C. = FULL LOAD CURRENT

Sound Power Level Spectra dB (re 10⁻¹² Watts)

Unit	Motor Pole	Motor Phase		Motor								dBA @ 3m
				63	125	250	500	1k	2k	4k	8k	
MFQ350	4	1	Inlet	70	74	76	72	72	70	62	54	55
MFQ350	4	1	Outlet	70	74	76	72	72	70	62	54	55
MFQ400	4	1	Inlet	71	78	79	75	74	69	68	59	57
MFQ400	4	1	Outlet	71	78	79	75	74	69	68	59	57
MFQ450	4	1	Inlet	80	82	79	76	78	73	68	60	59
MFQ450	4	1	Outlet	80	82	79	76	78	73	68	60	59
MFQ500	4	1	Inlet	83	85	81	79	80	76	71	66	61
MFQ500	4	1	Outlet	83	85	81	79	80	76	71	66	61

Performance Curve

400 to 560 dia. - 4 Pole, 3 Phase



Performance Guide

Stock Ref.	Motor		Curve Ref.	m³/s at Pa											Motor kW	SC Amps	FLC Amps	dBA @ 3m	
	Pole	Phase		r.p.m.	0	50	75	100	150	200	250	300	350	400					450
MFQ450/4/6/3*	4	3	1330	①	1.774	1.65	1.595	1.547	1.423	1.3	1.15	0.971	0.768	0.535	0.316	0.89	5.9	1.65	59
MFQ400/4/6/3*	4	3	1350	②	1.306	1.218	1.173	1.121	1.001	0.84	0.638	0.397				0.54	4.2	1.05	57
MFQ500/4/6/3*	4	3	1320	③	2.533	2.402	2.34	2.271	2.132	1.99	1.77	1.59	1.34	1.11	0.895	1.35	10	2.4	61
MFQ560/4/3	4	3	1350	④	3.673	3.525	3.451	3.377	3.229	3.08	2.89	2.7	2.47	2.24	1.85	2.4	20	4.3	68

*The 3 phase, 4 pole units 400 to 500 are fitted with 2 speed pole change delta/star connection motors as standard (4/6 pole).

S.C. = STARTING CURRENT
F.L.C. = FULL LOAD CURRENT

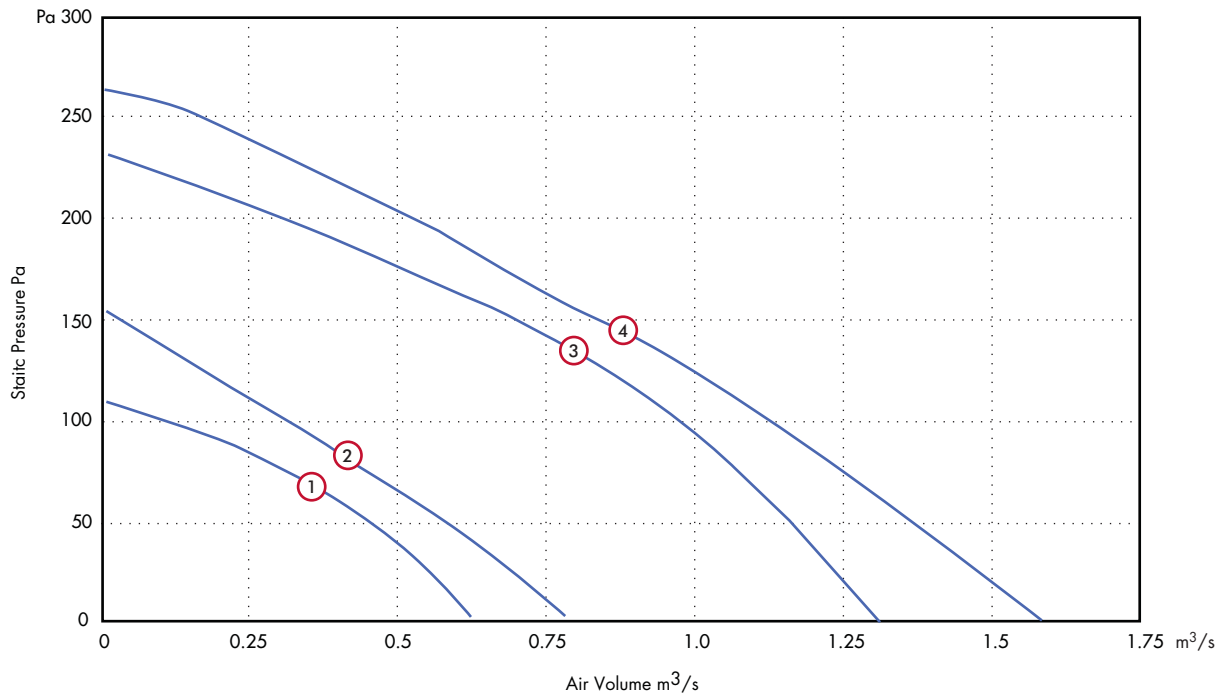
Sound Power Level Spectra dB (re 10⁻¹² Watts)

Unit	Motor			dB								
	Pole	Phase		63	125	250	500	1k	2k	4k	8k	@ 3m
MFQ400	4	3	Inlet	71	78	79	75	74	69	68	59	57
MFQ400	4	3	Outlet	71	78	79	75	74	69	68	59	57
MFQ450	4	3	Inlet	80	82	79	76	78	73	68	60	59
MFQ450	4	3	Outlet	80	82	79	76	78	73	68	60	59
MFQ500	4	3	Inlet	83	85	81	79	80	76	71	66	61
MFQ500	4	3	Outlet	83	85	81	79	80	76	71	66	61
MFQ560	4	3	Inlet	86	90	87	86	87	81	74	69	68
MFQ560	4	3	Outlet	86	90	87	86	87	81	74	69	68

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Performance Curve

350 to 500 dia. - 6 Pole, 1 Phase



Performance Guide

Stock Ref.	Motor			Curve Ref.	m³/s at Pa								Motor kW	SC Amps	FLC Amps	dBA @ 3m
	Pole	Phase	r.p.m.		0	25	50	75	100	150	200	250				
MFQ350/6/1	6	1	890	①	0.632	0.563	0.455	0.32	0.125				0.12	1.6	0.59	43
MFQ400/6/1	6	1	800	②	0.79	0.689	0.582	0.45	0.313	0.05			0.19	1.2	0.81	46
MFQ450/6/1	6	1	940	③	1.319	1.242	1.162	1.077	0.978	0.692	0.311		0.4	4.7	2.1	50
MFQ500/6/1	6	1	850	④	1.592	1.485	1.368	1.252	1.127	0.837	0.528	0.173	0.43	3.8	1.95	52

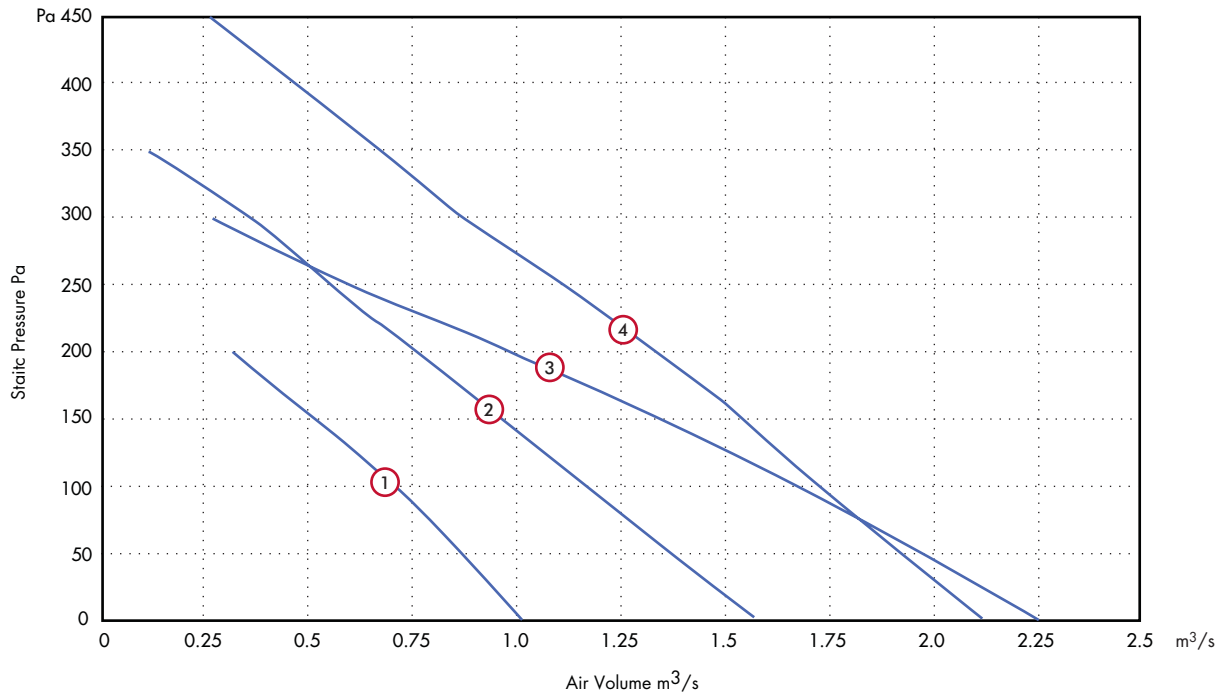
S.C. = STARTING CURRENT
F.L.C. = FULL LOAD CURRENT

Sound Power Level Spectra dB (re 10⁻¹² Watts)

Unit	Motor			dB								
	Pole	Phase		63	125	250	500	1k	2k	4k	8k	@ 3m
MFQ350	6	1	Inlet	62	62	65	61	59	55	54	33	43
MFQ350	6	1	Outlet	62	62	65	61	59	55	54	33	43
MFQ400	6	1	Inlet	68	66	67	63	64	60	49	40	46
MFQ400	6	1	Outlet	68	66	67	63	64	60	49	40	46
MFQ450	6	1	Inlet	72	72	71	68	66	63	57	49	50
MFQ450	6	1	Outlet	72	72	71	68	66	63	57	49	50
MFQ500	6	1	Inlet	73	73	69	69	70	65	57	50	52
MFQ500	6	1	Outlet	73	73	69	69	70	65	57	50	52

Performance Curve

400 to 630 dia. - 6 Pole, 3 Phase



Performance Guide

Stock Ref.	Motor			Curve Ref.	m³/s at Pa										Motor kW	SC Amps	FLC Amps	dBA @ 3m		
	Pole	Phase	r.p.m.		0	50	75	100	150	200	250	300	350	400					450	
MFQ400/4/6/3*	6	3	1050	①	1.011	0.872	0.793	0.706	0.512	0.324							0.39	1.4	0.67	46
MFQ450/4/6/3*	6	3	1040	②	1.569	1.364	1.265	1.162	0.96	0.76	0.565	0.357	0.111				0.59	2	0.96	50
MFQ500/4/6/3*	6	3	1020	③	2.115	1.92	1.8	1.72	1.54	1.31	1.124	0.87	0.67	0.47	0.26		0.88	3.4	1.45	56
MFQ560/6/3	6	3	850	④	2.249	1.957	1.811	1.66	1.329	0.997	0.62	0.25					0.67	3.7	1.45	54

S.C. = STARTING CURRENT
F.L.C. = FULL LOAD CURRENT

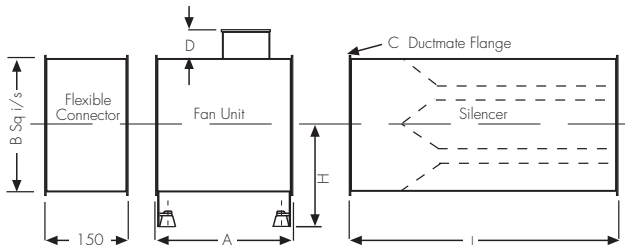
Sound Power Level Spectra dB (re 10⁻¹² Watts)

Unit	Motor		Motor	dB								
	Pole	Phase		63	125	250	500	1k	2k	4k	8k	@ 3m
MFQ400	6	3	Inlet	68	66	67	63	64	60	49	40	46
MFQ400	6	3	Outlet	68	66	67	63	64	60	49	40	46
MFQ450	6	3	Inlet	72	72	71	68	66	63	57	49	50
MFQ450	6	3	Outlet	72	72	71	68	66	63	57	49	50
MFQ500	6	3	Outlet	73	73	69	69	70	65	57	50	52
MFQ500	6	3	Inlet	79	80	76	76	78	72	65	56	56
MFQ560	6	3	Outlet	79	80	76	76	78	72	65	56	56
MFQ560	6	3	Inlet	76	75	73	73	73	65	57	49	54

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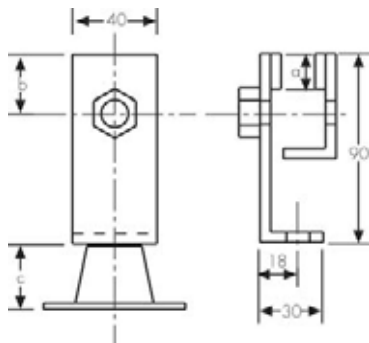
Accessories Dimensions (mm)

Flexible Connectors and Silencer



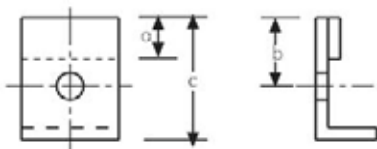
Unit	A	B	C	D	H	I	Weight	Flange
							kg	Ductmate
350	400	450	25	52	345	1200	45	25
400	450	500	25	52	370	1200	48	25
450	485	550	35	52	405	1200	55	35
500	510	650	35	86	455	1500	67	35
560	530	700	35	52	480	1500	70	35

Mount/Feet Details



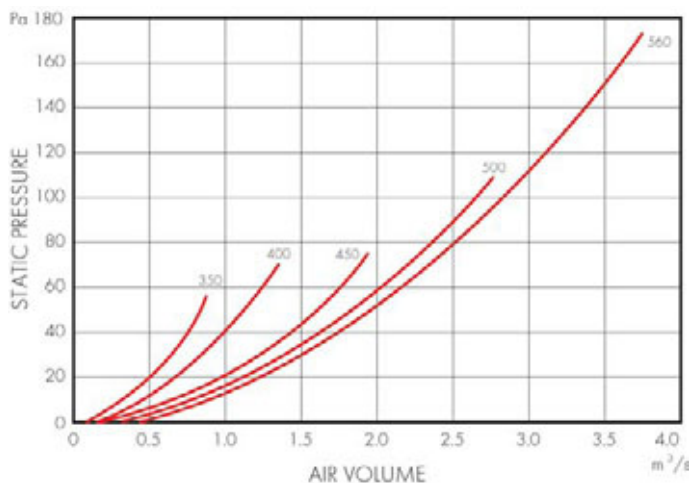
Stock Ref. No.	a	b	c
PAVM 1	25	38	27
PAVM 2	35	38	27
PAVM 3	35	38	35

Clamp Details



Stock Ref. No.	a	b	c
PAVM 1	25	38	60
PAVM 2	35	38	60
PAVM 3	35	38	60

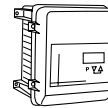
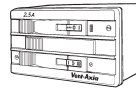
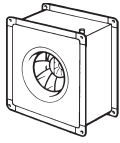
Silencer Resistance Pa



Silencer Insertion Losses

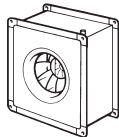
Size	63	125	250	500	1k	2k	4k	8k
350	-3	-5	-14	-27	-36	-36	-29	-24
400	-2	-4	-12	-22	-30	-30	-22	-14
450	-2	-4	-11	-17	-24	-24	-16	-8
500	-3	-6	-15	-23	-31	-31	-21	-11
560	-4	-8	-16	-24	-32	-32	-22	-12

Accessories



Standard Stock Ref.	Weatherproofed Stock Ref.	Electronic Controller Stock Ref.	Auto Transformer Stock Ref.	D.O.L. Starter & Overload Stock Ref.	*eDemand Controller		
					Voltage Control Stock Ref.	1/3 Phase Inverter Stock Ref.	3 Phase Inverter Stock Ref.
MFQ350/4/1	MFQ350/4/1WP	W10303102M	10314103	444744 + 444700	444164	-	-
MFQ400/4/1	MFQ400/4/1WP	W10303102M	10314103	444744 + 444702	444164	-	-
MFQ400/4/6/3*	MFQ400/4/6/3WP*	-	10314301	444747 + 444700	444166	444177	444172
MFQ450/4/1	MFQ450/4/1WP	10303106A	10314105	444744 + 444703	444164	-	-
MFQ450/4/6/3*	MFQ450/4/6/3WP*	-	10314304	444747 + 444699	444166	444177	444172
MFQ500/4/1	MFQ500/4/1WP	10303110A	10314107	444744 + 444704	444165	-	-
MFQ500/4/6/3*	MFQ500/4/6/3WP*	-	10314304	444747 + 444702	444166	444177	444173
MFQ560/4/3*	MFQ560/4/3WP*	-	10314307	444747 + 444703	444166	444177	444173
MFQ350/6/1	MFQ350/6/1WP	W10303102M	10313103	444744 + 444699	444164	-	-
MFQ400/6/1	MFQ400/6/1WP	W10303102M	10313103	444744 + 444699	444164	-	-
MFQ400/4/6/3*	MFQ400/4/6/3WP*	-	10314301	444747 + 444701	444166	444177	444172
MFQ450/6/1	MFQ450/6/1WP	W10303102M	10313103	444744 + 444701	444164	-	-
MFQ450/4/6/3*	MFQ450/4/6/3WP*	-	10314301	444747 + 444700	444166	444177	444172
MFQ500/6/1	MFQ500/6/1WP	W10303102M	10313103	444744 + 444701	444164	-	-
MFQ500/4/6/3*	MFQ500/4/6/3WP*	-	10314304	444747 + 444701	444166	444177	444172
MFQ560/6/3*	MFQ560/6/3WP	-	10314304	444747 + 444701	444166	444177	444172

* For full range of speed controller options, see Accessories & Controllers Section



Standard Stock Ref.	Weatherproofed Stock Ref.	Set of Mounting Feet & AV's Stock Ref.	Flexible Connection Stock Ref.	Matching Attenuator Stock Ref.	Acoustic Jacket Stock Ref.
MFQ400/4/1	MFQ400/4/1WP	PAVM1	MFQFC400	MFQSS400	MFQAJ400
MFQ400/4/6/3*	MFQ400/4/6/3WP*	PAVM1	MFQFC400	MFQSS400	MFQAJ400
MFQ450/4/1	MFQ450/4/1WP	PAVM2	MFQFC450	MFQSS450	MFQAJ450
MFQ450/4/6/3*	MFQ450/4/6/3WP*	PAVM2	MFQFC450	MFQSS450	MFQAJ450
MFQ500/4/1	MFQ500/4/1WP	PAVM3	MFQFC500	MFQSS500	MFQAJ500
MFQ500/4/6/3*	MFQ500/4/6/3WP*	PAVM3	MFQFC500	MFQSS500	MFQAJ500
MFQ560/4/3*	MFQ560/4/3WP*	PAVM3	MFQFC560	MFQSS560	MFQAJ560
MFQ350/6/1	MFQ350/6/1WP	PAVM1	MFQFC350	MFQSS350	MFQAJ350
MFQ400/6/1	MFQ400/6/1WP	PAVM1	MFQFC400	MFQSS400	MFQAJ400
MFQ400/4/6/3*	MFQ400/4/6/3WP*	PAVM1	MFQFC400	MFQSS400	MFQAJ400
MFQ450/6/1	MFQ450/6/1WP	PAVM2	MFQFC450	MFQSS450	MFQAJ450
MFQ450/4/6/3*	MFQ450/4/6/3WP*	PAVM2	MFQFC450	MFQSS450	MFQAJ450
MFQ500/6/1	MFQ500/6/1WP	PAVM3	MFQFC500	MFQSS500	MFQAJ500
MFQ500/4/6/3*	MFQ500/4/6/3WP*	PAVM3	MFQFC500	MFQSS500	MFQAJ500
MFQ560/6/3*	MFQ560/6/3WP	PAVM3	MFQFC560	MFQSS560	MFQAJ560

NOTE The 3 phase, 4 pole units 400 to 500 are fitted with 2 speed pole change delta/star connection motors as standard (4/6 pole).