

Working & Maintenance Instructions for:-

Hull No. 47

M.V. "LIMNOS"

Any Communication Regarding this Subject Should Bear
Reference No. 51,088.

Designed & Supplied by
Norris Warming Canada Limited,
1285 Hodge Street, Room 315,
Ville St. Laurent,
Montreal 9, Quebec,
Canada.

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P102/E Air Conditioning Unit

The Air Conditioning Unit consists of an electric heating coil connected directly to a direct expansion cooling coil.

The filtered fresh air, recirculated air or mixture of both is either heated or cooled to the required conditions for which the system has been designed.

The units, when on Air Conditioning are designed to operate on 50% fresh air and 50% recirculated air. The mixture of fresh and recirculated air can, however, be varied to suit various requirements by manual adjustment of dampers.

In extreme conditions, the recirculated damper may be fully opened and the fresh air damper fully closed for maximum benefits of both, heating and cooling and as the fresh air damper is not 100% air tight, normal fresh air leakage passed the damper will be sufficient to meet minimum fresh air requirements.

The heating coil consists of a galvanised sheet casing which contains a series of electric heating elements. The heating elements are wound on non-hygroscopic cores which are attached to either the top or side plate on the coil. On this plate will be found a terminal box to which the electrical connections are made. Inside the terminal box an over-temperature trip is fitted. This is set to prevent over heating occurring, should through some fault, the heating coil be 'on' when the fan is not running and is wired in series with the thermostat.

Under normal circumstances the heaters cannot be switched on until power is provided from the fan starter. This power is generally taken from an auxiliary contact on the Dead Side of the starter and passed through a transformer to provide the circuit for the heater control thermostats.

The elements are arranged in groups of three with phase balancing and each group is controlled by a thermostat.

The thermostats which are set on test are regulated by the air entering the heating coil through sensing elements situated in the unit before the heating coil. The settings of the thermostat are stopped to avoid an instant full load demand.

The thermostats each operate separate contactors which make, or break the power supply to the main heating elements.

Thermostats will be found to be conveniently located near the heating coil.

P102/E Air Conditioning Unit
(Continued.)

The air cooling coils consist of copper and aluminium fins fitted inside the galvanised steel casing and are complete with drain. It is important that this drain is kept free to ensure quick disposal of condensate.

All cooling controls are connected with the compressor and do not have any direct connection with the cooling coil. However, a cooling sensing thermostat is fitted in the return air which operates a solenoid valve on the Freon liquid supply to the cooling coil. When the return air temperature drops to approximately 72°F to 75°F., which is a comfortable flow, minimum temperature below which the compressor will not be required, the solenoid valve will close and the compressor will commence to operate on a pump down cycle.

NOTE: The low pressure cut out is of the automatic reset type and need not be reset. A time lag of approximately five minutes will govern this action and, therefore, the compressor will start up again automatically.

P104 - Electric Cabin Re-Heaters
High Velocity System

The electric cabin re-heat boxes, fitted in the Air Conditioned spaces, consist of a moulded fibreglass box, internally lined with acoustic thermal insulation, are designed to reduce the air to conventional velocity and attenuate the sound to an acceptable level.

Fitted inside the box, is an electric heating element, the heating coil being wound on a non-hygroscopic core. This heating element is controlled by a thermostat situated inside the space.

The thermostat senses the temperature of the space and switches the heater in the box 'on' or 'off' as required, the setting being that desired by the occupant. (Note - lowering of the thermostat setting will not increase the cooling of air during air conditioning, as this is governed by the ship conditions as a whole, and is only for heating purposes.)

The electrical circuits of 110 volts is used for the thermostats and this controls the contactor coil which is located in a contactor panel as the heating element is for the full ship's current, i.e., 440 or 550 volts. The contactor panel contains all the contactors which are controlled by thermostats in the various spaces and there may be one or two such panels provided for each air conditioning unit.

Connected to the bottom of each electric reheat box is an over-temperature trip which is set to prevent over heating occurring in the box should, through some fault, the heating coil be 'on' when the fan is not running or a fire damper closed etc., and is wired in series with the thermostat.

The over-temperature trip is a push reset and this can be done with a thin rod through a hole, which is provided for this purpose in the ceiling.

The electric re-heater box is designed so that the bottom plate is removable and new heating elements can be fitted if necessary.

FAN AND MOTOR MAINTENANCE

All fans, both axial and centrifugal, are directly connected with set screws to the extended shafts of the driving motor and neither have any bearings apart from motor bearings, therefore, maintenance of the fan as such is practically negligible.

For maintenance to the motors the following procedure should be adopted after the current supply to the unit concerned has been disconnected at the main breaker.

AXIAL FANS

Axial Type Fan Motors are accessible only by removal of the fan tube from the ductwork, unbolting the motor and disconnecting the conduit. The fan and motor can then be extracted from the tube and the wheel removed from the motor shaft by unfastening the set screws. The motor bearings can be inspected, cleaned and repacked or replaced, as necessary.

CENTRIFUGAL FANS

To remove the motor for maintenance, the impeller should be disconnected by undoing the set screws of the hub just outside the back plate. Care should be taken to ensure that the hub remains in the hole of the back plate. Access doors in the Taper connection in front of the fan will enable assistance to be given from the front.

Should the fan impeller have to be removed from the casing, the inlet and outlet flanges of the fan will have to be disconnected as well as the motor. The fan inlet cone and vanes will have to be disconnected from the front plate to allow the impeller to be withdrawn.

NOTE:

Fractional horsepower motors of Tamper manufacture with type "2Rs" bearings are sealed bearings and cannot be regreased, nor do they need any lubrication.

WARNING

OVER GREASING OF BEARINGS CAN BE AS HARMFUL AND CAUSE AS MUCH DAMAGE AS UNDER GREASING.

P105 - Direct Switching Starters type SC1
and SC2N

The starters are firmly mounted in a vertical position and are connected as diagram given in this booklet. Should cables be disconnected, care should be taken so as not to interchange cable clamps bearing terminal markings. All terminals should be securely tightened.

The overload relay dashpots should be clean and filled within 1" of top with special dashpot-oil provided. Where this is in capsules, each contains sufficient for one dashpot.

Dashpots and pistons are carefully matched to ensure accurate operation, and must on no account be interchanged.

MAINTENANCE

Contacts To obtain access, withdraw contactor after removing fixing nuts and disconnecting wiring as necessary. Before contactor is withdrawn, unscrew dashpots to prevent oil being spilled. Undo two fixing screws in moving contact carrier, which will lift clear displaying fixed and moving contacts. Contacts should be kept clean and unpitted by the careful use of a file card. They should not be filed harshly; if badly blistered, they may be dressed with a smooth file to restore contact shape.

As soon as silver facings become badly worn, replace contacts by a new set.

Magnets: Inspect magnet faces periodically, and wipe off rust or dirt with a clean dry cloth. Do not apply oil or grease, except for preservation during an idle period, after which it must be completely removed.

Excessive vibration during normal operation may be caused by:

1. Foreign matter (e.g. cable trimmings) lodging on the pole faces and preventing the magnet from sealing.
2. Incorrect assembly. Silencing rings on yoke and arrature must be diagonally disposed, i.e., with rings on opposite sides of operating coil.
3. Broken silencing ring. In this event, magnet should be replaced.

Operating Coil: To remove, disconnect tails, slacken fixing screws holding brass magnet brackets, and remove magnet yoke complete with felt washer and operating coil. These may then be readily separated.

P105 - Direct Switching Starters type SC1 & SC2N

OVERLOAD RELAYS

Current Settings: After filling with oil supplied (Allen West Specification No. 12/DP1) set dashpots with their top edges in line with the calibration mark nearest to 15% above normal full load current of motor. Values on calibration plate are minimum currents at which relays will operate at that particular setting.

Time-Lag Setting: This is controlled by the rate at which oil is allowed to flow from top to underside of the piston, and is adjusted by a washer which has five holes of graded size.

Starters are despatched with time-lags set at centre position (i.e. with centre hole of the washer covering the hole in the piston). If the load necessitates a different time-lag, remove the washer from the plunger and replace so that required hole coincides with the fixed hole in the plunger. Smaller hole gives longer time lag and vice versa.

If sufficient time-lag is not obtainable by this method, it may be increased by using a thicker dashpot oil (Allen West Specification No. 12/DPr).

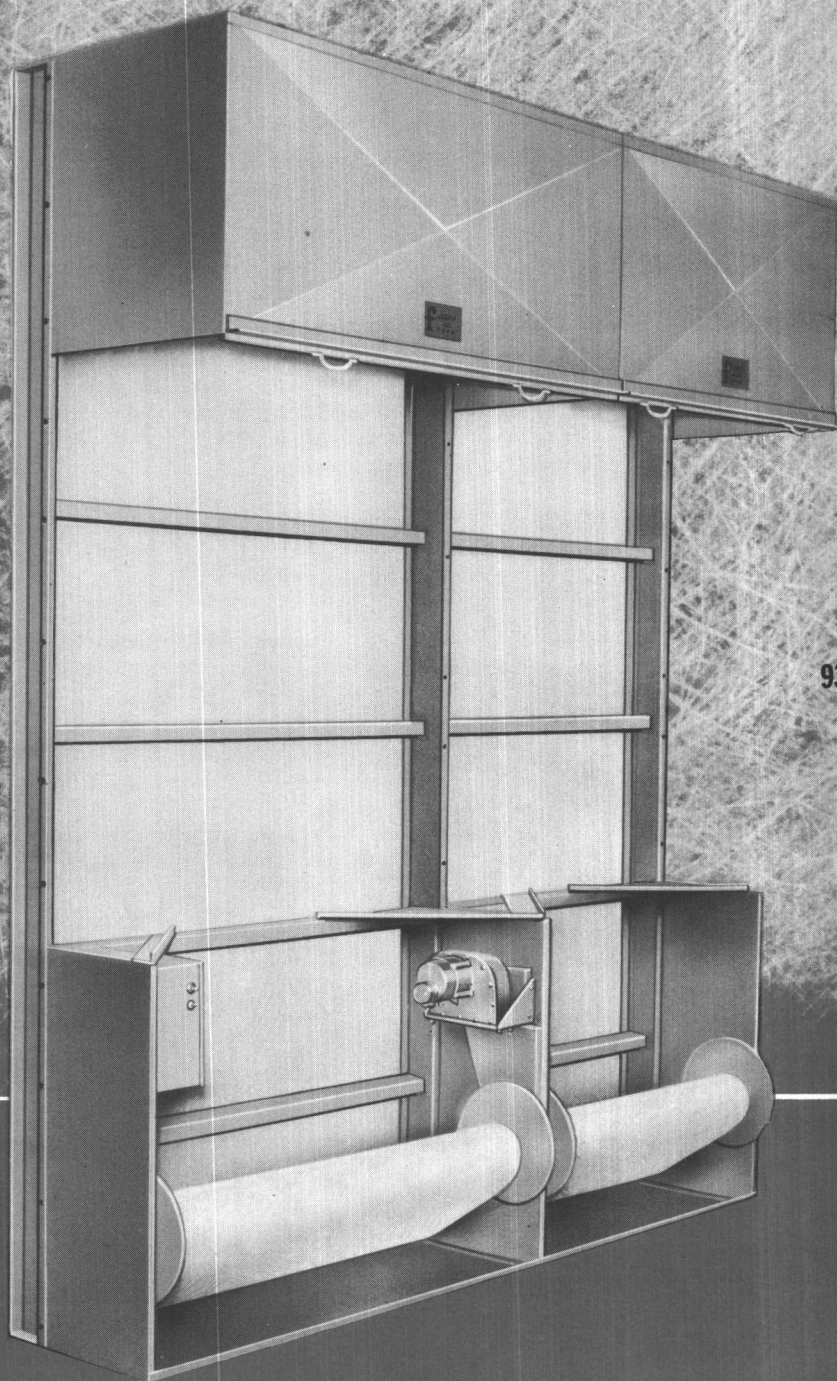
Dashpot Oils specified are obtainable only from Allen West Co. Ltd. Their use is strongly recommended, as they have been proven to give satisfactory performance and as other mineral oils may not be so satisfactory. OIL OF VEGETABLE ORIGIN SHOULD ON NO ACCOUNT BE USED.

Restraining Device: This automatically increases time-lag setting during heavy current peaks which occur under normal starting conditions. It comprises of a dished washer, which must be fitted concave side uppermost and will be above the washer with the time-lag holes.

On heavy current peaks the initial rush of oil through the hole in the piston and washer tilts the concave washer which seals the hole and thus, materially increased the time-lag. The concave washer assumes its original position as current decreases to normal value.

F A R - A I R[®]

ROLL-KLEEN



Minimum of moving parts.

Non-necking media.

No rear access required.

No moving parts exposed.

Totally enclosed gear motor.

93 sizes and 6 control systems.

Wide velocity range.

Disposable media spools.

Pre-mounted control panel.

**AUTOMATIC
RENEWABLE MEDIA
AIR FILTER**

DESCRIPTION

The Far-Air Roll-Kleen automatic filter is a modern, disposable media filter which renews the media in the face area, as required, from a large supply roll. The used media is automatically wound on a disposable spool for easy disposal.

A Roll-Kleen automatic filter gives up to a year of dependable air filtration from a single roll of media. It adapts itself to varying amounts of dust and dirt in the atmosphere. Signal lights indicate when replacement of media roll is required. The Roll-Kleen is by far the simplest, most versatile filter in its field.

APPLICATION

Modern plants and office buildings designed for a minimum of maintenance will benefit from Roll-Kleen automatic filtration. Filter banks that are neither readily accessible nor convenient for filter changing are examples of applications for which the Roll-Kleen filter is frequently used. Any filter installation which will handle heavy contamination loads and require very frequent filter changes will be well served by Roll-Kleen filters.

OPERATION

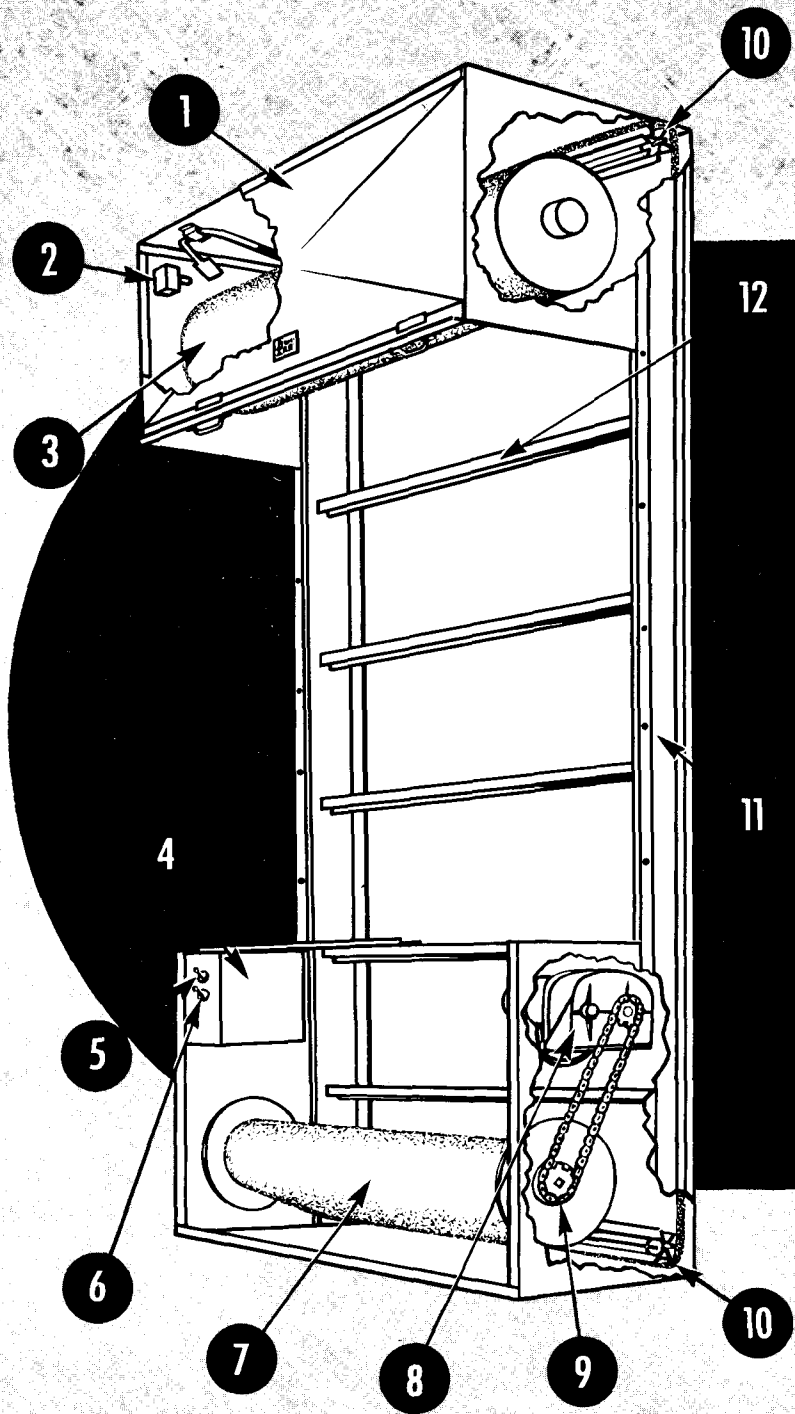
The media in a Roll-Kleen filter is changed by winding the used media onto the lower media spool. This action draws clean media into the face of the filter from the top roll. The lower spool is rotated by a gear motor through a simple chain and sprocket drive. All media movement is governed by automatic controls.

STANDARD CONTROLS, known as "Constant static pressure" controls are supplied with the filter. With this type of control, media movement starts when the pressure drop reaches a preset limit and stops when sufficient clean media has entered the face of the filter to lower the pressure drop approximately .1" wg from the maximum setting. This method results in a nearly constant pressure drop and airflow.

OPTIONAL CONTROLS, Available at extra cost:

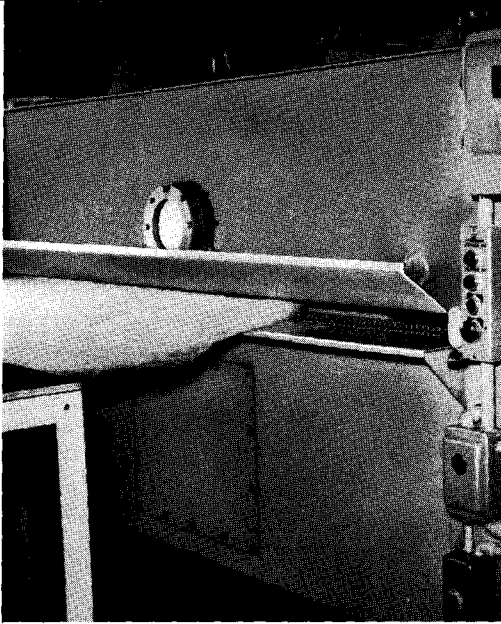
1. Complete media change—pressure actuated.
2. Complete media change—timer actuated.
3. Incremental movement—pressure actuated (Adjustable in increments of 2" or more).
4. Incremental movement—timer actuated (Adjustable in increments of 2" or more).
5. Pressure over-ride on either timer actuated system (2 or 4).

Control Panel and Gear Motor may be located on Upstream or Downstream side of unit, or completely outside of Airstream.



PARTS LIST

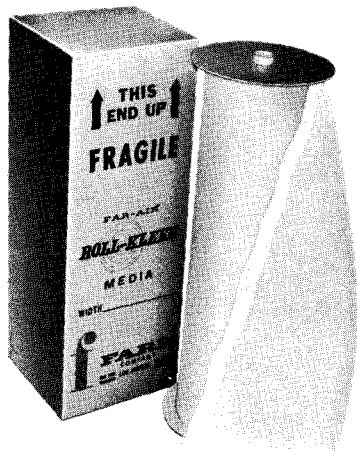
1. MEDIA ROLL COVER.
2. MEDIA RUNOUT SWITCH.
3. CLEAN MEDIA ROLL.
4. CONTROL BOX.
5. SELECTOR SWITCH.
6. LOADING SWITCH.
7. USED MEDIA ROLL.
8. GEAR MOTOR.
9. GUARDED CHAIN DRIVE.
10. IDLER ROLLS.
11. CHANNELED SIDE SECTION.
12. DEEP SECTION REINFORCING CHANNELS.



PERFORMANCE

The Roll-Kleen automatic filter is fully effective from high (500 fpm) to low (350 fpm) face velocities. Its efficiency rating by N.B.S. type Cottrell test, is 84.6%. The efficiency is 82% on Standardized Fine Air Cleaner Test Dust at the recommended face velocity of 500 fpm. Down to a velocity of 350 fpm, the efficiency will remain over 80%.

The efficiency and dirt holding capacity of the media is increased by spraying the media fibers with a special non-drip adhesive.

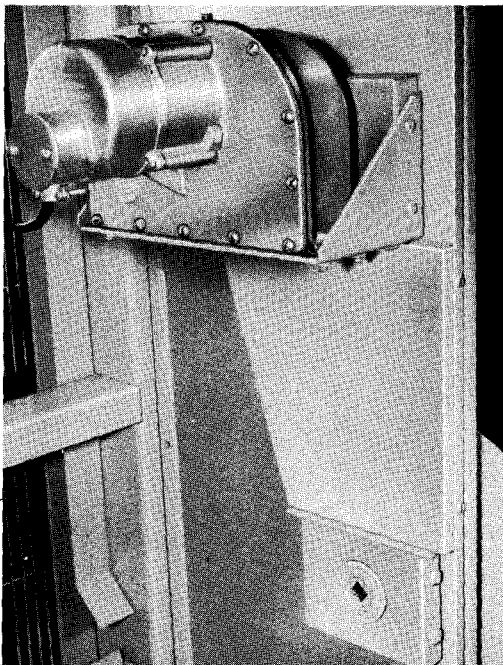


MEDIA

The Far-Air Roll-Kleen media designed and recommended for use in standard Roll-Kleen units is a glass fiber material which has been coated with adhesive and bonded to a strong, open-weave, cloth backing, known as lenoweave. It is packaged in compact rolls 70 feet long and the proper width for 3, 4 or 5 foot wide Roll-Kleen filter sections.

An exclusive feature of the Roll-Kleen media is the lenoweave fabric backing. This feature makes possible the greatly simplified Roll-Kleen design in which the principal moving part is the media itself. Use of this media, developed expressly for the Roll-Kleen filter, eliminates the need for a complicated media carriage. This lenoweave backing also helps protect individual fibers from being blown into the airstream and guards against necking of the media as it moves through the face of the filter.

***Media is of the progressive density type.**



DESIGN

There are three types of Roll-Kleen sections:

1. A MASTER which includes complete controls and is motorized.
2. A DRIVER which is motorized and may power another section but is controlled by a master section.
3. A SLAVE which is non-motorized and is both controlled and powered by other sections.

Combinations of these sections may be bolted together to handle the required capacity. Any size Roll-Kleen installation including the smallest size manufactured is economically practical. Access is required only on the upstream side of a Roll-Kleen installation.

Other design features include enclosed gear motor and drive assembly, completely disposable (tube and media) media rolls, a simple clutch that permits manual rotation of the lower media roll without disengaging the sprocket and chain drive, and guides that simplify upper media roll installation.

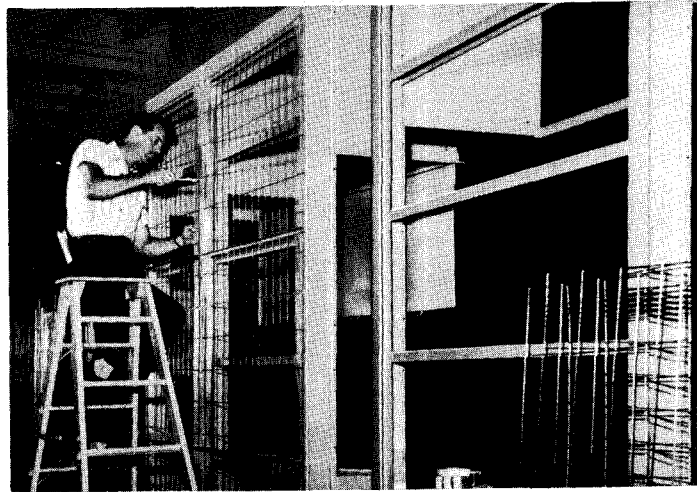
ROLL-KLEEN CAPACITY TABLES

(C.F.M.)

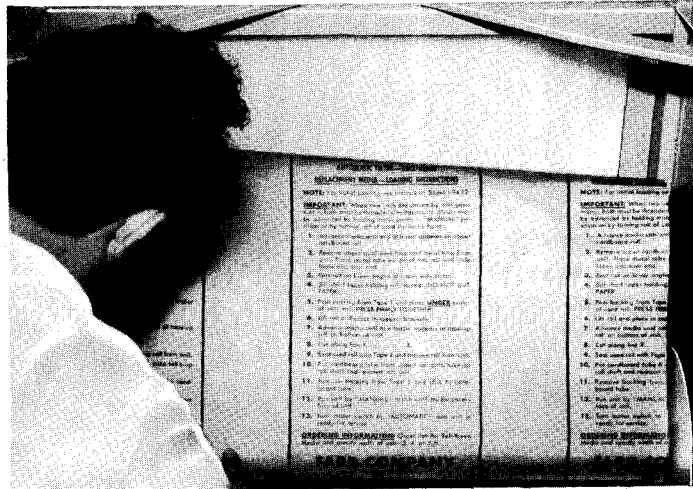
HEIGHT DESIGNATION NO.	OVERALL HEIGHT	WIDTH DESIGNATION NUMBER														HEIGHT DESIGNATION NO.
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	
		OVERALL WIDTH — FEET AND INCHES														
		3'0"	4'0"	5'0"	6'0"	7'0"	8'0"	9'0"	10'0"	11'0"	12'0"	13'0"	14'0"	15'0"	16'0"	
50	5'0"	5,640	7,810	9,980	11,280	13,450	15,620	17,790	19,960	21,260	23,430	25,600	27,770	29,940	31,240	50
54	5'4"	6,080	8,410	10,740	12,160	14,490	16,820	19,150	21,480	22,900	25,230	27,560	29,890	32,220	33,640	54
58	5'8"	6,510	9,010	11,510	13,020	15,520	18,020	20,520	23,020	24,530	27,030	29,530	32,030	34,530	36,040	58
60	6'0"	6,940	9,610	12,280	13,990	16,560	19,220	21,840	24,560	26,160	28,830	31,500	34,170	36,840	38,440	60
64	6'4"	7,380	10,210	13,040	14,760	17,590	20,420	23,250	26,080	27,800	30,630	33,460	36,290	39,120	40,840	64
68	6'8"	7,810	10,810	13,810	15,620	18,630	21,620	24,620	27,620	29,430	32,430	35,430	38,430	41,430	43,240	68
70	7'0"	8,240	11,410	14,580	16,490	19,660	22,820	25,990	29,160	31,060	34,230	37,400	40,570	43,740	45,540	70
74	7'4"	8,680	12,010	15,350	17,560	20,700	24,020	27,360	30,700	32,700	36,030	39,370	42,710	46,050	48,040	74
78	7'8"	9,110	12,610	16,120	18,230	21,730	25,220	28,730	32,240	34,330	37,830	41,340	44,850	48,360	50,440	78
80	8'0"	9,550	13,220	16,880	19,100	22,760	26,440	30,100	33,760	35,990	39,660	43,320	46,980	50,640	52,880	80
84	8'4"	9,980	13,820	17,650	19,960	23,800	27,640	31,470	35,300	37,620	41,460	45,290	49,120	52,950	55,280	84
88	8'8"	10,420	14,420	18,920	20,830	24,830	28,840	32,840	36,840	39,260	43,260	47,260	51,260	55,260	57,680	88
90	9'0"	10,850	15,020	19,180	21,700	25,870	30,040	34,200	38,360	40,890	45,060	49,220	53,380	57,540	60,080	90
94	9'4"	11,280	15,620	19,950	22,570	26,900	31,240	35,570	39,900	42,520	46,860	51,190	55,520	59,850	62,480	94
98	9'8"	11,720	16,220	20,720	23,440	27,940	32,440	36,980	41,440	44,160	48,660	53,160	57,660	62,160	64,880	98
100	10'0"	12,150	16,820	21,990	24,300	28,970	33,640	38,310	42,780	45,790	50,460	55,130	60,800	64,470	67,880	100
104	10'4"	12,590	17,420	22,250	25,170	30,010	34,840	39,670	44,500	47,430	52,260	57,190	62,020	66,850	69,880	104
108	10'8"	13,020	18,020	23,020	26,040	31,040	36,040	41,040	46,040	49,060	54,060	59,060	64,060	69,060	72,080	108
110	11'0"	13,450	18,620	23,790	26,910	32,080	37,240	42,410	47,580	50,690	55,860	61,030	66,200	71,370	74,480	110
114	11'4"	13,890	19,220	24,560	27,780	33,110	38,440	43,780	49,120	52,330	57,660	63,000	68,340	73,680	76,880	114
118	11'8"	14,320	19,820	25,320	28,640	34,140	39,640	45,140	50,640	53,960	59,460	64,960	70,460	75,960	79,280	118
120	12'0"	14,760	20,420	26,090	29,510	35,180	40,840	46,510	52,180	55,600	61,260	66,930	72,600	78,270	81,880	120
124	12'4"	15,190	21,020	26,860	30,380	36,210	42,040	47,880	53,720	57,230	63,060	68,900	74,740	80,580	84,080	124
128	12'8"	15,620	21,620	27,630	31,250	37,250	43,240	49,250	55,260	58,860	64,860	70,870	76,880	82,890	86,880	128
130	13'0"	16,060	22,230	28,390	32,120	38,280	44,460	50,620	56,780	60,520	66,690	72,850	79,010	85,170	89,920	130
134	13'4"	16,490	22,830	29,160	32,980	39,320	45,660	51,990	58,320	62,150	68,490	74,820	81,150	87,480	91,320	134
138	13'8"	16,930	23,430	29,930	33,850	40,350	46,860	53,360	59,860	63,790	70,290	76,790	83,290	89,790	93,720	138
140	14'0"	17,360	24,030	30,700	34,720	41,390	48,060	54,730	61,400	65,420	72,090	78,760	85,430	92,100	96,120	140
144	14'4"	17,790	24,630	31,460	35,590	42,420	49,260	56,090	62,920	67,050	73,890	80,720	87,550	94,380	98,520	144
148	14'8"	18,230	25,230	32,230	36,460	43,460	50,460	57,460	64,460	68,690	75,690	82,690	89,690	96,690	100,920	148
150	15'0"	18,660	25,830	33,000	37,320	44,490	51,660	58,830	66,000	70,320	77,490	84,660	91,830	99,000	103,320	150
NO. AND WIDTH OF SECTIONS		1 - No. 3	1 - No. 4	1 - No. 5	2 - No. 3	1 - No. 3 1 - No. 4	2 - No. 4	1 - No. 5 1 - No. 4	2 - No. 5	2 - No. 4 1 - No. 3	3 - No. 4	2 - No. 4 1 - No. 5	2 - No. 5 1 - No. 4	3 - No. 5	4 - No. 4	

HEIGHT DESIGNATION NO.	OVERALL HEIGHT	WIDTH DESIGNATION NUMBER														HEIGHT DESIGNATION NO.
		17	18	19	20	21	22	23	24	25	26	27	28	29	30	
		OVERALL WIDTH — FEET AND INCHES														
		17'0"	18'0"	19'0"	20'0"	21'0"	22'0"	23'0"	24'0"	25'0"	26'0"	27'0"	28'0"	29'0"	30'0"	
50	5'0"	33,410	35,580	37,750	39,920	41,220	43,390	45,560	47,730	49,900	51,200	53,370	55,540	57,710	59,880	50
54	5'4"	35,970	38,300	40,630	42,960	44,380	46,710	49,040	51,370	53,700	55,120	57,450	59,780	62,110	64,440	54
58	5'8"	38,540	41,040	43,540	46,040	47,550	50,050	52,550	55,050	57,550	59,060	61,560	64,060	66,560	69,060	58
60	6'0"	41,110	43,780	46,450	49,120	50,720	53,390	56,060	58,730	61,400	63,010	65,670	68,340	71,010	73,680	60
64	6'4"	43,670	46,500	49,330	52,160	53,880	56,710	59,540	62,370	65,200	68,030	70,860	73,690	76,520	79,350	64
68	6'8"	46,240	49,240	52,240	55,240	57,050	60,050	63,050	66,050	69,050	72,050	75,050	78,050	81,050	84,050	68
70	7'0"	48,810	51,980	55,150	58,320	60,220	63,390	66,560	69,730	72,900	74,810	77,970	81,140	84,310	87,480	70
74	7'4"	51,380	54,720	58,060	61,400	63,390	66,730	70,080	73,410	76,750	78,760	82,080	85,430	88,760	92,100	74
78	7'8"	53,950	57,460	60,970	64,480	66,560	70,070	73,590	77,100	80,600	82,710	86,190	89,710	93,210	96,720	78
80	8'0"	56,540	60,200	63,860	67,520	69,760	73,420	77,070	80,740	84,400	86,620	90,300	93,950	97,620	101,280	80
84	8'4"	59,110	62,940	66,770	70,600	72,930	76,760	80,580	84,420	88,250	90,560	94,410	98,230	102,170	106,080	84
88	8'8"	61,680	65,680	69,680	73,680	76,100	80,100	84,100	88,100	92,100	94,510	98,520	102,520	106,520	110,520	88
90	9'0"	64,240	68,400	72,560	76,720	79,260	83,420	87,570	91,740	95,900	98,420	102,600	106,750	110,920	115,080	90
94	9'4"	66,810	71,140	75,470	79,800	82,430	86,760	91,080	95,420	99,750	102,370	106,710	111,030	115,370	119,700	94
98	9'8"	69,380	73,880	78,340	82,880	85,200	90,100	94,600	99,100	103,600	106,320	110,820	115,320	119,820	124,320	98
100	10'0"	71,950	76,620	81,290	85,960	88,770	93,440	98,110	102,780	107,450	110,260	114,930	119,600	124,270	128,940	100
104	10'4"	74,510	79,340	84,170	89,000	91,930	96,760	101,590	106,420	111,250	114,170	119,010	123,840	128,670	133,500	104
108	10'8"	77,080	82,080	87,080	92,080	95,100	100,100	105,100	110,100	115,100	118,120	123,120	128,120	133,120	138,120	108
110	11'0"	79,650	84,820	89,990	95,160	98,270	103,440	108,610	113,780	118,950	122,070	127,230	132,400	137,570	142,740	110
114	11'4"	82,220	87,560	92,900	98,240	101,440	106,780	112,130	117,440	122,800	126,020	131,340	136,660	142,020	147,360	114
118	11'8"	84,780	90,280	95,780	101,280	104,600	110,100	115,600	121,100	126,600	129,920	135,420	140,920	146,420	151,920	118
120	12'0"	87,350	93,020	98,690	104,360	107,770	113,440	119,120	124,780	130,450	133,870	139,530	145,200	150,870	156,540	120
124	12'4"	89,920	95,740	101,600	107,440	110,940	116,780	122,630	128,440	134,300	137,820	143,640	149,490	155,320	161,160	124
128	12'8"	92,490	98,500	104,510	110,520	113,910	120,120	126,440	132,760	139,150	141,770	147,750	153,730	159,710	165,720	128
130	13'0"	95,060	101,240	107,400	113,560	117,310	123,470	129,630	135,790	141,950	145,880	152,040	158,200	164,360	170,520	130
134	13'4"	97,650	103,900	110,310	116,640	120,480	126,810	133,130	139,470	145,800	149,620	155,970	162,290	168,630	174,960	134
138	13'8"	100,220	106,720	113,220	119,720	123,650	130,150	136,650	143,150	149,650	153,570	160,080	166,580	173,080	179,580	138
140	14'0"	102,790	109,460	116,130	122,800	126,820	133,490	140,160	146,830	153,500	157,520	164,190	170,860	177,530	184,200	140
144	14'4"	105,350	112,180	119,010	125,840	129,960	136,810	143,660	150,510	157,360	161,430	168,270	175,120	181,970	188,760	144
148	14'8"	107,920	114,920	121,920	128,920	133,150	140,150	147,150	154,150	161,150	165,380	172,380	179,380	186,380	193,380	148

Factory fabrication of all components keep original installation simplified, control boxes, switches and gear motors are all pre-wired. All electrical circuits for a complete Roll-Kleen installation are factory tested before shipment.



Clear, simple, step-by-step instructions for installing the media are printed on the leader section of each media roll. These instructions, plus the fact that the lower roll can be turned by hand without disengaging the chain drive, make media installation quick and easy.



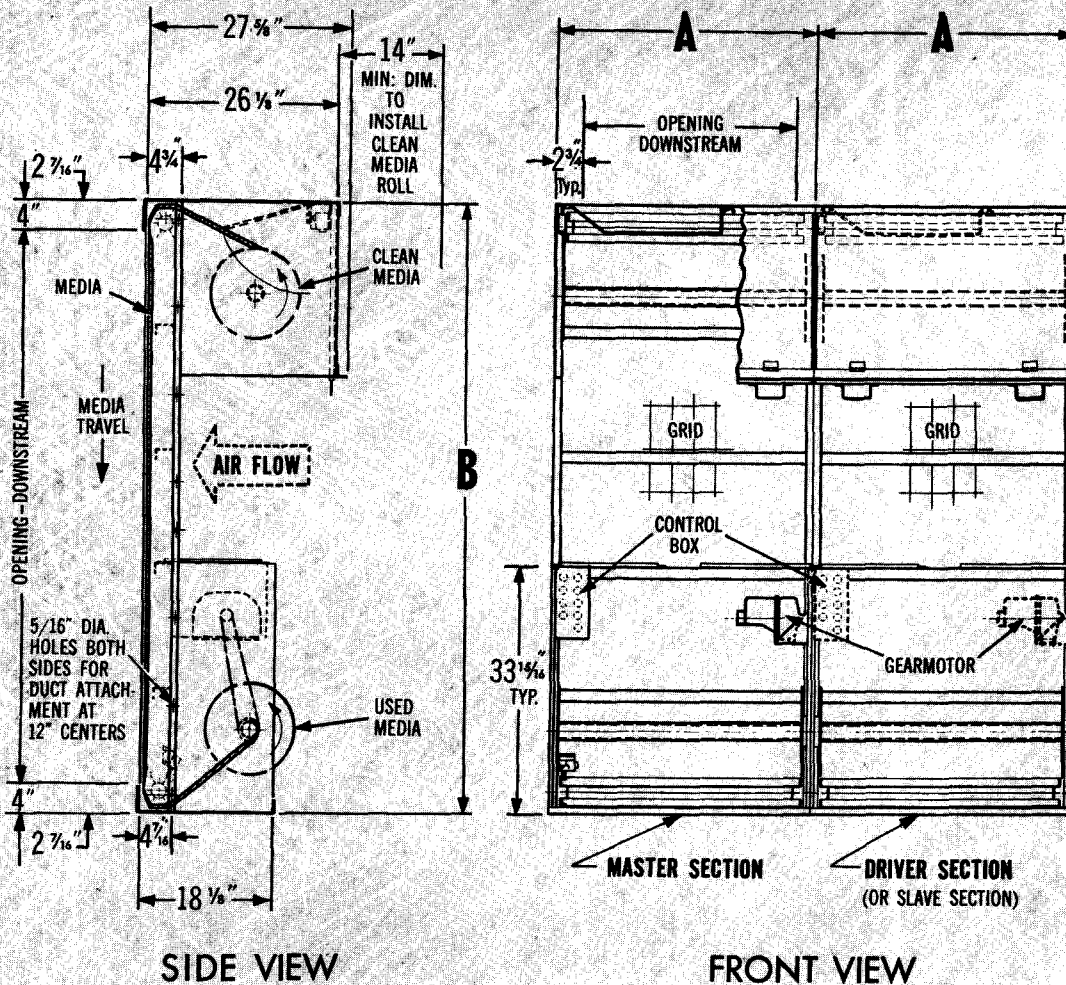
INSTALLATION

The Far-Air Roll-Kleen automatic filter installation consists of one or more sections of the proper size as determined by the amount of air to be filtered and the dimensions of the space available. Filter sections are shipped factory-assembled and installation is simple and easy.

The filter drive and control assembly is pre-mounted on one or more of the filter sections. Filter sections are aligned and attached to the air duct. Completion of electrical and pressure switch connections is necessary.

When two or more sections are to be installed, the sections are aligned and bolted together. The drive shafts of sections operating from one drive assembly are connected by the insertion of a coupling. The maintenance signal lights may be installed at the filter bank or connected and wired to any convenient location, such as a central control station.

DIMENSION PLAN



A WIDTHS AVAILABLE: 3'-0", 4'-0" AND 5'-0".

B HEIGHTS AVAILABLE: 5'-0" THRU 15'-0" IN 4" INCREMENTS.

EACH SIZE IS SUPPLIED WITH ONE MASTER SECTION. SIZES COMPRISED OF MULTIPLE SECTIONS ARE FURNISHED WITH ONE MASTER PLUS DRIVER AND/OR SLAVE SECTIONS. SIZE DETERMINES WHETHER DRIVERS OR SLAVES ARE REQUIRED.

ELECTRICAL CHARACTERISTICS: 110 VOLTS, SINGLE PHASE, 60 CYCLES IS STANDARD.

ONE SET OF CONTROLS IS FURNISHED WITH EACH MASTER SECTION.

ONE SIGNAL LIGHT BOX FURNISHED WITH EACH MASTER SECTION.

CONTROL BOX, GEARMOTOR AND CHAIN DRIVE FURNISHED ON MASTER AND DRIVER SECTIONS ONLY.

MASTER AND DRIVER SECTIONS ARE MOTORIZED. SLAVE SECTIONS ARE NON-MOTORIZED.

CONSTRUCTION

All structural members of Roll-Kleen automatic filters are fabricated of sturdy, channel-shaped, heavy (11) gauge steel. The basic frame is given additional rigidity by welding cross members, also of heavy gauge channeled steel, at appropriate stress points. Regardless of the size, a Roll-Kleen filter will hold the required alignment.

Roll-Kleen automatic filters are manufactured in sections 3, 4 and 5 feet in width and in heights from 5 to 15 feet in increments of 4 inches. Any number of these sections may be joined together to provide the necessary filter face area. All sections are assembled and factory-tested prior to shipment.

MAINTENANCE

The Far-Air Roll-Kleen automatic filter requires only periodic inspection and lubrication. The media roll must, of course, be changed. Media changes are infrequent because of the large supply on each roll.

Two signal lights, which may be placed at any convenient location, give a complete service picture at all times. One signal light is a media run-out warning. The second light indicates excess pressure drop across the face of the filter. Media replacement should be made when both signal lights go on.

HOW TO SPECIFY

The air filter shall be of the automatic renewable media type. It shall consist of a heavy gauge steel frame adequately reinforced to form a rigid unit. A metal grid shall be provided formed of vertical and horizontal bars properly spaced to assure adequate support for the media. The clean media roll shall be mounted at the top of the frame. The dirty media shall be moved down the face of the grid onto a disposable spool located at the bottom of the frame. The shaded pole gear motor driving the media shall be precision built with an all steel spur gear train turning on ball and needle bearings with sealed-in oil supply for full flooded lubrication and shall have an output torque of 400 inch pounds, and shall not burn out when stalled on the line. It shall be located on the upstream side of the filter and connected to the media take up spool by means of an enclosed roller chain and sprocket drive.

Media movement shall be actuated by means of a differential pressure operated microswitch which shall be set to initiate media travel at .5" w.g. and which shall have a maximum differential between on and off of .1" w.g.

The media shall consist of a glass fiber mat 2½" thick. Fibers shall be resin bonded and shall be sufficiently flexible to resist fracture and entrainment. The media shall be coated with a flameproof adhesive and shall be reinforced with ¼" mesh cotton fabric bonded with flameproof glue to the down stream side to prevent the entrainment of glass fibers and to eliminate necking.

Filters shall be the Far-Air Roll-Kleen as manufactured by the Farr Company, Montreal, Que. to C.S.A. approval file-15833.

HOW TO ORDER

1. Select the Roll-Kleen model from the CAPACITY TABLES that meets your size and C.F.M. requirements.
2. Write the width, then a dash and then the height number. Also write, in brackets, the number of C.F.M. to be handled. For example, Model No. 9 - 84 (31,470 C.F.M.) is a model 9' wide by 8'4" high which will handle 31,470 C.F.M.
3. Indicate the electrical voltage.
4. Indicate any optional equipment such as a transformer or special protective finish. Also indicate the number of spare rolls of Roll-Kleen media required.

THE FAR-AIR FAMILY OF ROLL-KLEEN FILTERS



ROLL-KLEEN



HI-KLEEN



TYPE H
ROLL-KLEEN



LINT-KLEEN

CONTACT YOUR LOCAL REPRESENTATIVE

FARR

COMPANY LTD.

MONTREAL
390 DESLAURIERS ST.
Riverside 7-6575

TORONTO
21 KERN RD., DON MILLS P.O.
Hicory 4-4448

Western Distributors: E. H. Price Ltd.

Manufactured under license to FARR Co., Los Angeles, Calif., Originators of FAR-AIR certified filter service.

Reference P 101 - Automatic Air Filters

DESCRIPTION

Automatic Air Filters are used to filter the fresh and recirculated air entering the unit. These are Marine disposable media filters which renew the media in the face area, as required, from a large roll. The used media is automatically wound on to a disposable spool for easy disposal.

The Automatic Filter gives from nine to twelve months dependable air filtration from a single roll of media.

Signal lights indicate when replacement of media is required.

OPERATION

The media in an Automatic Filter is changed by winding the used media on the lower media spool. This action draws clean media into the face of the filter from the top roll. The lower spool is rotated by a gear motor through a simple chain and sprocket drive. All media movement is governed by automatic controls.

The timer actuated control is supplied with each filter. This type of control media movement is governed by an electrical timer when the switch is in the automatic position.

The media can be moved more quickly for special circumstances, when the switch is at the hand position. These circumstances would be when reloading the filter media and should the filter be so heavily contaminated with dust that it seriously affects the air volume. The latter may occur during the loading and discharging of dust bearing cargoes.

RELOADING UNIT

For ease of installation it is recommended that the blower be shut down during reloading.

To reload the unit; switch on control panel to "load" until paper trailer end appears on cardboard tube. Turn switch to "off". Remove cardboard tube from machine.

Place media on upper roll tube and insert tube between upper side plates allowing the steel portion of the roll to rest on the bottom angle of the side plates.

Open new roll of media and tear protective paper from adhesive on outside roll. Place under extreme end of trailer on used roll and press together. Place roll in upper support brackets with run-out switch on top of roller.

Reference P101 - Air Filters (Cont'd)

RELOADING UNIT (Cont'd)

Turn switch to "load" until leader on new roll appears on take-up and return switch to "off". Cut new leader immediately behind adhesive strip.

Seal used roll with strip of adhesive remaining and remove from machine.

Put cardboard tube, removed from upper media roll, on the take-up roll and replace take-up roll in unit.

Remove protective cover from adhesive remaining on new roll of media and stick to cardboard tube.

Turn switch to "load" until media completely covers face of filter and turn switch to "automatic". Unit will now operate automatically.

MAINTENANCE

Each six months check oil in gearmotor to see that it is up to the level of plug on side of gear case. Replenish oil if necessary by removing plug on top of gear case. The use of Standard Oil CO's RPM-10-30 or equal is recommended.

Each six months, all moving parts should be checked to see that there is no binding or abrasion. Bearings are either sealed ball bearings or the self-lubricating type and should require no further lubrication. Avoid the use of any but dry type lubricant (Graphite Dixon #635 or equal, molydisulphide, etc) on bearings in case re-lubrication becomes necessary.

RE-ORDERING INFORMATION

When re-ordering media specify contract number as given in the front of this booklet, designating width required, i.e. 3 ft., 4 ft., or 5 ft. roll.

UPPER IDLER ROLL

MEDIA RUNCUT SWITCH ARM MUST REST ON ROLL, AND NOT ON DEHINDING LAYER.

REFER TO "INSTALLATION, OPER- ATION, AND MAINTENANCE INSTRUCTIONS, FARR ROLL-KLEER AUTO- MATIC FILTER", SECTION III "INSTALLATION OF MEDIA".

ROLL END PROTECTORS

MEDIA RUNCUT SWITCH

UPPER MEDIA ROLL

UPPER SIDE PLATE ANGLES

LOADING POSITION OF MEDIA

MEDIA TRAVEL

AIR FLOW

SIDE SEALS

OIL FILLING PLUG

GEAR MOTOR

LOWER MEDIA ROLL

TAKE-UP ROLL TAB CLIP

MEASURING SWITCH

LOWER IDLER ROLL

SCALE

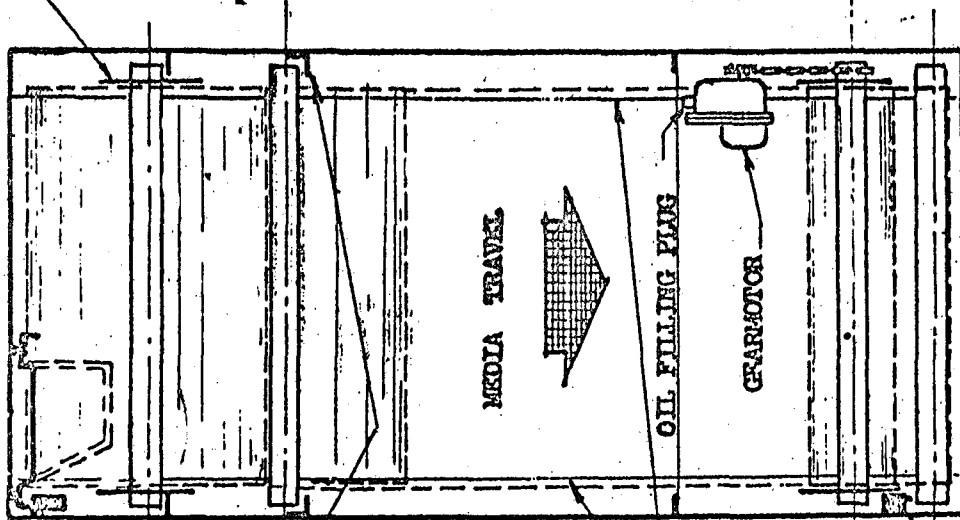
None

TOL UNLESS NOTED

NEXT ASSEM.

AUTOMATIC FILTER - ROLL-KLEER - MEDIA INSTALLATION.

DIAGRAM



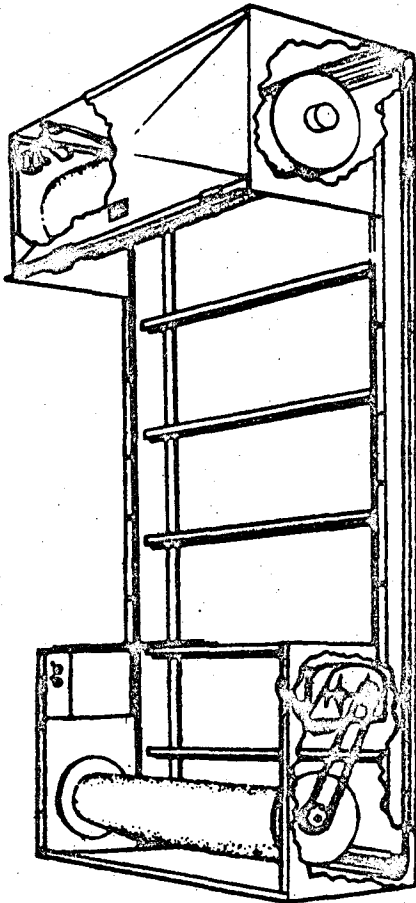
0	5-25	REVISED RUNCUT SWITCH	1-57	1-4
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A	1-4-57	FIRST ISSUE	1-57	1-4
ISSUE	DATE	DESCRIPTION	C.W.O.	DFT.
			CL.	A

DWG. NO. **FARR CO.** ISSUE **L-9739-E**

DESIGN AND SPECIFICATION REFERENCE SHEET

STANDARD ROLL-KLEEN FILTERS



PRINCIPAL DIMENSIONS

Width: 3', 4' or 5' per section.

Height: 5' to 15' in 4" increments.

Depth: 27 $\frac{5}{8}$ " at the top.
(thickest cross section)

Clearance required:

Upstream, 14" minimum.

Downstream, 1 $\frac{1}{4}$ " minimum.

Length of ductwork required to house Roll-Kleen and provide minimum clearance: 42 $\frac{7}{8}$ ".

Sections are combined to meet any CFM requirement.

Notes:

1. Wiring diagram in Control Box.
2. 5/16" diameter holes for duct attachment at 12" centers.
3. Sections are factory numbered (1-r) when more than one section is required.
4. Media leader attaches to trailer of previous roll for easy loading.
5. Recommended airflow 500 fpm.
6. Pressure drop, clean media at 500 fpm: 0.2" wg.

MEDIA ROLLS: 12 $\frac{1}{2}$ " diameter x 3' 4", or 5' (less 2 $\frac{3}{4}$ ")

MEDIA BOXES: 13" x 13" x 3', 4', or 5' (less 1")

Spare media rolls should be provided. Specify number and size desired.

MODEL SELECTION: See Capacity Tables in Bulletin B-1400-2A. Several height and width combinations are usually possible for any given CFM requirement. Check the various advantages of all models that handle the required capacity, i.e. installations made up of lower, wider sections require media roll changes less frequently.

POWER REQUIREMENTS:

Standard: 110 Volts, single phase, 60 cycles

Transformer required for non-standard. Specify power available.

INSTALLATION NOTES:

The proper number of motorized and non-motorized sections will be supplied according to Model specified. Complete installation instructions and diagrams for wiring connections accompany shipment. All sections are factory assembled, unless otherwise specified, and have been operationally checked out prior to shipment.

STANDARD CONTROLS: Constant static pressure.

A pressure switch actuates the gage/meter to move clean media into the filter face when a preset maximum pressure drop is reached and stops it when sufficient clean media has been introduced to reduce the pressure drop to a preset minimum.

Factory setting: Maximum 0.5" wg. — minimum 0.4" wg.

OPTIONAL CONTROLS:

There are 5 other timer, pressure, complete media change and combination control systems, available at extra cost to meet various special requirements. They are fully described in Ferr Company Sheet I-13200.

Pressure drop with other systems: 0.6" wg. max.

(Factory setting) to 0.2" minimum.

Actual Weight, per section, incl. gage/meter: 275 to 400 pounds, depending on size (see Chart F-111 for shipping weights).

Signal lights can be installed at any convenient location, such as a maintenance control center or right at the filter bank.

FERR
COMPANY

CONTROL TRANSFORMERS

I-PHASE OPEN INDOOR DRY TYPE

HAMMOND

TYPE "H"

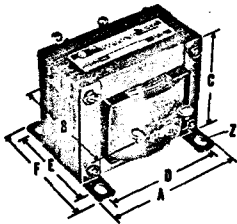


Fig. 2
100 VA to 500 VA

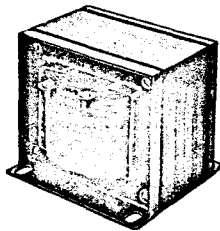


Fig. 1
25 VA, 50 VA, 750 VA & over

25 VA TO 5000 VA 60 CYCLE

FEATURES:

- Rugged, economical, open core and coil designs for mounting in other ventilated enclosures.
- C.S.A. approved.
- Designed and manufactured to meet or exceed specifications ASA C89 and NEMA ST1-4.
- Efficient designs with dull black finish for low temperature rise. Class A insulation used up to 750 VA, class B 1000 VA and over.
- Standard screw lug terminals.

ENGINEERING SPECIFICATION:

(Qty.) _____ standard C.S.A. approved open type control transformers,
_____ volt-ampere, 60 cycle, single phase, primary _____ volts, secondary
_____ volts, HAMMOND Type H or approved equal.

APPLICATION:

- Actuating relays, contactors, bells, signal & alarm systems.
- Operating small motors, solenoid operated valves and dampers.
- Machine lighting and circuit isolation.

VOLT AMPS	PRI VOLTS	SEC VOLTS	CATALOGUE NUMBER	VOLT AMPS	PRI VOLTS	SEC VOLTS	CATALOGUE NUMBER						
25	120	24	HD2G*	500	208	120	HL3J						
	600	120	HD9J		240	120	HL5J						
50	120	12	HE2E		480	120	HL7J						
	120	24	HE2G*		600	120	HL9J						
	208	24	HE3G*		600	240	HL9M						
	208	120	HE3J	600	600	HL9P							
	240	24	HE5G*	750	600	120/240	HM9J						
	240	120	HE5J		600	240	HM9M						
	480	120	HE7J		1000	480	120/240	HN7P					
	600	24	HE9G*	600		120/240	HN9P						
600	120	HE9J	1500	600	120/240	HP7P							
600	240	HE9M		480	120/240	HP9P							
100	120	12		HG2E	2000	480	120/240	HQ7P					
	120	24	HG2G*	600		120/240	HQ9P						
	208	120	HG3J	3000	480	120/240	HS7P						
	240	120	HG5J		600	120/240	HS9P						
	480	120	HG7J	5000	480	120/240	HU7P						
	600	120	HG9J		600	120/240	HU9P						
	600	240	HG9M		25	480	120/240	HU7P					
	600	120/240	HG9P	600		120/240	HU9P						
175	120	24	HI2G*	VOLT AMPS		NET WEIGHT	A	B	C	D	E	F	Z
	208	120	HI3J	25		2 1/4	3	2 7/8	2 1/2	2 3/8	1 1/2	2	3/8 x 3/8
	240	120	HI5J	50		3 1/4	3	3 3/8	2 1/2	2 3/8	2 1/4	2 3/4	3/8 x 3/8
	480	120	HI7J	100	5 3/4	3 3/4	4	3 1/8	3 1/8	2 3/4	3 1/2	1/4 x 3/8	
	600	120	HI9J	175	8	3 3/4	4 3/4	3 1/8	3 1/8	3 1/2	4 1/4	1/4 x 3/8	
600	240	HI9M	250	13	4 1/2	5	3 3/4	3 3/4	3 3/8	4 1/4	3/8 x 1/2		
250	120	24	HJ2G*	350	16 1/2	4 1/2	5 3/4	3 3/4	3 3/4	4 3/8	5 1/4	3/8 x 1/2	
	208	120	HJ3J	500	21 1/2	6	5 1/2	5	5	3 1/2	4 1/2	3/8 x 3/8	
	240	120	HJ5J	750	28	6	6 1/4	5	5	4 7/8	5 3/4	3/8 x 3/8	
	480	120	HJ7J	1000	28	6	6 1/4	5	5	4 7/8	5 3/4	3/8 x 3/8	
	480	240	HJ7M	1500	40	7 1/2	6 1/2	6 1/4	6	4 3/4	5 3/4	3/8 x 3/4	
	600	120	HJ9J	2000	55	7 1/2	8	6 1/4	6	6 1/4	7 1/4	3/8 x 1/2	
	600	240	HJ9M	3000	88	9	8 1/4	7 1/2	7	4 1/4	5 1/2	3/8 x 1/2	
	600	120/240	HJ9P	5000	145	9	11 1/2	7 1/2	7	9 1/4	10 1/2	3/8 x 1/2	
350	480	120	HK7J										
	600	120	HK9J										
	600	240	HK9M										

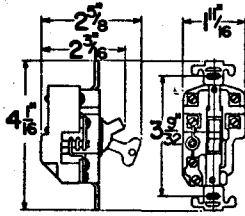
● Higher VA ratings available on special light weight cores.

* denotes new design. Old 25 volt design available on special order.

APPROXIMATE DIMENSIONS

(Do Not Use For Construction)

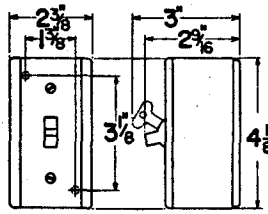
Open Type



Catalog Numbers

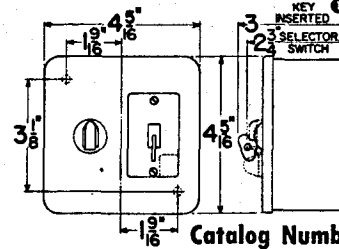
- 600-TOX4 600-TOX109 600-TOX216
 TOX5 TOX110 TOX217
 TOX48 TOX148
 TOX49 TOX149

NEMA Type 1 Enclosure



Catalog Numbers

- 600-TAX4 600-TAX109 600-TAX216
 TAX5 TAX110 TAX217
 TAX48 TAX148
 TAX49 TAX149

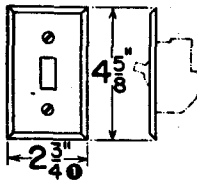


Catalog Numbers

- 600-TAX9 600-TAX142 600-TAX218
 TAX10 TAX144 TAX219
 TAX53 TAX145
 TAX55 TAX147

① Width with Toggle Operator 2 3/4"
 Width with Lever Operator 2 1/4"

NEMA Type 1B Flush Mounting

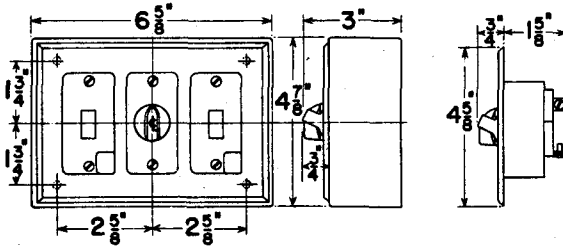


① Two Switch Width — 4 3/4"

Catalog Numbers

- 600-TKX4 600-TKX49 600-TKX142 600-TKX217
 TKX5 TKX53 TKX144 TKX218
 TKX9 TKX55 TKX145 TKX219
 TKX10 TKX109 TKX147
 TKX48 TKX110 TKX216

Two Speed Switch—NEMA Type 1 Enclosure



Catalog Numbers

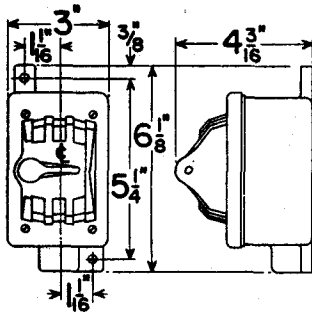
- 600-TAX293
 TAX294
 TAX298
 TAX300

Catalog Numbers

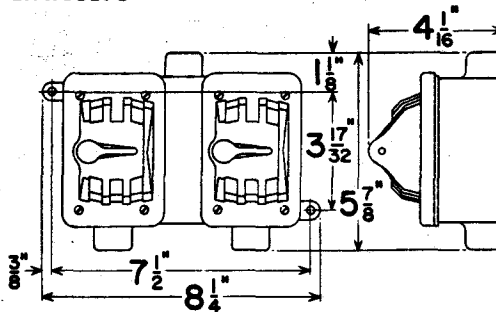
- 600-TKX293
 TKX294
 TKX298
 TKX300

Two Speed Switch NEMA Type 1B Flush Mounting

NEMA Type 4 Enclosure

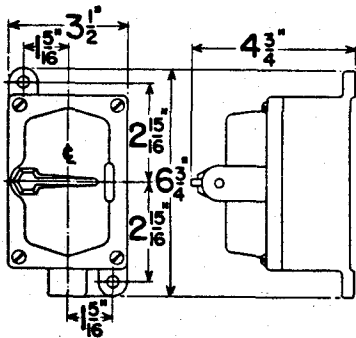


Catalog Numbers
 600-TCX4 600-TCX5

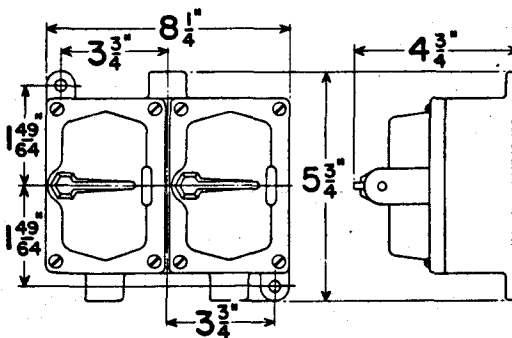


Catalog Numbers
 600-TCA7 600-TCD7 600-TCX9 600-TCX10

NEMA Type 7-9 Enclosure

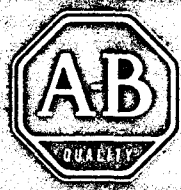


Catalog Numbers
 600-TEX4 600-TEX5



Catalog Numbers
 600-TEA7 600-TED7 600-TEX9 600-TEX10



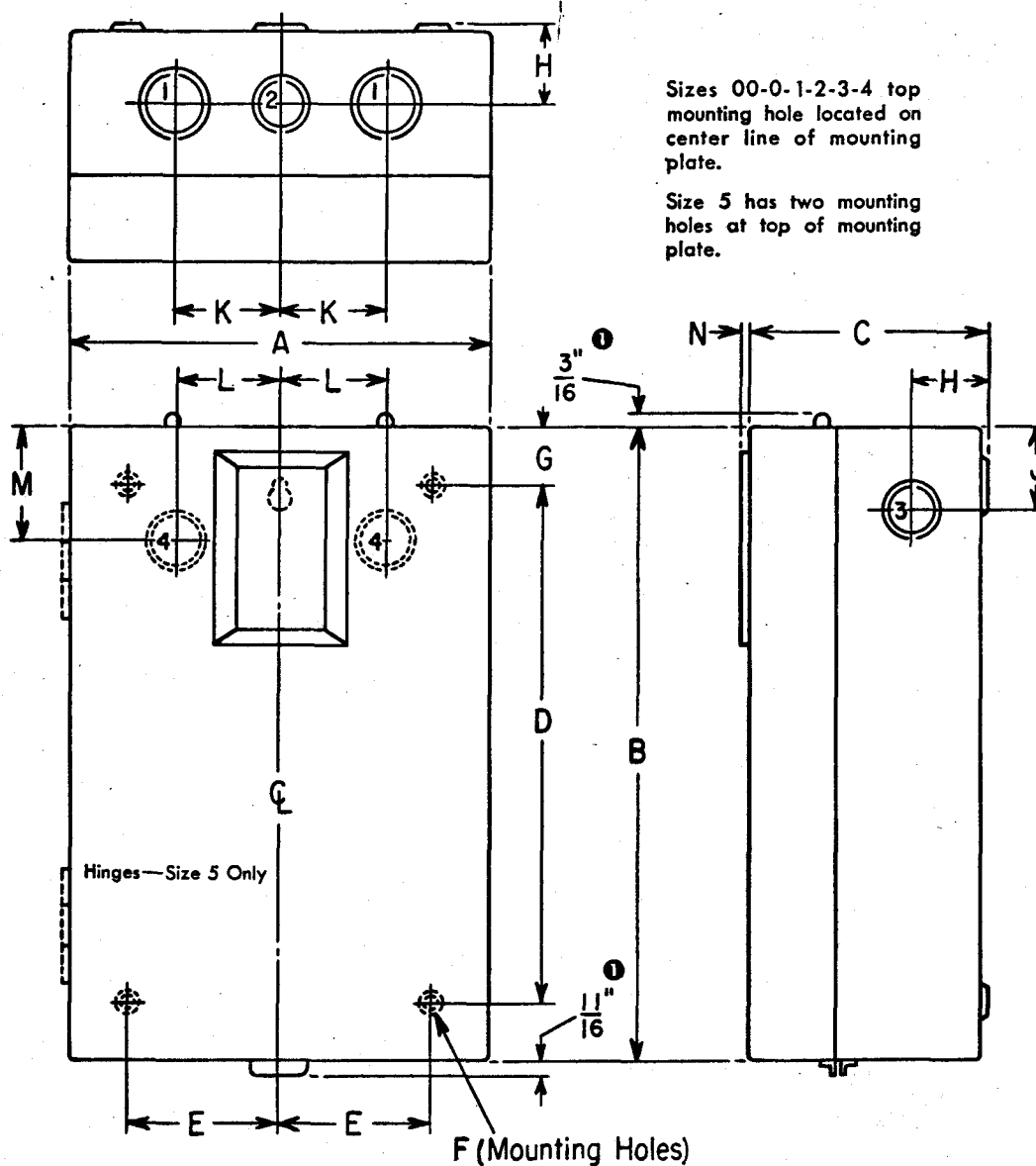


Bulletin 702 AC Contactors

Sizes 00 to 5 Inclusive • Nema Type 1 General Purpose Enclosure
Series K Construction

May 15, 1962

Dimension Drawing **702** Sheet No. 1A



Sizes 00-0-1-2-3-4 top mounting hole located on center line of mounting plate.
Size 5 has two mounting holes at top of mounting plate.

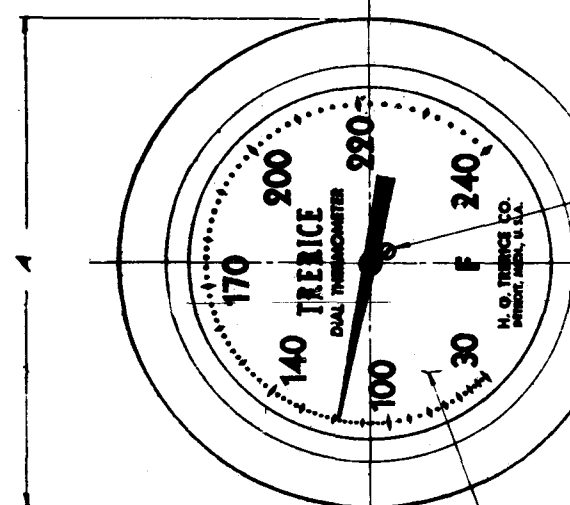
PLEASE REFER TO GALT FOR SIZE AND LOCATION OF KNOCKOUTS TO CONFORM TO CEMA STANDARDS.

① Sizes 00-0-1-2-3-4 Only

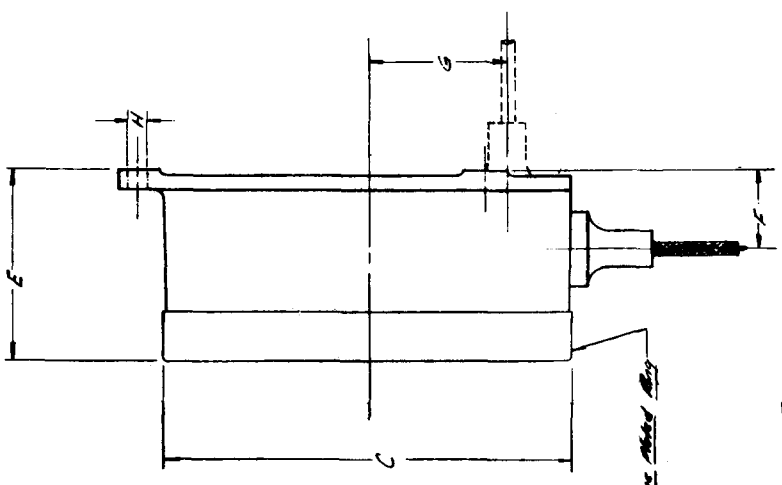
Nema Size	Number of Poles	Enclosure Dimensions In Inches								Knockout Locating Dimensions and Conduit Sizes In Inches								Approx. Shipping Weight	
		Dimension Symbol																	
		A	B	C	D	E	F	G	N	H	J	K	L	M	1 Top & Bottom	2 Top & Bottom	3 Both Sides		4
00	2-3-4	4 ⁷ / ₈	6 ¹³ / ₁₆	4 ³ / ₁₆	5 ⁵ / ₈	1 ⁷ / ₈	7 ⁷ / ₃₂	9 ⁵ / ₈	3 ³ / ₃₂	1 ¹ / ₈	—	1 ¹ / ₈	—	—	1 ¹ / ₂ -3 ⁴ / ₈	—	—	—	4 Lbs.
0	1-2-3-4	6 ⁵ / ₁₆	8 ⁵ / ₁₆	4 ⁵ / ₁₆	6 ⁷ / ₈	2 ¹ / ₂	7 ⁷ / ₃₂	7 ⁵ / ₈	3 ³ / ₃₂	1 ¹ / ₈	1 ¹ / ₂	1 ¹ / ₂	2 ³ / ₈	3 ⁵ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	5 Lbs.
1	1-2-3-4	6 ¹³ / ₁₆	9 ⁵ / ₈	4 ⁵ / ₁₆	7 ¹ / ₄	2 ³ / ₄	7 ⁷ / ₃₂	1	3 ³ / ₃₂	1 ¹ / ₈	1 ³ / ₈	1 ¹ / ₈	2 ³ / ₈	1	3 ⁴ / ₈ -1	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	6 ¹ / ₂ Lbs.
2	2-3-4	7 ⁵ / ₈	11 ⁵ / ₈	4 ⁵ / ₁₆	8 ¹ / ₄	2 ³ / ₄	9 ⁵ / ₃₂	13 ¹ / ₁₆	3 ³ / ₃₂	1 ³ / ₈	2	2 ³ / ₈	2 ³ / ₈	1 ¹ / ₁₆	1-1 ¹ / ₄	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	3 ⁴ / ₈ -1	9 Lbs.
3	2-3-4	10 ³ / ₈	15 ³ / ₄	6 ⁷ / ₈	12 ³ / ₄	3 ³ / ₈	11 ¹ / ₃₂	1 ¹ / ₂	1 ⁵ / ₈	2	2 ¹ / ₄	3 ¹ / ₄	3 ¹ / ₄	1 ¹ / ₈	1 ¹ / ₄ -1 ¹ / ₂	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	1-1 ¹ / ₄	25 Lbs.
4	2-3-4	11 ⁵ / ₈	21 ³ / ₈	7 ¹⁵ / ₁₆	17 ¹ / ₂	4	11 ¹ / ₃₂	1 ¹³ / ₁₆	1 ⁵ / ₈	2 ¹ / ₄	2 ¹ / ₂	3 ⁵ / ₈	—	—	2-2 ¹ / ₂	1 ¹ / ₂ -3 ⁴ / ₈	1 ¹ / ₂ -3 ⁴ / ₈	—	36 Lbs.
5	2-3	17 ⁷ / ₁₆	32 ³ / ₁₆	9 ⁵ / ₈	28	6 ⁷ / ₈	9 ⁵ / ₁₆	2 ³ / ₃₂	1 ⁵ / ₈	No Conduit Openings Provided								92 Lbs.	

Supersedes Sheet No. 1A Dated April 3, 1961

Form 702-504

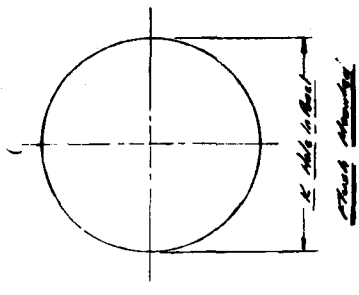
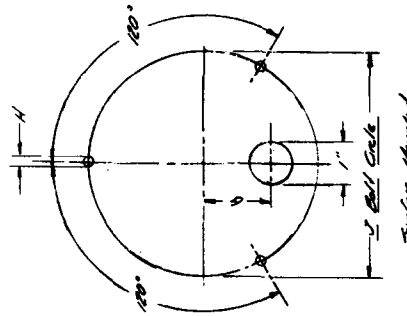


*White Metal Mount.
Background Mill Black
Enamel Glass I
Mounting*



STANDARD RANGES	
VAPOR	
FAHRENHEIT	CENTIGRADE
-100 TO 100	-76 TO 10
0 TO 100	0 TO 100
-20 TO 100	-30 TO 40
0 TO 100	-20 TO 40
-40 TO 150	-40 TO 65
0 TO 180	-20 TO 70
30 TO 240	0 TO 115
100 TO 350	40 TO 180
200 TO 430	80 TO 230
MERCURY	
FAHRENHEIT	CENTIGRADE
0 TO 100	0 TO 100
-40 TO 120	-40 TO 120
0 TO 160	0 TO 160
30 TO 180	30 TO 180
30 TO 240	30 TO 240
0 TO 300	0 TO 300
0 TO 400	0 TO 400
150 TO 760	
200 TO 1000	

No. 8000 Series Dial Thermometer Data											
Dial Size	A	B	C	F	G	H	J	K	L	M	N
4 1/2"	5 7/8"	2 3/8"	4 1/4"	2 1/8"	1 3/8"	1 1/2"	1 1/8"	1 1/4"	1 1/8"	1 1/2"	1 1/8"
6"	7 1/8"	3 1/4"	2 1/4"	1 3/4"	1 1/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"
8 1/2"	10 1/4"	4 1/4"	3 1/4"	2 1/4"	1 3/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"



TUBE SYSTEM DATA

VAPOR SYSTEM, FOR 1/4" & 1/2" DIAL SIZES THE BULB IS FURNISHED STANDARD IN COPPER 7/16" O. D. X 3/4" L. LENGTH ON TUBE SYSTEM LENGTHS OF 20' OR LESS OVER 20' & UP TO 60' LENGTH IS INCREASED TO 1" OVER 60' CONSULT FACTORY. 8 1/4" DIAL SIZES ARE FURNISHED STANDARD IN COPPER 7/16" O. D. X 1 1/2" L. LENGTH ON TUBE SYSTEMS UP TO 60' LONG - OVER 60' LONG CONSULT FACTORY.

SOLID LIQUID FILL, FOR 1/4", 1/2" & 3/4" DIAL SIZES THE BULB IS FURNISHED UP TO 20" MAXIMUM BELL 7/16" O. D. X 2 3/4" LONG FOR ANY LENGTH. LENGTHS UP TO 20" ARE REGULARLY FURNISHED. LONGER LENGTHS CAN BE FURNISHED IF THE DEVIATION IN TEMPERATURE READINGS CAUSED BY AMBIENT TEMPERATURE CHANGES ALONG THE CAPILLARY IS NOT OBJECTIONABLE. THIS DEVIATION IS COMPUTED BY USING THE FORMULA $(\pm D \times L \times 0.004)$ - DEVIATION FROM ACTUAL BULB TEMPERATURE IN DEGREES F.

BULB TEMPERATURE IN DEGREES F. PLUS 100 = DIFFERENCE BETWEEN 75° & A HIGHER AMBIENT TEMP.

BULB TEMPERATURE IN DEGREES F. PLUS 100 = DIFFERENCE BETWEEN 75° & A LOWER AMBIENT TEMP.

DIFFERENCE IN FEET OF CAPILLARY EXPOSED TO A TEMP. OTHER THAN 75 F.

Always Consultation Sheet - Optional

H. O. TRERICE CO.
DETROIT, MICHIGAN

DETROIT, MICHIGAN

DETROIT, MICHIGAN



BULLETIN 108
HERMETIC COMPRESSORS
1/20 - 5 H.P.

Tecumseh

HERMETIC COMPRESSOR CATALOG



WORLD'S LARGEST MANUFACTURER OF REFRIGERATION COMPRESSORS
AND CONDENSING UNITS FOR THE REFRIGERATION INDUSTRY

TECUMSEH PRODUCTS COMPANY

TECUMSEH, MICHIGAN • MARION, OHIO



Tecumseh

SALES FEATURES

Tecumseh Products Company is the world's largest manufacturer of refrigeration compressors. The four domestic plants have produced over 52,000,000 compressors since 1932 and now produce approximately 4,000,000 a year. In addition there are 13 Tecumseh foreign licensees supplying Tecumseh designed compressors all over the world. Another division of Tecumseh does basic research in thermoelectric refrigeration.

Illustrated and described in this catalog is the complete line of basic Tecumseh hermetic compressors from 1/20 - 5 H.P. In the past few years the entire line has been redesigned to incorporate major technological improvements and provide our customers with a product that weighs less, takes less space and is more economical than ever before. One extremely important development which has been a big factor in this program is the use of two-pole (3500 rpm) motors in all sizes. Tecumseh has built well over 8,000,000 compressors with two-pole motors since 1956 and today has more compressors operating satisfactorily in the field with this feature than any other manufacturer.

Features such as the mechanical anti-slug device and internal thermostats are described on page 10. Also many Tecumseh compressors now include internal overloads which provide complete inherent protection where they cannot be affected by outside influences.

Customers will note that all R-22 compressors are color coded in this catalog for easy identification. We would also like to point out that because of the many variations in shipping containers and quantities that only net weights are shown. This is figured on the basis of oil, electrical components and valves where used. However, these weights should be considered as approximations only and not used to compute shipping costs.

PLASTIC COVERS AND ELECTRICAL COMPONENT ASSEMBLY

Tecumseh is now using a Fiberglas cover with lockwire assembly on AE, P, T, AJ and AH models. This is used with an overload spring clip and, in the smaller sizes a push-on relay.

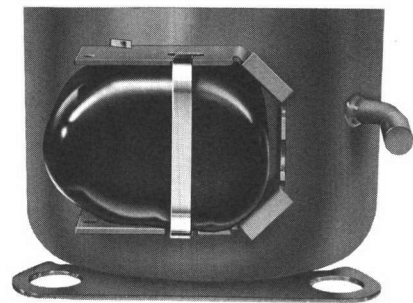
This arrangement greatly simplifies the assembly of these components since no screws or tools are required. Illustrated below is an AE compressor with push-on relay.



AE compressor showing glass terminal, overload, overload clip, push-on relay, plastic cover and lockwire.



Here the overload and relay are shown assembled in their proper position. Newer relays will have a boss in the center as a stop for the lead to the overload.



All parts are now assembled under the cover which is secured to the fence with a bale strap.

RATING CONDITIONS — ALL MODELS

NOTE: All capacity data given in this catalog are based on the following conditions:

1. All rating figures are nominal with acceptable limits plus or minus 5%.
2. Conditions:

HIGH BACK PRESSURE
 130° F. condensing temperature
 45° F. evaporator temperature
 95° F. return gas
 95° F. ambient
 115° F. liquid temperature entering expansion valve

MEDIUM BACK PRESSURE
 130° F. condensing temperature
 20° F. evaporator temperature
 95° F. return gas
 95° F. ambient
 115° F. liquid temperature entering expansion valve

LOW BACK PRESSURE
 130° F. condensing temperature
 -10° F. evaporator temperature
 90° F. return gas
 90° F. ambient
 90° F. liquid temperature entering expansion valve

EXPLANATION OF MOTOR TYPE AS SHOWN IN CATALOG:

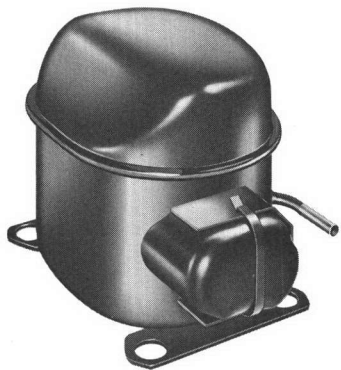
RSIR resistance start, induction run
 CSIR capacitor start, induction run
 CSR capacitor start and run
 PSC permanent split capacitor

An "A" prefix on the compressor indicates 3500 RPM.

Tecumseh

SMALL COMPRESSORS

1/20 - 1/5 H.P.



The Tecumseh AE line offers the field a group of very small, low cost compressors for a variety of applications. All of these models have two pole motors for maximum capacity and minimum physical dimensions. They also have plastic covers and push-on relays as described on page 2.

The present AE line includes five low temperature models (1/20, 1/12, 1/8, 1/6 and 1/5 H.P.) and three high temperature models (1/6 and 1/5 H.P.) All models up to 1/5 H.P. have the same physical dimensions while the 1/5 H.P. models are 23/32" higher. Model AE59ZF9 is an extra-capacity model for vending machine applications. All models are designed for R-12.

AE compressors mount on rubber grommets which results in an extremely low noise level and smooth, vibrationless operation.

The AE compressors are the smallest now on the market and are ideal for small refrigerators, freezers, and other applications where machine space is extremely limited.

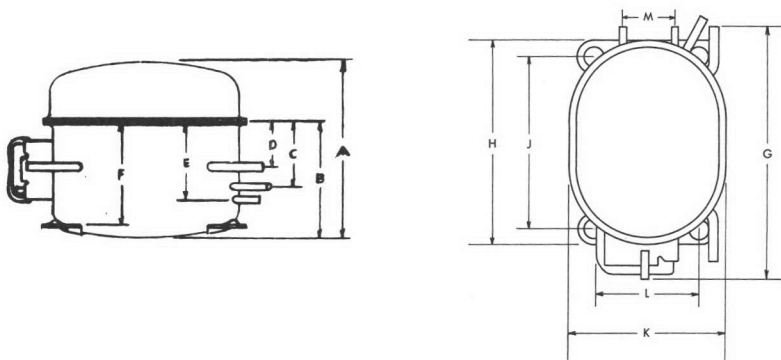
H.P.	Model	Bore	Stroke	Disp.	Appl.	BTU/Hr.	Refrgr.	Motor Type	Suct. Line	Disc. Line	Oil Cooler Tubes	Oil Chg.	• Net Weight
1/20	AE20Z5	.821	.360	.190	LBP	*200	12	RSIR	¼ ID	⅜ ID	No	13 oz.	17
1/12	†AE12Z7	.821	.466	.247	LBP	*320	12	RSIR	¼ ID	⅜ ID	No	13 oz.	18
1/8	†AE8ZA7	.866	.466	.274	LBP	*360	12	RSIR	¼ ID	⅜ ID	No	13 oz.	19
1/6	†AE6ZD7	.955	.466	.334	LBP	*430	12	RSIR	¼ ID	⅜ ID	Yes	13 oz.	19
1/6	†AE6ZA7	.866	.466	.274	HBP	1400	12	RSIR	¼ ID	⅜ ID	No	13 oz.	19
1/5	†AE5ZF9	1.000	.587	.462	LBP	*600	12	RSIR	¼ ID	⅜ ID	Yes	20 oz.	20
1/5	AE5ZA9	.866	.587	.346	HBP	1725	12	RSIR	¼ ID	⅜ ID	No	20 oz.	20
1/5	AE59ZF9	1.000	.587	.462	HBP	2500	12	RSIR	¼ ID	⅜ ID	No	20 oz.	21

Data for models marked (*) are with static air flow over the compressor. All others are forced convection.
 † Also available as 50 cycle, 240/200 volt.

• Approximate.

AE Models	1/12, 1/8 and 1/6 H.P.		1/5 H.P.	
	Without Oil Cooler	With Oil Cooler	Without Oil Cooler	With Oil Cooler
A	6 ²⁵ / ₃₂	6 ²⁵ / ₃₂	7 ¹⁵ / ₃₂	7 ¹⁵ / ₃₂
B	4 ¹⁵ / ₃₂	4 ¹⁵ / ₃₂	5 ⁵ / ₃₂	5 ⁵ / ₃₂
C	2 ½	2 ½	2 ½	2 ½
D	1 ¾	1 ¾	1 ¾	1 ¾
E	—	3	—	3 ¾
F	4 ¹ / ₁₆	4 ¹ / ₁₆	4 ¾	4 ¾
G	*10 ¾	*10 ¾	*10 ¾	*10 ¾
H	7 ²⁵ / ₃₂	7 ²⁵ / ₃₂	7 ²⁵ / ₃₂	7 ²⁵ / ₃₂
J	6 ½	6 ½	6 ½	6 ½
K	6 ¹ / ₃₂	6 ¹ / ₃₂	6 ¹ / ₃₂	6 ¹ / ₃₂
L	4	4	4	4
M	—	2	—	2

DIMENSIONS



* Approximate
 Oil Cooler Tubes are ¼" OD Steel

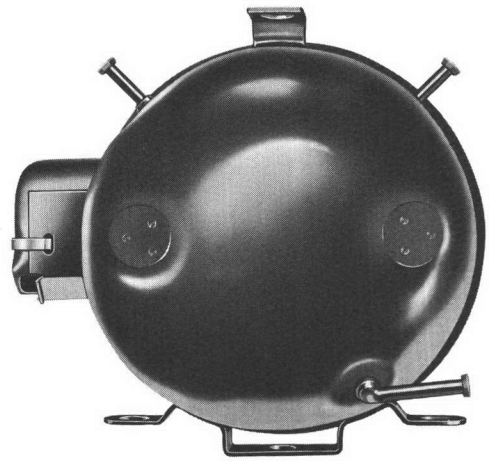
Tecumseh

PANCAKE COMPRESSORS

1/12 - 1/3 H.P.

The basic pancake line has been built by Tecumseh for many years. The line has been extended so that it now includes models from 1/12 to 1/3 H.P. All models are designed for R-12 and incorporate glass terminals, plastic covers and push-on relays. Several high speed (3500 rpm) models are now offered and these are indicated by an "A" prefix in the model number. Two high torque models for 1/4 and 1/3 H.P. high temperature applications have recently been added.

The general appearance and the physical size of all these pancake compressors is identical. This feature permits the use of these models through an entire line of household cabinets or freezers without major tooling changes. Their shape is often a major advantage where the front-to-back dimension must be held to a minimum.



Six models are offered for low back pressure applications in regular intervals from 320 BTU to 980 BTU. Seven high back pressure models are offered for use on water coolers, beverage coolers and other commercial applications.

LOW TEMPERATURE MODELS

H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Refrgr.	Motor Type	Suct. Line	Disc. Line	Oil Chg.	• Net Weight
1/12	P1219	1 ¹ / ₃₂	3 ¹ / ₁₆	.471	*320	12	RSIR	1/4	3/16	22 oz.	26
1/8	P91	1 ¹ / ₃₂	5/8	.522	*370	12	RSIR	1/4	3/16	22 oz.	29
1/6	P6112	1 ¹ / ₃₂	3/4	.626	*450	12	RSIR	1/4	3/16	22 oz.	29
1/5	†P5312	13/16	3/4	.830	*620	12	RSIR	5/16	1/4	22 oz.	30
1/4	AR43	13/16	5/8	.690	980	12	RSIR	5/16	1/4	22 oz.	28
1/4	AP43	13/16	5/8	.690	980	12	RSIR	5/16	1/4	22 oz.	28

Data for models marked (*) are with static air flow over the compressor. All others are forced convection.
 † Also available as 50 cycle, 240 volt.

• Approximate

HIGH TEMPERATURE MODELS

H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Refrgr.	Motor Type	Suct. Line	Disc. Line	Oil Chg.	• Net Weight
1/6	P61	1 ¹ / ₃₂	5/8	.522	1420	12	RSIR	1/4	3/16	22 oz.	29
1/5	*P5112	1 ¹ / ₃₂	3/4	.626	1800	12	RSIR	1/4	3/16	22 oz.	29
1/5	P5311	13/16	11/16	.762	2200	12	RSIR	5/16	1/4	22 oz.	29
1/4	**AP4111	1 ¹ / ₃₂	11/16	.575	3070	12	RSIR	5/16	1/4	22 oz.	28
1/3	**AP3311	13/16	11/16	.762	3950	12	RSIR	5/16	1/4	22 oz.	28
1/4	†CAP4111	1 ¹ / ₃₂	11/16	.575	3070	12	CSIR	5/16	1/4	22 oz.	28
1/3	†CAP3311	13/16	11/16	.762	3950	12	CSIR	5/16	1/4	22 oz.	28

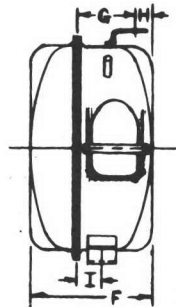
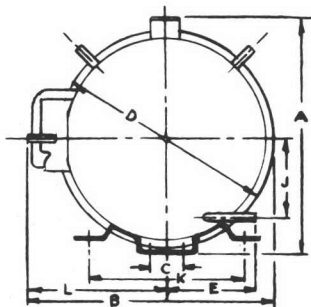
† High Torque.

* Also available as 50 cycle, 240 volt.

** Also available as 50 cycle, 230 volt.

• Approximate

DIMENSIONS



P, AP & AR Models	Plastic Covers
A	10 ¹¹ / ₃₂
B	10 ⁹ / ₃₂
C	13/4
D	93/4
E	4
F	6 ⁷ / ₃₂
G	2 ⁹ / ₁₆
H	1 ¹ / ₈
I	1
J	3 ¹ / ₂
K	7
L	6 ⁵ / ₃₂

Tecumseh

TINY "T" COMPRESSORS

1/6 - 1/3 H.P.



The "T" compressor series provides a complete line of internally spring mounted compressors matching the capacities and price of the pancakes. Manufacturers may, therefore, choose between pancakes and T models; whichever physical size best meets his requirements.

This line represents considerable savings in weight, size and cost over the old ISM models. In most cases, these models make an ideal replacement compressor for the old ISM compressors. An adapter base is offered to simplify field replacement of T models for ISM's. They are particularly in demand wherever height is a limiting factor.

All models are designed for R-12 and incorporate glass terminals, plastic covers and push-on relay. Most models utilize two-pole motors and these carry the prefix "A". All mount on rubber grommets to eliminate

noise and vibration. Capacities range from 525 BTU to 1500 BTU on low temperature and 2100 BTU to 3800 BTU on high temperature. All use suction gas cooling and low temperature models are available with or without oil coolers.

LOW TEMPERATURE MODELS

Motor H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Refgr.	Motor Type	Suct. Line	Disc. Line	Oil Cooler	Oil Chg.	Net Weight
1/6	T63	1 ³ / ₁₆	5/8	.690	*525	12	RSIR	5/16	1/4	Yes	38 oz.	31
1/5	T55	1 ⁵ / ₁₆	5/8	.845	*625	12	RSIR	5/16	1/4	Yes	38 oz.	31
1/5	AT5C	1 ³ / ₃₂	5/8	.588	850	12	RSIR	5/16	1/4	Yes	38 oz.	31
1/4	△AT43	1 ³ / ₁₆	5/8	.690	980	12	RSIR	5/16	1/4	Yes	38 oz.	31
1/4	†AT45	1 ⁵ / ₁₆	5/8	.845	1040	12	RSIR	5/16	1/4	Yes	38 oz.	31
1/4	**CAT43	1 ³ / ₁₆	5/8	.690	980	12	CSIR	5/16	1/4	Yes	38 oz.	34
1/3	AT35	1 ⁵ / ₁₆	5/8	.845	1250	12	RSIR	5/16	1/4	Yes	38 oz.	31
1/3	AT3512	1 ⁵ / ₁₆	3/4	1.015	1500	12	CSIR	5/16	1/4	Yes	38 oz.	31
1/3	**CAT3512	1 ⁵ / ₁₆	3/4	1.015	1500	12	CSIR	5/16	1/4	Yes	38 oz.	36

† Special 50 cycle

** High Torque

△ Also available as 50 cycle, 230 volt.

● Approximate

Data for models marked (*) are with static air flow over the compressor. All others are forced convection.

HIGH TEMPERATURE MODELS

Motor H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Refgr.	Motor Type	Suct. Line	Disc. Line	Oil Cooler	Oil Chg.	Net Weight
1/5	T53	1 ³ / ₁₆	5/8	.690	2100	12	RSIR	5/16	1/4	No	38 oz.	31
1/4	AT4C	1 ³ / ₃₂	5/8	.588	3100	12	RSIR	5/16	1/4	No	38 oz.	31
1/4	**CAT4C	1 ³ / ₃₂	5/8	.588	3100	12	CSIR	5/16	1/4	No	38 oz.	33
1/3	AT34	1 ¹ / ₄	5/8	.767	3800	12	RSIR	5/16	1/4	No	38 oz.	33
1/3	†**CAT34	1 ¹ / ₄	5/8	.767	3800	12	CSIR	5/16	1/4	No	38 oz.	35

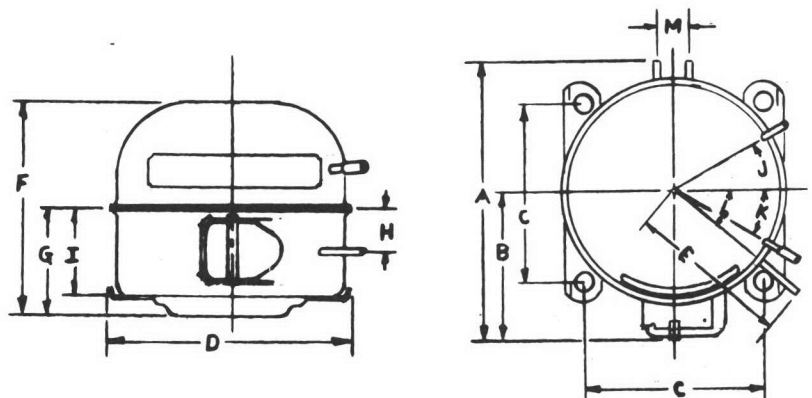
** High Torque

† Also available as 50 cycle, 240/200 volt.

● Approximate

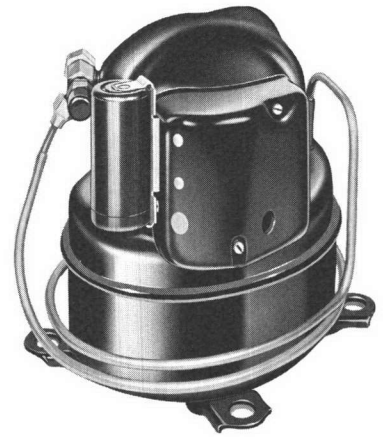
T, AT & CAT Models	With Oil Cooler	Less Oil Cooler
A	11 ³ / ₈	10 ¹ / ₄
B	5 ⁷ / ₈	5 ⁷ / ₈
C	7	7
D	8 ³ / ₄	8 ³ / ₄
E	6 ¹ / ₄	6 ¹ / ₄
F	7 ³ / ₄	7 ³ / ₄
G	3 ⁵ / ₁₆	3 ⁵ / ₁₆
H	1 ¹ / ₁₆	1 ¹ / ₁₆
I	3 ⁵ / ₃₂	3 ⁵ / ₃₂
J	30°	30°
K	30°	30°
L	40°	40°
M	1 ¹ / ₄	—

DIMENSIONS



Tecumseh

TWIN CYLINDER COMMERCIAL COMPRESSORS 1/2 - 3/4 H.P.



There are seven basic Tecumseh externally mounted 1/2 and 3/4 H.P. compressors. All are high torque and most are also offered in "B" models for capillary tube applications. Note that the low temperature model C7616 is designed for R-22. There are also high, medium and low temperature compressors in each horsepower size for 220/208 volt three phase application. All three phase compressors include an internal line break overload for maximum protection.

The Tecumseh twin has been used on a wide variety of applications for many years and has proven to be a rugged dependable compressor. Recent improvements include special mufflers, a new oiling system on low temperature and new motors for maximum starting torque.

These models are suitable for all types of commercial applications. The high torque compressors are used extensively for both air and water cooled condensing units including models for low, medium, and high back pressure.

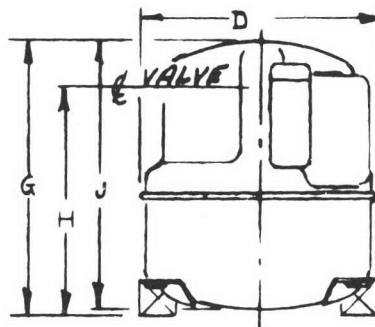
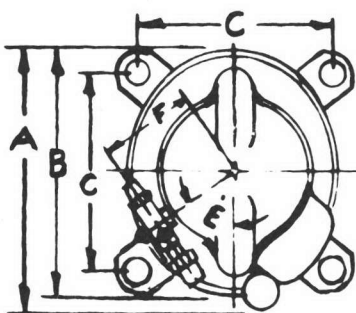
Motor H.P.	Model	Bore	Stroke	Disp.	Appl.	BTU/Hr.	Refrgr.	Motor Type	Suct. Valve	Disc. Line	Oil Chg.	• Net Weight	Voltage
1/2	*C2L16	1 3/8	1 1/4	3.03	LBP	2140	12	CSIR	1/2 ID	5/16 ID	45 oz.	63	*115 and 230
1/2	*C2516	1 5/16	1 1/4	2.74	MBP	5000	12	CSIR	1/2 ID	5/16 ID	45 oz.	63	*115 and 230
1/2	*C2513	1 5/16	1 3/16	2.20	HBP	6350	12	CSIR	1/2 ID	5/16 ID	45 oz.	63	*115 and 230
3/4	*C7616	1 3/8	1 1/4	3.03	LBP	3450	22	CSIR	1/2 ID	5/16 ID	45 oz.	68	230
3/4	*C7T16	1 5/8	1 1/4	4.22	LBP	3550	12	†CSIR	1/2 ID	5/16 ID	45 oz.	68	*115 and 230
3/4	C7P16	1 1/2	1 1/4	3.59	MBP	6000	12	†CSIR	1/2 ID	5/16 ID	45 oz.	69	*115 and 230
3/4	*C7616	1 3/8	1 1/4	3.03	HBP	9150	12	†CSIR	1/2 ID	5/16 ID	45 oz.	68	*115 and 230

Note: All above are high torque. Models marked * are also available as "B" models (i.e. B2L16) for capillary tube applications.

† For 230v-115v models CSCR.

* Also 220/208 three phase
• Approximate

DIMENSIONS



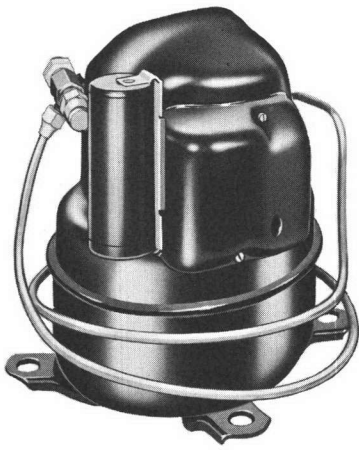
Model	B2616 B2513	C2L16 C2516 C2513	C2L16 3 Phase C2516 3 Phase C2513 3 Phase	† C7616 C7T16 C7P16
A	12 1/4 *	12 5/8 *	10 13/16	10 13/16
B	10 13/16	10 13/16	10 13/16	10 13/16
C	7 1/2	7 1/2	7 1/2	7 1/2
D	8 13/16	8 13/16	8 13/16	8 13/16
E	55°	55°	55°	55°
F	4 11/64	4 11/64	4 11/64	4 11/64
G	11 1/4 *	11 1/2 *	11 7/8	11 7/8
H	9 1/4	9 1/4	9 13/16 *	9 13/16 *
J	10 27/32	10 27/32	11 15/32	11 15/32

* Approximate

† Either 1 phase or 3 phase,
also 1 phase B models.

Tecumseh

TWIN CYLINDER COMMERCIAL COMPRESSORS 1 - 1-1/2 H.P.



The Tecumseh twin cylinder, external mount commercial compressor line continues through the 1 and 1-1/2 H.P. range with four 1 H.P. models and one 1-1/2 H.P. All are high torque and may be used on expansion valve systems. Model B1P16 is designed for R-22. There is a 1 H.P., R-12 model for each back pressure and each is also available for 220/208 volt three phase. The three phase models also have internal line break overloads for maximum protection.

These models have the same basic design as our high production air conditioning models which allows important cost savings to the customer. The external spring mounting absorbs all vibration and results in an extremely quiet-running compressor. All models are offered with either a valve or stub tubes.

Model B32U18 is normally used on bulk milk cooler applications and allows an extremely compact low cost unit for this application. A complete line of 1 H.P. high-sides are available in single and three phase and either air or water cooled.

Motor H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Appl.	Refrg.	Motor Type	Suct. Valve	Disc. Line	Oil Chg.	• Net Weight	Voltage
1	B1P16	1 1/2	1 1/64	3.59	4200	LBP	22	CSR	5/8	5/16 ID	45 oz.	70	230
1	B1U18	1 11/16	1 1/8	5.03	4200	LBP	12	CSR	5/8	5/16 ID	45 oz.	70	230*
1	B1T16	1 5/8	1 1/64	4.22	7100	MBP	12	CSR	5/8	5/16 ID	45 oz.	70	230*
1	B1T16	1 5/8	1 1/64	4.22	12000	HBP	12	CSR	5/8	5/16 ID	45 oz.	70	230*
1 1/2	B32U18	1 11/16	1 1/8	5.03	16500	HBP	12	CSR	† 3/4	5/16 ID	45 oz.	74	230

All high torque

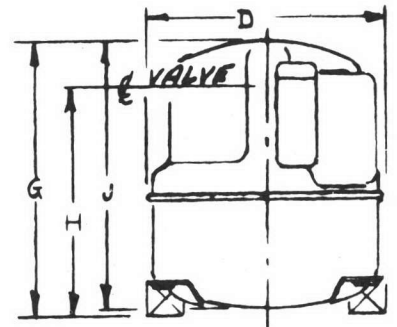
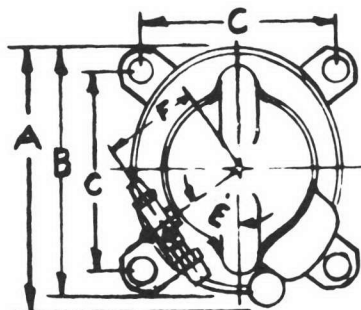
† Rotolock

● Approximate
* Also 220/208v three phase

Model	B1P16 1 Phase B1T16 1 Phase	B1U18 1 Phase B32U18 1 Phase	B1T16 3 Phase B1U18 3 Phase
A	10 13/16	10 13/16	10 13/16
B	10 13/16	10 13/16	10 13/16
C	7 1/2	7 1/2	7 1/2
D	8 13/16	8 13/16	8 13/16
E	55°	55°	55°
F	4 11/64	4 11/64	4 11/64
G	11 7/8 *	12 7/16 *	11 7/8 *
H	9 13/16 *	10 1/2 *	9 13/16 *
J	11 15/32	12 7/32	11 15/32

* Approximate

DIMENSIONS

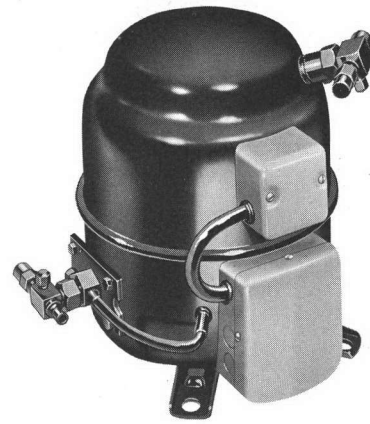


Tecumseh

TWIN CYLINDER COMMERCIAL COMPRESSORS 1-1/2 - 3 H.P.

The twin cylinder compressors from 1-1/2 to 3 H.P. are all internally spring mounted and so may be fastened securely to a base. These are all heavy duty compressors suitable for all types of commercial applications. All models are available for either single or three phase operation and are normally used with Rotolock suction and discharge valves to simplify field exchange.

There are four 1-1/2 H.P. models, two 2 H.P. models and three 3 H.P. models. Models JE300, PJE300 and PJG300 have been used extensively for residential air conditioning and heat pumps. They have waterproof terminals and are available with a mechanical anti-slug device. The addition of an anti-slug device is indicated by changing the last digit in the model number to a 1; i.e., JE301.



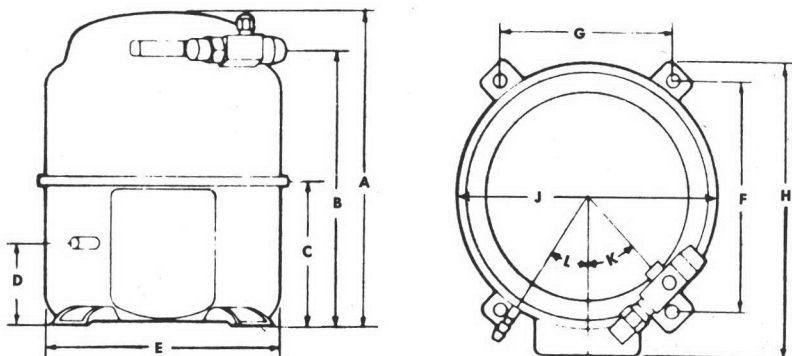
All of these compressors (except the "PJ" models) are built into commercial condensing units. The line includes both single and three phase versions of air-cooled, water-cooled, and air-water cooled condensing units. Special bulk milk cooler models are offered and the compressors used on these applications (JB150 and JE200) include an oil interconnect spud.

Motor H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Appl.	Refrg.	Motor Type	Suct. Valve‡	Disc. Valve‡	Oil Chg.	• Net Weight	Voltage
1½	JE150	2	1.2	7.54	6100	LBP	12	CSR	7/8	3/8	55 oz.	102	230*
1½	JG150	1 7/8	1.2	6.64	19700	MBP	12	CSR	7/8	3/8	55 oz.	102	230*
1½	JA150	1½	1.2	4.27	18440	HBP	22	CSR	7/8	3/8	55 oz.	102	230*
1½	JB150	1¾	1.2	5.78	16400	HBP	12	CSR	7/8	3/8	55 oz.	102	230*
2	JB200	1¾	1.2	5.78	24250	HBP	22	CSR	7/8	3/8	55 oz.	107	230*
2	JE200	2	1.2	7.54	22500	HBP	12	CSR	7/8	3/8	55 oz.	107	230*
3	JE300	2	1.2	7.54	35000	HBP	22	CSR	7/8	3/8	55 oz.	115	230*
3	PJE300	2	1.2	7.54	37500	HBP	22	CSR	7/8	3/8	55 oz.	115	230*
3	PJG300	1 7/8	1.2	6.64	33000	HBP	22	CSR	7/8	3/8	55 oz.	115	230*

‡ Rotolock

• Approximate
* Also 220/208v three phase

DIMENSIONS

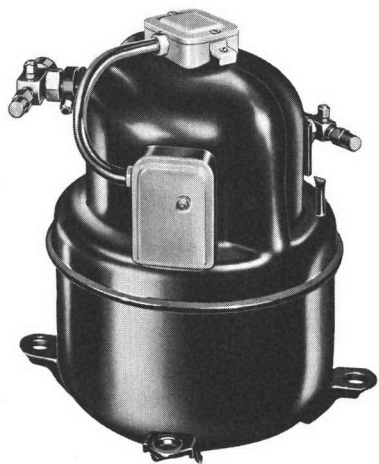


‡ PJE300 PJG300	JE300	JE200 JB200	JA150 JB150 JE150 JG150	Models
14 1/16 ‡	14 1/16	13 3/16	13 3/16	A
8 5/8	12 1/2	11 5/8	11 1/16	B
6 5/16	6 5/16	6 5/16	6 5/16	C
3 7/16	3 7/16	3 7/16	3 7/16	D
11 1/8	11 1/8	11 1/8	11 1/8	E
10 1/4	10 1/4	10 1/4	10 1/4	F
8	8	8	8	G
13 13/32	13 13/32	13 13/32	13 1/4	H
11 7/8	11 7/8	11 7/8	11 7/8	J
180°	45°	45°	45°	K
33°*	33°*	33°*	33°*	L

* Rotolock discharge valve — 90°
‡ For PJE301 add 1" to height (A dimension)
For three phase models add 2 5/32" to height (A dimension)

Tecumseh

FOUR CYLINDER COMMERCIAL COMPRESSORS 2 - 5 H.P.



Tecumseh offers six, four cylinder externally mounted compressors in the 2 to 5 H.P. range. Models PFB400 and PFB500 are designed for R-22 and the balance use R-12. All are available in either single or three phase and may be obtained with Rotolock valves and weatherproof terminal covers.

The two and three horsepower low temperature compressors complete the Tecumseh line for this application. Models FB300 and FE400 complete the present R-12 line and are used on many types of commercial highsides including special units for bulk milk coolers. These two models also have an oil interconnect spud. The four and five horsepower R-22 compressors are available with mechanical anti-slug and internal thermostat. A change in

the last digit of the model number to a 3; i.e., PFB503, designates the addition of these features. The four and five horsepower R-22 models are also offered in nominal 440v and 550v three phase.

A complete line of highsides for a wide variety of heavy-duty commercial units are built up from these compressors.

Motor H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Appl.	Refrgr.	Motor Type	Suct. Valve ‡	Disc. Valve ‡	Oil Chg.	• Net Weight	Voltage
2	FD200	1 3/4	1.149	11.04	8800	LBP	12	CSR	7/8	1/2	165 oz.	181	230*
3	FE300	1 13/16	1 7/16	14.82	13280	LBP	12	CSR	1 1/8	1/2	165 oz.	181	230*
3	FB300	1 3/4	1 7/16	13.80	37500	HBP	12	CSR	1 1/8	1/2	115 oz.	181	230*
4	FE400	1 13/16	1 7/16	14.82	47300	HBP	12	CSR	1 1/8	1/2	115 oz.	184	230*
4	PFB400†	1 3/4	1.149	11.04	51000	HBP	22	CSR	1 1/8	1/2	115 oz.	186	230*
5	PFB500†	1 3/4	1 7/16	13.80	66500	HBP	22	CSR	1 1/8	1/2	115 oz.	191	230*

* Also 220/208v 3 phase

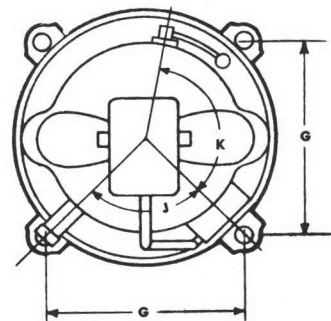
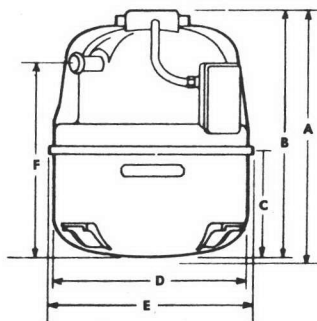
† Also available with anti-slug and internal thermostat — models PFB403 and PFB503.

‡ Rotolock

• Approximate

All Models	1 Phase	3 Phase
A	18 1/2	18 3/32
B	18 1/8	17 29/32
C	7 13/16	7 13/16
D	13 3/8	13 3/8
E	14 1/8	14 1/8
F	14 13/16	14 13/16
G	10 7/8	10 7/8
H	—	—
J	90°	90°
K	135°	135°

DIMENSIONS



Tecumseh

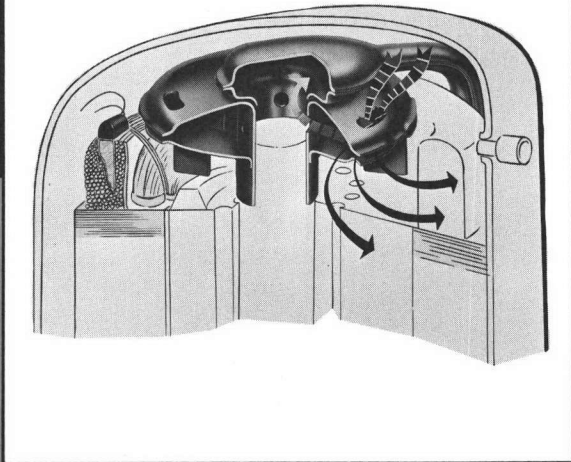
SALES FEATURES

The Tecumseh air conditioning line offers the widest selection of models and capacities available to the industry for this application.

This line has become the standard of the industry and by its versatility, gives the customer flexibility in his design and application. He further has the benefit of outstanding engineering accomplishments which consistently have led the industry in new developments.

There are many new features now available on Tecumseh air conditioning compressors which are of major interest to customers in the field. All standard window cooler compressors now include PSC (permanent split capacitor) motors and therefore eliminate the cost of a relay and start capacitor on normal applications. A run capacitor anti-slug circuit is available for the larger external mount twins for additional slugging protection.

On larger models, two features are of paramount importance. These are the mechanical anti-slug device and the internal thermostat, both of which are explained below.



ANTI-SLUG DEVICE

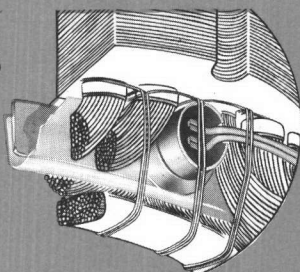
The Tecumseh mechanical anti-slug device is a new exclusive feature available on 3 H.P. twins, 4 and 5 H.P. four cylinder, plus AH and CL models. This device consists basically of two assemblies. One is the centrifuge which is press-fit on the crankshaft and therefore rotates at the speed of the compressor. The refrigerant is drawn in through the holes in the top. Any liquid or oil is expelled through the slots on the side by centrifugal force and the gas, being lighter, is drawn through the slots in the hub. The second assembly collects the gas and directs it to the cylinder heads.

This system always operates when the compressor is running and functions under all conditions which may affect slugging. It is not dependent upon any external component which may fail and so is practically foolproof.

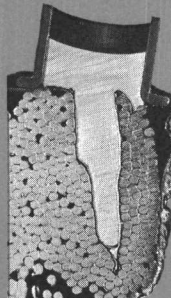
INTERNAL THERMOSTATS

Internal thermostats are included on 4 and 5 H.P. four cylinder compressors as well as most models in both the AH and CL lines. They are inserted directly in the motor windings and therefore measure motor temperature exactly, without allowing for the air gap between the motor and the top of the shell where overloads are normally located. This is particularly important in heat pump applications where the ambient may have considerable influence on the protection system.

Because the thermostat is located at the most critical point, it gives instantaneous and accurate sensing of the motor temperature and can therefore remove the compressor from the line at a safe temperature level. It is always operative when the compressor is running.

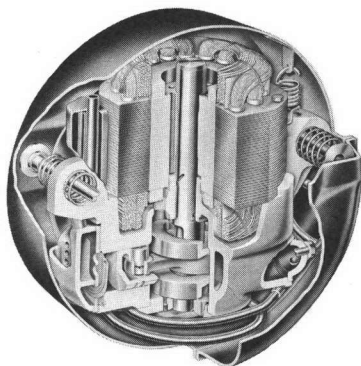


PFB TYPE

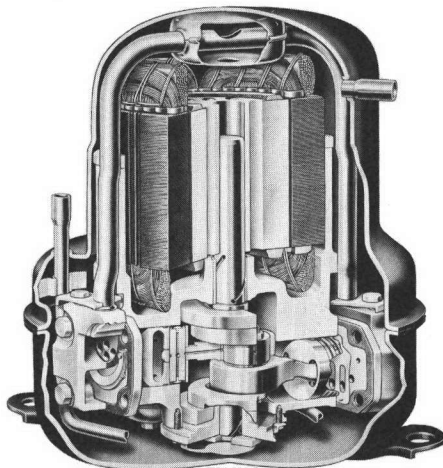


CL TYPE

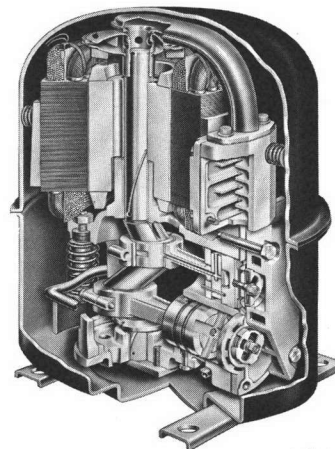
CONSTRUCTION DETAILS — BASIC AIR CONDITIONING COMPRESSORS



AU MODELS



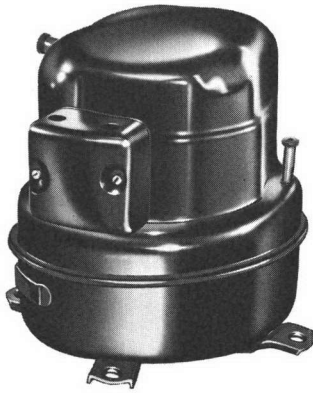
TWIN



CL MODELS

Tecumseh

TWIN CYLINDER AIR CONDITIONING COMPRESSORS 11,500 btu/hr. — 26,500 btu/hr.



The basic twin cylinder externally spring mounted Tecumseh compressors have served the room air conditioning industry for many years. The present line all have PSC motors and ranges in capacity from 11,500 BTU/hr to 26,500 BTU/hr. All models may also be used on heat pump applications.

The twin line offers many variations in voltage, tube arrangements and mountings to match customer requirements exactly. High capacity, high power factor, high BTU/watt, economical operation and low initial cost are all major features built into each Tecumseh air conditioning compressor.

Note that four models are also designed for 230 volt, 50 cycle operation to meet a specific customer requirement for this application. The BO2A and BO2B have internal overloads for maximum fool-proof protection.

Motor H.P.	Model	Bore	Stroke	Disp.	BTU/Hr.	Refrgr.	Motor Type	Suct. Line	Disc. Line	Oil Chg.	• Net Weight	Electrical
1	B1613	1 $\frac{3}{8}$	1 $\frac{3}{64}$	2.42	11500	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	65	115v 12 amp
1	*B1616	1 $\frac{3}{8}$	1 $\frac{1}{64}$	3.03	14000	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	65	230v
1 $\frac{1}{2}$	B32M16	1 $\frac{7}{16}$	1 $\frac{1}{64}$	3.29	15200	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	71	208v and 230v
1 $\frac{1}{2}$	B32T16	1 $\frac{3}{8}$	1 $\frac{1}{64}$	4.22	16250	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	71	230v 50 cycle
1 $\frac{1}{2}$	B32P16	1 $\frac{1}{2}$	1 $\frac{1}{64}$	3.59	17400	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	71	†208v and 230v
1 $\frac{3}{4}$	B74P18	1 $\frac{1}{2}$	1 $\frac{1}{8}$	3.98	18200	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	78	208v and 230v
1 $\frac{3}{4}$	B74T16	1 $\frac{3}{8}$	1 $\frac{1}{64}$	4.22	19500	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	78	†208v and 230v
2	*B21T18	1 $\frac{3}{8}$	1 $\frac{1}{8}$	4.67	22000	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	78	208v and 230v
2	*B21U18	1 $\frac{11}{16}$	1 $\frac{1}{8}$	5.03	24000	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	78	208v and 230v
2	*BO2A	1 $\frac{11}{16}$	1 $\frac{1}{8}$	5.03	24000	22	PSC	$\frac{1}{2}$	$\frac{5}{16}$ ID	45 oz.	78	†208v and 230v
2	BO2B	1.707	1 $\frac{1}{8}$	5.14	26500	22	PSC	$\frac{5}{8}$	$\frac{5}{16}$ ID	45 oz.	78	230v

* Also available as 50 cycle, 230 volt.

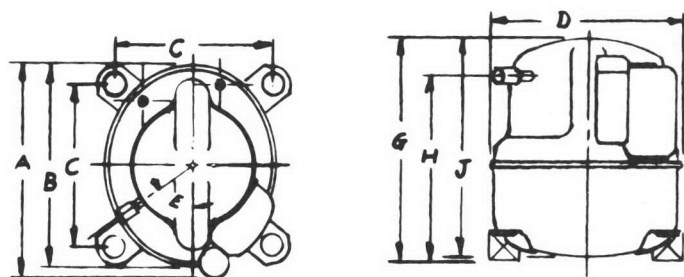
† Also available as three phase, 220/208 volt.

• Approximate

Model	All 1 H.P. and B32M16	B32P16 B32T16 B74P18	B74T16 B21T18 B21U18 BO2A	BO2B
A	10 $\frac{3}{16}$	10 $\frac{3}{16}$	10 $\frac{3}{16}$	10 $\frac{3}{16}$
B	10 $\frac{3}{16}$	10 $\frac{3}{16}$	10 $\frac{3}{16}$	10 $\frac{3}{16}$
C	7 $\frac{1}{2}$	7 $\frac{1}{2}$	7 $\frac{1}{2}$	7 $\frac{1}{2}$
D	8 $\frac{3}{16}$	8 $\frac{3}{16}$	8 $\frac{3}{16}$	8 $\frac{3}{16}$
E	55°	55°	55°	55°
G	11 $\frac{7}{8}$ †	12 $\frac{1}{16}$ †	12 $\frac{1}{16}$ †	12 $\frac{1}{16}$ †
H	9 $\frac{13}{16}$ †	10 $\frac{1}{2}$ †	10 $\frac{7}{8}$ †	12 $\frac{3}{32}$
J	11 $\frac{15}{32}$	12 $\frac{5}{32}$	12 $\frac{17}{32}$	12 $\frac{17}{32}$

All models dimensioned with small cover.
† Approximate

DIMENSIONS



Tecumseh

"AU" SERIES AIR CONDITIONING COMPRESSORS 6,000 btu/hr. — 14,500 btu/hr.

The Tecumseh pancake design offers six basic AU models for air conditioning applications, plus model AR26. Included are 115 volt, 7-1/2 and 12 amp compressors as well as a range of 208 volt and 230 volt models. All models except the AR26 are designed for R-22 and incorporate PSC motors, eliminating the start capacitor and relay. All of these models may also be used on heat pump applications.

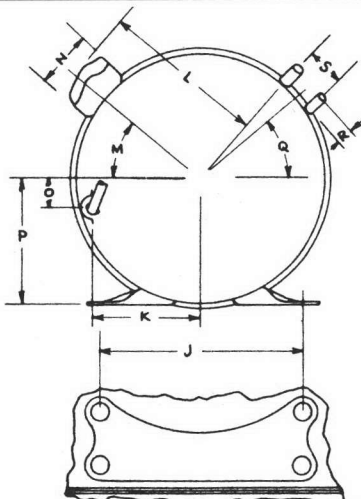
The pancake design has obvious cost, weight and size advantages which should be of interest to every manufacturer of room coolers. All have glass terminals for speedy hookup and variations in tube arrangements and mounting brackets accommodate all types of production procedures. All pancake type air conditioning compressors

have two pole (3500 rpm) motors. Their small, compact, size makes it possible to design cabinets for maximum portability and slim front-to-back dimensions.

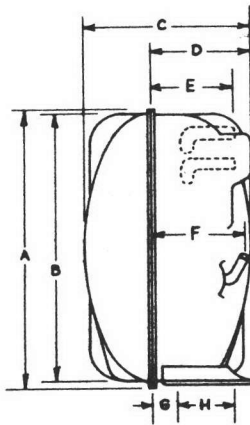
Adapter bases are available to match AJ mounting dimensions.



Model	Bore	Stroke	Disp.	BTU/Hr.	Refrg.	Motor Type	Suct. Line	Disc. Line	Oil Chg.	• Net Weight	Voltages		
											115V	208	230
AR26	1 3/8	5/8	.928	5000	12	CSR	5/16	1/4	22 oz.	31	✓		
AU3	1 1/16	5/8	.690	6000	22	PSC	3/8 ID	1/4 ID	30 oz.	40	✓	✓	✓
AU4	1 1/4	5/8	.767	7050	22	PSC	3/8 ID	1/4 ID	30 oz.	40	✓		
AU14	1 1/4	5/8	.767	7050	22	PSC	3/8 ID	1/4 ID	30 oz.	41	✓	✓	✓
AU16	1 3/8	5/8	.928	8300	22	PSC	3/8 ID	1/4 ID	30 oz.	41	✓	✓	✓
AU1612	1 3/8	3/4	1.114	10000	22	PSC	3/8 ID	1/4 ID	30 oz.	43	✓	✓	✓
AU1M12	1 7/16	3/4	1.220	10700	22	PSC	3/8 ID	1/4 ID	30 oz.	43	✓		
*AU1P12	1 1/2	3/4	1.325	11900	22	PSC	3/8 ID	1/4 ID	30 oz.	43		✓	✓
*AUR13	1 1/16	1 3/16	1.580	14500	22	PSC	3/8 ID	1/4 ID	30 oz.	43		✓	✓



DIMENSIONS



* Includes bracket.
† If top bracket is used this dimension will increase.

Model	Pancakes	
	AR26	ALL AU MODELS
A	* 10 11/32	† 10 3/8
B	8 31/32	9 7/8
C	6 7/32	6 1/4
D	3 11/16	3 11/16
E	—	3 1/16
F	—	3 7/16
G	1	1 5/16
H	—	2 7/16
J	—	8
K	3 3/8	4 7/32
L	—	6 7/16
M	—	40°
N	2 1/4	2 9/16
O	3 1/2	1 7/32
P	4 13/32	5
Q	—	41° 30'
R	1 1/2	7/8
S	—	1 7/16

Tecumseh

"AJ" SERIES AIR CONDITIONING COMPRESSORS 6,000 btu/hr. — 18,500 btu/hr.



The new AJ series is designed to compliment the AU line as well as to extend it to 18,500 BTU. Ten basic models are offered with variations in voltage, mounting and tubes to meet all customer requirements for room coolers or heat pumps. All include PSC, high speed (3500 rpm) motors for maximum capacity and minimum size. All are designed for R-22.

The AJ compressors have plastic covers secured with a bale strap which requires no tools for assembly. Further they may be waterproofed by the addition of a gasket under the cover. AJ models have internal springs and use rubber grommets for external mounting. This combination provides extremely quiet, smooth running operation. Mountings will fit the same dimensions as the AU series and so physically the compressors may be used interchangeably across the line. The compact dimensions

of several models make them ideal for casement window applications. The 230/208 volt models are designed to operate over a range of plus 10% of 230 volt and minus 5% of 208 volt. Special models are also offered for 240/220 volt, 50 cycle operation.

The cost, size and adaptability of this line offers many important benefits to the manufacturer of room coolers which may be incorporated in his end product.

Model	Bore	Stroke	Disp.	BTU/Hr.	Refrg.	Motor Type	Suct. Line	Disc. Line	Oil Chg.	• Net Weight	Voltages	
											115V	230/208
AJ3	1 ³ / ₁₆	5/8	.690	6000	22	PSC	3/8 ID	1/4 ID	25 oz.	40	✓	✓
AJ4	1 1/4	5/8	.767	7050	22	PSC	3/8 ID	1/4 ID	25 oz.	41	✓	
AJ14	1 1/4	5/8	.767	7050	22	PSC	3/8 ID	1/4 ID	25 oz.	44	✓	✓
AJ16	1 3/8	5/8	.928	8300	22	PSC	3/8 ID	1/4 ID	25 oz.	44	✓	✓
AJ1612	1 3/8	3/4	1.114	10000	22	PSC	3/8 ID	1/4 ID	25 oz.	45	✓	✓
AJ1M12	1 7/16	3/4	1.217	10700	22	PSC	3/8 ID	1/4 ID	25 oz.	45	✓	✓
*AJ1P12	1 1/2	3/4	1.325	11900	22	PSC	3/8 ID	1/4 ID	25 oz.	45		✓
AJ1P13	1 1/2	1 3/16	1.436	13200	22	PSC	3/8 ID	1/4 ID	25 oz.	46		✓
*AJR13	1 7/16	1 3/16	1.580	15000	22	PSC	1/2 ID	5/16 ID	25 oz.	46		✓
*AJR15	1 7/16	1 5/16	1.830	17200	22	PSC	1/2 ID	5/16 ID	25 oz.	50		✓
*AJT15	1 5/8	1 5/16	1.990	18500	22	PSC	1/2 ID	5/16 ID	25 oz.	50		✓

* Also available as 50 cycle, 240/220 volt.

• Approximate

AJ MODELS	AJ3 AJ14 AJ16	AJ1612 AJ1M12 AJ1P12	AJ1P13 AJR13 AJR15* AJT15*
A	9 7/8	10 1/8	10 5/8
B	3 15/32	3 15/32	3 15/32
C	1/4	1/4	1/4
D	7/32	7/32	7/32
E	7/16	7/16	7/16
F	3 1/16	3 1/16	3 1/16
G	2 27/32	2 27/32	2 27/32
H	3 7/16	3 7/16	3 7/16
I	8	8	8
J	4 13/16	4 13/16	4 13/16
K	2 29/32	2 29/32	2 29/32
L	6 1/2	6 1/2	6 1/2
M	3	3	3
N	3 5/8	3 5/8	3 5/8
O	8 5/8	8 5/8	8 5/8

* Add 7/16" to height for anti-slug models.

DIMENSIONS

