



Instrument Air Systems: Oil-Less Reciprocating

GENERAL

The Chemetron Skid Mount Instrument Air System provides high pressure clean dry air for medical support purposes. The system is designed in accordance to NPFA99 section 5.1.3.8 Instrument Air Supply Systems.

INSTRUMENT AIR SYSTEM

The package shall include multiple air compressors and associated equipment, one ASME tank, one medical desiccant air treatment system, and one medical control panel. The only field connections required will be system discharge and power connection at the control panel, and between skid-air and power connections. All interconnecting piping and wiring shall be included and operationally tested prior to shipment. Vibration isolation pads are included with the system.

COMPRESSOR PUMP

The compressor pump shall be belt-driven reciprocating, two-stage, single-acting, air-cooled, oil pressure lubricated design. Each compressor shall be capable of compressing air to a maximum pressure of 250 psig. Crankshaft and connecting rod bearings are pressure lubricated for extended life. Piston rings shall include two compression rings, and on oil control ring to provide excellent oil control and high efficiency air delivery. Single-unit disc type valves provide low lift and long life. Discs are made of corrosion resistant Swedish steel. Intercoolers are provided between compression stages for maximum efficiency. Each compressor shall include a discharge check valve of brass construction, an ASME safety relief valve, discharge flexible connectors, a start-up unload system, an isolation valve, an air-cooled aftercooler, and a moisture separator with automatic drain.

MOTORS

Each compressor shall be belt driven by a 1750 RPM, ODP, NEMA construction motor with a 1.15 service OSHA-approved belt guards shall be provided.

AIR RECEIVER

The system shall include an ASME air receiver rated for 250 PSI MAWP. The tank shall be equipped with a pressure gauge, safety relief valve, block and by-pass valves, and condensate sight gauge and automatic electronic tank drain with manual override. The receiver shall be internally lined with an FDA-approved material for corrosion resistance.

CONTROL PANEL

The system shall include a NEMA 12 control panel which complies with NFPA 99 requirements for Medical Air. The controls operate the duplex, triplex or quadplex 250 psi capable air compressor modules as needed in response to a pressure signal from a pressure transducer located in main system pipeline near the air receiver.

The Pressure signal is input to the PLC and is programmed to operate one, two or three compressor modules as needed to maintain the system minimum pressure of 200 psig. A touch screen interface displays system status and alarm conditions. A reserve pump-in-use alarm along with remote indication if the air demand increases beyond the system rated capacity or the pressure drops for any other reason and the reserve compressor module is ever called for. An acknowledge function is provided for use during start up and maintenance. Pressure settings are factory set and are not user adjustable

The PLC will alternate which compressor module is started each time a call for is generated. If a compressor is running longer than ten minutes continuously, the control will alternate to the next available compressor module to equalize run time and synchronize maintenance intervals. On initial start-up, or if air pressure drops rapidly, simultaneous motor starts are prevented by a programmed three-second stagger. Two 110V control circuit transformers with primary and secondary fuses are installed with a reserve transformer-in-use indicator light.

Motor circuit breakers with lockable disconnects and On/Off/Auto switches are provided for each compressor module. Operating in hand mode will bypass PLC controls. Operating hours, high temperature alarms, motor overload alarms and run indication for each compressor module is displayed on the screen. Easily navigated menus are provided to allow the user to select the display conditions and acknowledge the alarms. Remote alarm contacts are provided as shown on the system wiring diagram.

AIR PURIFICATION PACKAGE

The air purification package shall be sized in conformance with NFPA 99 specifications and consist of the following: dual desiccant air dryers, dual filter and regulator bank with sample ports, dew point monitor with alarm, and all bypass piping. All components shall be mounted piped and wired to the air receiver.

DESICCANT AIR DRYERS

Each twin-tower desiccant dryer shall be sized for the peak calculated system demand to provide a pressure dew point of -40° F. Dryer controls shall include a repressurization cycle to prevent shocking of the desiccant bed prior to switching towers. An integral purge saving control system shall be provided and shall suspend the purge air loss during periods of low demand. When the dryer is in purge control mode, the tower switching valves shall not operate, and only one desiccant tower shall be on-line. Dryers that continue to operate the switching valves on a fixed cycle, while in purge control mode shall not be acceptable.

FILTRATION & PRESSURE REDUCING STATION

The filtration systems shall consist of four stages of filtration, two pressure reducing valves with pressure gauges, and a sample air port. The first stage of filtration shall include dual .01 micron coalescing pre-filters with element change indicators and automatic condensate drains and installed up-stream of the air dryers. The second stage shall include dual 1 micron particulate filters with element change indicators and installed downstream of the air dryers. The third stage shall include dual activated carbon filters. The fourth stage shall include dual .01 micron final filters with pressure drop indicators. A dual set of pressure reducing valves with pressure gauges shall be installed downstream of the final filters. Each filter/dryer/regulator assembly shall be plumbed with bypass valves to enable service without disrupting air flow to the facility.

DEW POINT MONITOR

The system-integrated hygrometer shall be equipped with an LCD dew point display and high dew point alarm with dry contacts for remote monitoring. The dew point sensor (probe) shall be installed so that the monitored airflow is downstream of the pressure regulator assembly. The monitor shall include a self calibration mode to enable calibration of the dew point sensor without the need to return the sensor to the factory for calibration.

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**Duplex Skidmount
5 - 10 HP**

DIMENSIONS					
MODEL	DIM. A	DIM. B	DIM. C	Outlet	FIG.
IADS050-120T	65"	66"	79"	3/4"	A
IADS075-120T	65"	66"	79"	3/4"	A
IADS010-120T	65"	79"	80"	3/4"	B

Fig. A

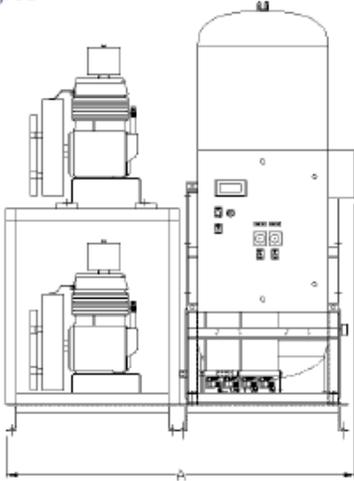


Fig. B

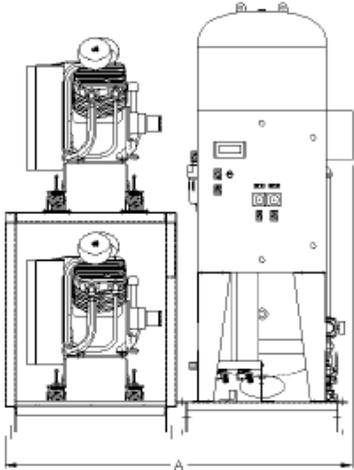


Fig. A

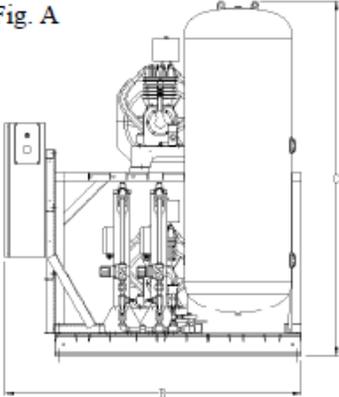
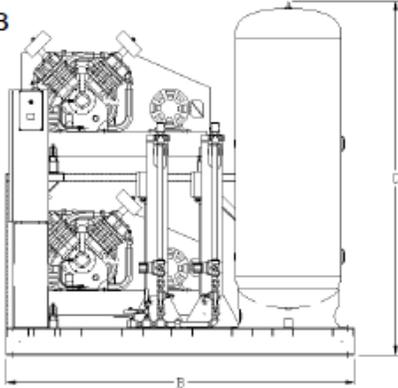


Fig. B

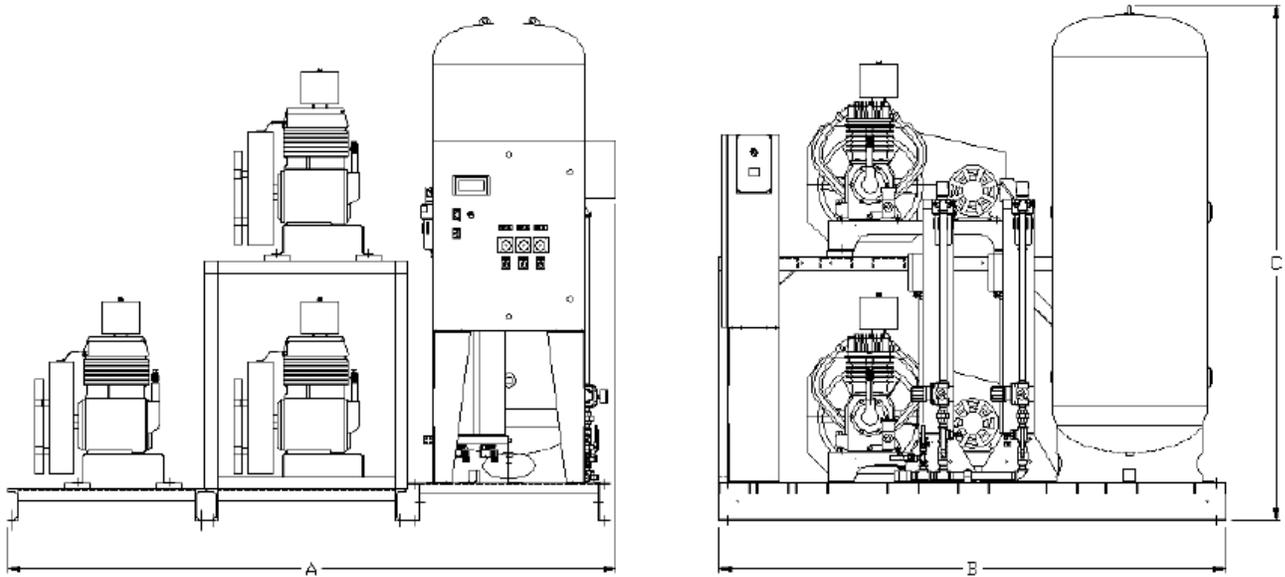


Duplex Skidmount							
MODEL	HP	SCFM @ 200 PSI	TANK SIZE	SYSTEM F.L.A.			SYSTEM WEIGHT
				208V	230V	460V	
IADS050-120T	5	15.5	120	16.7	15.2	7.6	1,850
IADS075-120T	7.5	19.6	120	24.2	22	11	1,940
IADS010-120T	10	29.0	120	30.8	28	14	2,540

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**Triplex Skidmount
5 - 10 HP**

DIMENSIONS				
MODEL	DIM. A	DIM. B	DIM. C	Outlet x1
IATS050-120T	97"	79"	81"	3/4"
IATS075-120T	97"	79"	81"	3/4"
IATS010-200T	97"	79"	85"	1"

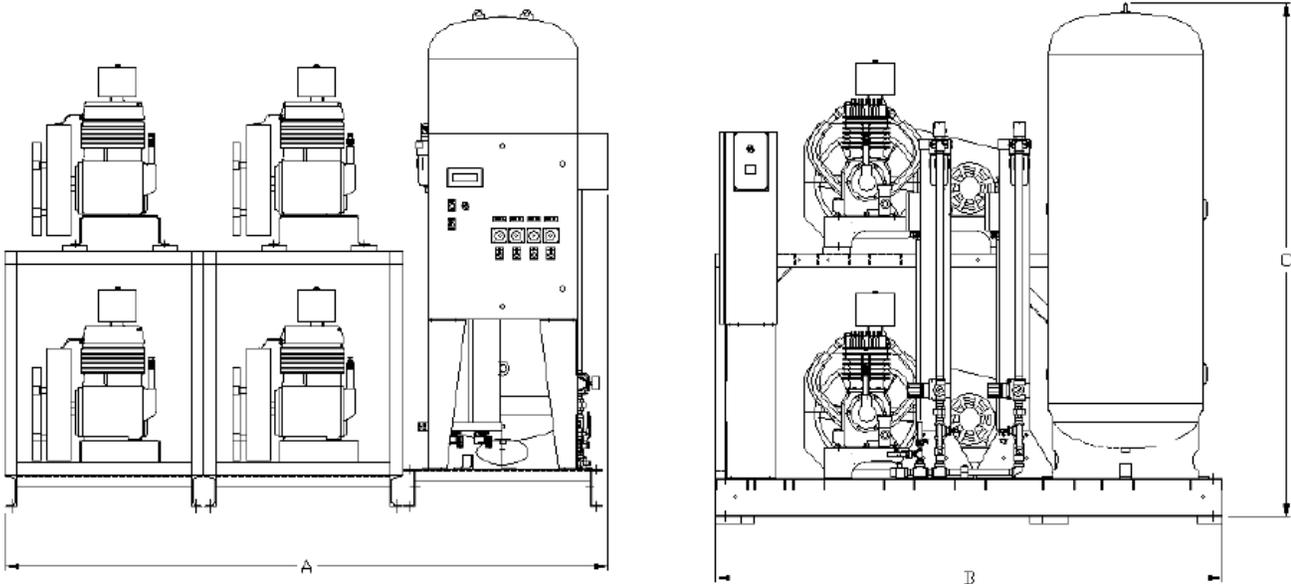


Triplex Skidmount							
MODEL	HP ¹	SCFM @ 200 PSI	TANK SIZE	SYSTEM F.L.A.			SYSTEM WEIGHT
				208V	230V	460V	
IATS050-120T	5	31	120	16.7	15.2	7.6	2,610
IATS075-120T	7.5	39.2	120	24.2	22	11	2,900
IATS010-200T	10	58.0	200	30.8	28	14	2,842

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**Quadplex Skidmount
5 - 10 HP**

DIMENSIONS				
MODEL	DIM. A	DIM. B	DIM. C	Outlet x1
IAQS050-120T	97"	79"	81"	3/4"
IAQS075-200T	97"	79"	85"	1"
IAQS-010-240T	96"	79"	96"	1"



Quadplex Skidmount							
MODEL	HP	SCFM @ 200 PSI	TANK SIZE (Gal)	SYSTEM F.L.A.			SYSTEM WEIGHT
				208V	230V	460V	
IAQS050-120T	5	46.5	120	16.7	15.2	7.6	3,275
IAQS075-200T	7.5	58.8	200	24.2	22	11	3,680
IAQS-010-240T	10	87.0	240	30.8	28	14	4,844

All specifications are nominal and subject to change without notice.

Warranty:
See Allied Statement of Warranties for details.

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