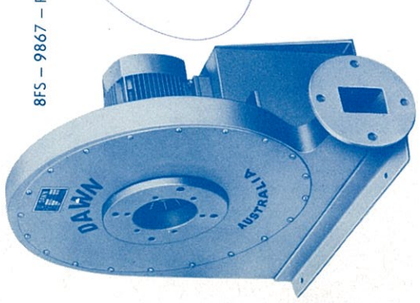
"DAWN" Oil Burner Blowers



8FS – 9867 – RO

FS — SERIES
PRESSURE BLOWERS

This range of standard "DAWN" Oil Burner Blowers is specifically designed to suit a number of oil-fired furnace applications where pressure from 3.5 kPa to 7.0 kPa and volumes from 71 L/s to 247 L/s for atomization and combustion of oil fuels.

There are 7 fans in the range with designations and design duties as under:

Designation	Code No.	Volume		Pressure	Motor
3-FS	124337	212 L/s	@	3.5 kPa	1.5 kW
4-FS	124345	82 L/s	@	5.25 kPa	1.5 kW
5-FS	124353	165 L/s	@	5.25 kPa	1.5 kW
6-FS	124361	247 L/s	@	5.25 kPa	2.25 kW
7-FS	124396	71 L/s	@	7.0 kPa	1.5 kW
8-FS	124409	141 L/s	@	7.0 kPa	2.25 kW
9-FS	124417	212 L/s	@	7.0 kPa	3.0 kW

WEIGHTS:

3-FS	4-FS	5-FS	6-FS	7-FS	8-FS	9-FS
80 kg	85 kg	90 kg	95 kg	100 kg	102 kg	125 kg

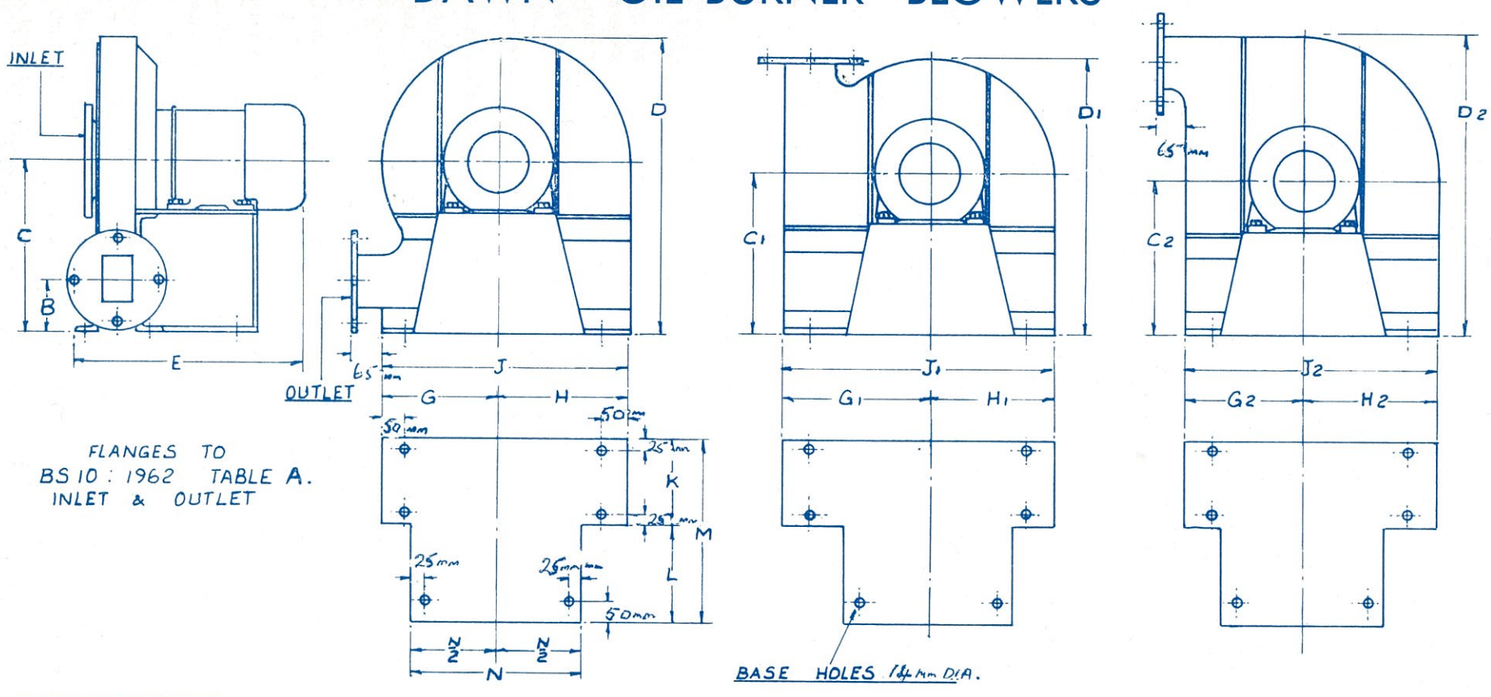
ACCESSORIES:

Air Filters, according to your choice. (Pressure loss through the Filter must be allowed for when selecting Blower.)

Matching Flanges.

Vibration Dampeners or other mountings.

"DAWN" OIL-BURNER BLOWERS



FLANGES TO BS 10 : 1962 TABLE A. INLET & OUTLET

ALL DIMENSIONS IN MM

FAN	B	C	C1	C2	D	D1	D2	E	G	G1	G2	H	H1	H2	J	J1	J2	K	L	M	N
3 FS	108	349	329	311	610	572	606	406	243	295	243	278	260	278	521	556	521	168	175	343	330
4 FS	79	375	365	356	680	660	680	394	295	324	295	314	305	314	610	629	610	143	200	343	330
5 FS	92	387	375	362	699	673	699	394	299	337	299	324	311	324	622	648	616	156	178	343	330
6 FS	102	395	379	360	708	670	705	445	292	345	292	327	310	327	619	654	619	165	191	356	356
7 FS	79	413	405	397	759	743	759	394	338	362	338	354	346	354	692	708	692	140	203	343	330
8 FS	86	429	416	403	781	756	781	445	340	379	340	365	352	365	705	730	705	149	206	356	356
9 FS	92	437	422	408	794	765	794	470	343	386	343	372	357	372	714	743	714	159	210	368	356

INLET	OUTLET
125	100
100	50
100	75
125	90
90	50
100	65
125	75

CONSTRUCTION:

Welded fabricated heavy gauge steel case and motor pedestal, reinforced at critical positions. The inlet side plate is screwed in position and can be easily removed to inspect the impeller.

Flanged inlet and outlet (B.S.10:1962 – Australian amendment AS.B52-1964 Table A) are provided to facilitate easy connection to standard pipe flanges and thereby ensure that the pipework connected to the blower will be the same as was used in factory testing and for which the blower was designed.

The fully shrouded impeller is rigidly constructed of mild steel around a cast iron centre. It is statically and dynamically balanced, and direct coupled to a 2 Pole 50 Hz TEFC motor (3000 r/min. Synchronous Speed). Rated performance is calculated at 2850 r/min.

G.M.F. Motors are normally supplied, but other makes may be used if you so desire.

All of these fans are available, if required, as pulley-drive units. The design duty rating being the same as for direct coupled motorized blowers.

DISCHARGE & DRIVE:

The standard blower discharge and drive is "RO" (BS:848 Part 1: 1963), this is commonly referred to as "Right-hand Under Cast". Any other direction of discharge and drive may be had if specified on order.

APPLICATIONS:

This range is a "fabricated steel" extension of the "DAWN" Cast Iron Pressure Blower range, and as such is suitable for the same type of duties where higher pressure and volume is necessary. These include the supply of air to oil, gas or solid fuel fired furnaces or ovens, and are used extensively by leading combustion engineers in conjunction with many different heating units. They are particularly suitable for the aeration of pulverized material, such as cement hoppers, where condensation of compressed air is a problem and dry air is essential. In this application they are also, by far, more economical than compressed air. There are numerous other applications within the volume and pressure capacities shown on the performance tables on opposite page.

SELECTION FOR OIL COMBUSTION APPLICATIONS:

These blowers are designed primarily to provide a series of standard pressure blowers, which can be obtained "ex-stock", to meet the atomizing air requirements of a number of everyday furnace applications where 4.5, 9, 18, 36 and 72 litre per hour burners are used, either singly or in multiples, and with an "over-pressure" characteristic to compensate for additional resistance in the piping system.

Oil-burner Air Volume:

Theoretical total air for complete combustion of oil is 16.5 L/s of air for each 4.5 litres of oil per hour, allowing a margin for losses. In practice, with "Open-nose" burners, it can be assumed that approximately 0.14 cubic metres of air will be inducted at the burner nose for every 0.84 cubic metre provided by the blower through the burner, and therefore the blower requirement is reduced to 14 L/s per 4.5 litres of oil per hour. For "Sealed-nose" burners 16.5 L/s per 4.5 litres of oil per hour must be provided by the blower. For certain classes of process more air must be provided than is required for complete combustion, or, in other words, conditions will be adjusted so that the rate of oil feed will be less than 4.5 L/h for every 16.5 L/s.

Oil-burner Air Pressure:

All oil-burners have a minimum air pressure requirement for atomizing the fuel oil to be burnt. These pressures are available from the burner manufacturers. Care must be taken in selecting a blower for oil-burner operation to allow for sufficient pressure, over the burner requirement, to overcome other resistances in the system.

For example: A blower is required to supply atomizing air to a furnace which is equipped with 4 "sealed-nose" burners, each of which burns 9 litres of oil per hour, and has an operating pressure of 5.25 kPa. The system resistance between blower and burners is equal to approximately 1.5 kPa.

As stated previously, "sealed-nose" burners require 16.5 L/s each. Therefore:

4 x 16.5 L/s x 2 = 132 L/s air volume

and burner operating pressure is 5.25 kPa; plus system resistance pressure 1.25 kPa. Therefore:

pressure required equals 5.25 + 1.5 = 6.75 kPa.

The blower then must be capable of delivering 132 L/s against 6.75 kPa. It is wise to select the blower closest to this duty **but above it**. Your selection then will be a "DAWN" 8–FS Oil-burner Blower, the design duty of which is 141 L/s @ 7 kPa.

MULTI-STAGING:

These blowers are ideally suited to multi-staging, in series for pressure increase or in parallel for volume increase. While generally it is more economical to install a larger blower to achieve this increase, it is sometimes convenient to stage a second blower to an existing one when increasing the performance of equipment already installed. If a larger blower is necessary, may we recommend your reference to the brochure detailing "DAWN" High Pressure Blowers, a range having capacities up to 2350 L/s @ 1.25 kPa. See also: "DAWN" Cast Iron Pressure Blowers.

The performances shown are taken from actual factory tests conducted in accordance with B.S.848: Part 1:1963; Test Method No. 3. The following tables are at rated speed of 2850 r/min. Graphs of performance curves are available if required.

		DESIGN DUTY										
3–FS	kPa	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4	4.03	4	
	L/s	287	280	268	254	235	212	176	103	61	ND	
	kW	1.49	1.46	1.43	1.40	1.35	1.30	1.25	1.10	1.05	1.00	
4–FS	kPa	4	4.25	4.5	4.75	5.0	5.25	5.5	5.75	6	5.75	
	L/s	103	101	99	94	89	82	73	59	28	ND	
	kW	1.39	1.37	1.37	1.34	1.33	1.30	1.27	1.23	1.18	1.16	
5–FS	kPa	4	4.25	4.5	4.75	5.0	5.25	5.5	5.75	6	6.05	5.75
	L/s	205	197	190	183	174	165	153	136	106	82	ND
	kW	1.77	1.70	1.64	1.58	1.52	1.46	1.38	1.30	1.16	1.05	.75
6–FS	kPa	4	4.25	4.5	4.75	5.0	5.25	5.5	5.75	6	5.89	5.5
	L/s	310	299	287	275	263	247	228	195	141	71	ND
	kW	2.5	2.44	2.36	2.29	2.21	2.1	2.0	1.84	1.58	1.25	.94
7–FS	kPa	5.75	6.0	6.25	6.5	6.75	7.0	7.25	7.5	7.75	7.8	7.75
	L/s	92	87	82	80	75	71	64	54	35	19	ND
	kW	1.49	1.44	1.40	1.38	1.34	1.31	1.23	1.21	1.12	1.02	.98
8–FS	kPA	5.75	6.0	6.25	6.5	6.75	7.0	7.25	7.5	7.75	7.83	7.75
	L/s	179	172	165	160	153	141	129	115	85	56	ND
	kW	2.25	2.21	2.18	2.14	2.06	2.03	1.95	1.85	1.67	1.5	1.2
9–FS	kPa	5.75	6.0	6.25	6.5	6.75	7.0	7.25	7.5	7.75	8.05	7.75
	L/s	247	240	233	226	219	212	202	190	172	106	ND
	kW	3.0	2.85	2.78	2.7	2.63	2.55	2.44	2.33	2.18	1.65	1.31