Note: The P24AL low-side ammonia machine began production in 1972. The original conutilized Allen-Bradley NEMA components, and in mid-1993 changed to include Cutler components. The control panel was changed to Allen Bradley I.E.C. components in mid-19 items will be listed below as replacments.

## Control Panel, Allen-Bradley I.E.C Components

Part Number	Reg'd	<u>Description</u>
12A2590G12	1	GAGE, 4 1/2" DIAMETER, 30"-150# 1/4" BC, AMMONIA  Suction Pressure Gage (Optional)
12A2590G13	1	GAGE, 4 1/2" DIAMETER, 30"-300# 1/4" BC, AMMONIA  Discharge Pressure Gage (Optional)
12A2117D01	1	HI/LOW PRESSURE SWITCH (Optional)
12A7500E60	1	A/B SELECTOR SWITCH, 2 POSITION  "1SS" Hand/Auto Switch
12A7500E74	1	CONTACT BLOCK/MOUNTING LATCH, 1-NO, 1-NC  Contact Block for 12A7500E60 Selector Switch
12A7500E57	1	A/B PUSH BUTTON SWITCH (RED) "1PB" Stop Push-Button Switch
12A7500E76	1	CONTACT BLOCK/MOUNTING LATCH, 1-NC  Contact Block for 12A7500E57
12A7500E56		A/B PUSH BUTTON SWITCH (GREEN) "2PB" Start Push-Button Switch
12A7500E75	1	CONTACT BLOCK/MOUNTING LATCH, 1-NO  Contact Block for 12A7500E56
12A7500E58	1	A/B PUSH BUTTON SWITCH (WHITE)  "3PB" Manual Harvest Switch
12A7500E75	1	CONTACT BLOCK/MOUNTING LATCH, 1-NO Contact Block for 12A7500E58
12A7500E78B	1	BLUE LED LIGHT MODULE/MOUNTING LATCH "1LT" Freezing
12A7500E78W	1	WHITE LED LIGHT MODULE/MOUNTING LATCH "2LT" Liquid Feed
12A7500E78R	1	RED LED LIGHT MODULE/MOUNTING LATCH "3LT" Thawing
12A7520E35	3	BULB #755, A/B 2TL5/2TL7 PILOT LIGHT, 6.3V
12B7503E21	1	ELAPSED TIME INDICATOR, 220V, 60HZ, DIN RAIL MOUNT
12A7503E22	1	THAW TIMER, 8 PIN PLUG-IN, 100-240V., 50/60HZ "2TR"
12A7503E39	1	TIMER BASE, 8 PIN, GUARDED TERMINAL
12B7503E20	1	ELAPSED TIME INDICATOR, 220V, 50HZ, DIN RAIL MOUNT

## Control Panel (Con'd)

Note: A timer is the standard method to control the "Freeze Cycle" on P24AL Units. Analogue were used until the mid-1990's at that time a change was made to digital timers which are still used. Please verify the type timer being replaced along with the control voltage to ensure the replacement is provided.

Part Number	Reg'd	<u>Description</u>
12A7503E3K	1	KIT, EAGLE DIGITAL TIMER , 208/240V 50/60 HZ  Primary Freezing Timer
12A7503E4K	1	KIT, EAGLE DIGITAL TIMER, 120 VOLT 50/60HZ  **Primary Freezing Timer**
12A7503E04	1	TIMER, 0-60MIN EAGLE SIGNAL #HP56B601, 240V.,60HZ  Analogue Primary Freezing Timer
12A7503E03	1	TIMER, 0-30MIN EAGLE SIGNAL #HP55B601, 240V.,60HZ  Analogue Primary Freezing Timer
12A7503E2	1	TIMER, 0-15MIN EAGLE SIGNAL #HP518B601, 240V.,60HZ  Analogue Primary Freezing Timer
12A7503E05	1	TIMER, 0-10MIN EAGLE SIGNAL #HP54B601, 240V.,60HZ  Analogue Primary Freezing Timer
12A7503E06	1	TIMER, 0-60MIN EAGLE SIGNAL #HP56A601, 120V.,60HZ  Analogue Primary Freezing Timer
12A7503E02	1	TIMER, 0-30MIN EAGLE SIGNAL #HP55A601, 120V.,60HZ  Analogue Primary Freezing Timer
12A2117C03	1	FREEZER PRESSURE SWITCH, ASCO PG16A  Option to Freeze Timer, requires Transducer (12A2117T03)
12A2117T03	1	TRANSDUCER, ASCO RANGE 6-60 PSI Used with Freezer Pressure Switch 12A2117C03
12A7517E27	1	RELAY, AB, 10A, 2-NO/2-NC, 208/240 "1CR" Relay (Replaces 12A7517E02-700N200A2)
12A7517E28	2	A/B RELAY, 10A, 3-NO/1-NC, 208/240 "2CR" & "3CR" Relay (Replaces 12A7517E02-700N200A2)
12A7517E32	1	RELAY, 10A, 2 NO/2 NC, 120V "CR1" Relay for 120 Volt Controls
12A7517E33	2	RELAY, 10A,3 NO/1 NC, 120V "CR2 or CR3" Relay for 120 Volt Controls
12A7518E30		A/B AUX. CONTACT, 3A, 1 NO/1 NC, (SIDE MOUNT)
12A7503E38	1	A/B TIMER, PNEUMATIC, ON-DELAY FOR 700-CF RELAY  Time Delay for Cutter Motor on "1CR" Relay
12A7516E23	1	A/B CONTACTOR, 9-AMP, 3-POLE, 208/240V W/1-NO AUX "2M" Water Pump 308/240V or "3M" All Cutter Motor
12A7516E24	1	A/B CONTACTOR, 12-AMP, 3 POLE, 208/240V W/1-NO AUX "2M" Water Pump 190/208/230V

## **Control Panel (Con'd)**

Part Number	Reg'd	<u>Description</u>
12A7505E21	1	CONNECTOR KIT FOR 140-MN / CONTACTOR  Connecting Kit Cutter Pump Contactor to Motor Starter
		Connecting the Catter i unip Contactor to motor Starter
12A7530E54UL	1	MANUAL MOTOR STARTER, 1.6-2.5A
12A7530E55UL	1	MANUAL MOTOR STARTER, 2.5-4.0A
12A7530E56UL	1	MANUAL MOTOR STARTER, 4.0-6.3A
12A7530E57UL	1	MANUAL MOTOR STARTER, 6.3-10.0 AMP
12A7518E33UL	2	AUX. CONTACT, 6A, 1 NO TRIP, 1 NC TRIP
		Auxillary for Water Pump and Cutter Motor Starter

Note: If replacing Water Pump Or Cutter Motor Contactor in Pre-1993 Allen Bradley Panel or Cutter-Hammer Control Panel, the Contactor and Overload Relays listed below will be require drawing avavilable upon request). Amp rating on motors should be set in compliance with na amp rating when setting the overload relay.

12A7516E24	1	A/B CONTACTOR, 12-AMP, 3 POLE, 208/240V W/1-NO AUX
		"2M" Water Pump or "3M" Cutter Motor (12-amp Max)
		Water Pump or Cutter Motor Contactor (12-amp Max)
12A7538E11	1	OVERLOAD RELAY, 1-5AMP SOLID STATE
		Cutter Motor or Water Pump 460 Volt
12A7538E12	1	OVERLOAD RELAY, 3.2-16AMP SOLID STATE
		Cutter Motor or Water Pump 230 Volt
12A7519E31		TRANSFORMER, HEVI-DUTY 1KVA 240/480-120/240 60HZ
12A7519E24		TRANSFORMER, HEVI-DUTY, 1KVA, 380/400/50 HZ,
12A7515E21S	1	CIRCUIT BREAKER, 3A, 2 POLE, 4
		"CB4" Control Circuit 460V
12A7515E22S	1	CIRCUIT BREAKER, 6A, 2 POLE, 4
		"CB4" Control Circuit 200/208/230V
12A7515E33S	1	CIRCUIT BREAKER, 4A, 2 POLE, 4
		"CB4" Control Circuit 400V

#### **Freezer Components**

Part Number	Reg'd	<u>Description</u>
12A2600G08	1	FREEZER COVER GASKET 27" x 22" x 3/16"
12B2145C04	1	P24 POLYCARBONATE FREEZER COVER W/VENT HOLE
		(Requires the Foot Valve & Bulkhead Fitting below)
12A4200B1007	1	VALVES, FOOT (PLASTIC), 1-1/2" MPT
12A2450B13	1	BULKHEAD FITTING, (PVC) 1 1/2"
19T4001S0915	4	P24 FREEZER COVER RETAINING RINGS
12A2240H4109	12	NUT, WING, BRASS, 3/8"-16NC
12A2250A12	12	WASHER, CUT 3/8" x 1" O.D. SS
12B2185V12	264	1" VENT TUBE WATER DISTRIBUTOR, 16GA WHITE
12B2185V22	198	1-1/4" VENT TUBE WATER DISTRIBUTOR, 16GA WHITE
12B2185V32	144	1-1/2" VENT TUBE WATER DISTRIBUTOR, 16GA WHITE
12B2185V42	102	1-3/4" VENT TUBE WATER DISTRIBUTOR, 16GA WHITE

# Freezer Components (Con'd)

Part Number	Reg'd	<u>Description</u>
12A4009R01		PLUG, RUBBER 7/8" OD X 2" LG FOR 1" TUBES
		Requires 3/8" Bolt, Nut & Washers
12A4009R02		PLUG, RUBBER 1"OD X 2 1/2"LG FOR 1-1/4" TUBES
		Requires 3/8" Bolt, Nut & Washers
12A4009R03		PLUG, RUBBER 1 1/4"OD X 2 1/2" FOR 1-1/2" TUBES
		Requires 3/8" Bolt, Nut & Washers
12A4009R04		PLUG ,RUBBER 1 1/2"OD X 2 1/2" FOR 1-3/4" TUBES
		Requires 3/8" Bolt, Nut & Washers
12A2215H1119	1	CAP SCREW, 3/8"-16NC X 3" LONG
12A2240A1109	1	NUT, HEX 3/8"-16NC S.S.
12A2250A12	2	WASHER, CUT 3/8" x 1" O.D. SS
		(Use this washer for 1" tubes)
12A2250A109	2	WASHER, CUT 3/8" x 7/8" O.D. SS
		(Use this washer for 1 1/4", 1 1/2" & 1 3/4" tubes)
12A7500E22	1	FLOAT SWITCH, HANSON #HLL (DIFFERENTIAL SET @ 1/2")
		Replaces Alco FS1A or RS Type LL
12A7500E24	1	SWITCH ASSEMBLY #HLL-SW FOR HANSON
		Also can be used on RS Type LL
12A7509E17		HEATER, HANSEN #HTR2 FOR 12A7500E22 FLOAT SWITCH
		Optional - Heater for Refrigerant Float Switch Asembly
12A2600F01	2	FLANGE GASKET FOR 3/4" & 1" 2-BOLT FLANGE
12A2625G03	1	GAGE GLASS 1/2" X 28-1/8" LONG
		For Use with Hand Wheel Gage Cock Valves
12A2625G11	1	GAGE GLASS, 1/2" X 28 3/8" LONG
		For Use with Service Wrench Gage Cock Valves
12A2625G05	1	GAGE GLASS 1/2" X 29" LONG
		For Custom Application (Cut to Fit)
19T2635G06	1	GAGE GLASS GUARD SET, 27 1/4"
		For Use with Service Wrench Gage Cock Valves
12A2635G06	1	GAGE GLASS GUARD 60" LENGTH
		For Custom Application (Cut to Fit)
12A4199V26	2	GAGE GLASS PACKING O-RING FOR 1/2" DIAMETER
12A4200J0405	1	UPPER GAGE COCK VALVE, STEEL
		Replaced Hand Wheel Valve - May 1999
12A4200J0406	1	LOWER GAGE COCK VALVE, STEEL
		Replaced Hand Wheel Valve - May 1999
12A3050C0301	2	PIPE NIPPLE, 1/2" X 1-1/2" LONG

Note: Serial number of unit required for purchase of relief valves. Relief valve setting must not the design pressure of the vessel.

12A4200L0603	2	RELIEF VALVE SET @ 275#, 3/4" FPT x 1" FPT
12A4200M0601	1	3-WAY VALVE 3/4" FOR AMMONIA

#### **Cutter Drive**

Note: The cutters on the original P24 units were nickel plated carbon steel driven by a belt a system off the bottom of a galvanized water tank. In 1977, the design was changed to the curr drive setup and at the same time, the entire water tank and cutter was changed to stainly Reliance one piece gearmotors were used until a design change in 1998 to the separate Grov and U.S. Motor. Note: Grove and Reliance reducers require different mounting configuation not interchangeable.

Part Number	Req'd	<u>Description</u>
12A2900M0701	1	GEARMOTOR, RELIANCE R56WG21A ,1HP 230/460V-3P-60HZ For Belt-Driven Cutters Prior to 1977
12A2900M0702	1	GEARMOTOR, RELIANCE, 1HP 230/380/460V-3P-50/60HZ  Direct Drive Units with Stainless Steel Tanks Until 1998
12A4080S1	1	SEAL, KIT #07901938AC FOR RELIANCE 1HP GEARMOTOR
12A2900M0704	1	GEARMOTOR, GROVE 15:1, 1-1/2HP, 230-460V-3P-50/60HZ  Direct Drive Units Built Since 1998
12A2900M0705	1	MOTOR, 1 1/2 HP, FOR GROVE GEARMOTOR 12A2900M0704
12A4030R1	1	REDUCER, GROVE 10:1 FOR GEARMOTOR 12A2900M0704
12A4080S24	2	SEAL KIT FOR GROVE REDUCER USED ON P24
12B2615D03	1	P24 DRIVE GEAR , ALUMINUM / BRONZE 9-1/4" PD, 72 TEETH Replaces Cast Iron Gear
12B2060B01	1	DRIVE GEAR HUB, STAINLESS STEEL 1-1/8" BORE  For use with Grove gearmotor
12B2060B04	1	DRIVE GEAR HUB, 7/8" BORE STAINLESS STEEL For Aluminum Bronze Gear (Will not work with Cast Gear)
12A2215G111	3	CAP SCREW,5/16"-18NC X 1" SS HEX HEAD
12A2250B108	3	WASHER, LOCK 5/16" SS ( 300 SERIES)
19T2615R03	1	P24 FINISHED RING GEAR
12A3040S02	6	CUTTER BEARING ROLL PIN 3/16" X 1/2" (This pin used to secure ring gear to cutter)
126087	1	BELT 630XH200 DIAMOND FOR P24 BOTTOM DRIVE CUTTER

### **Cutter Internals**

Part Number	Req'd	<u>Description</u>
19T2035B01	2	CUTTER BLADE, P24, 10" LONG
19T2010A11	2	P24 CUTTER ADAPTOR PLATE
19T4130T04	8	ADAPTOR PLATE SPACER, 5/8" O.D. S.S. TUBING x 7/8" LG.
12A2226H1117	8	MACHINE SCREW, FLAT HEAD SS, 3/8"-16NC x 2-1/2" LG
		For Adaptor Plates
12A2240A1309	8	NUT, HEX 3/8"-16NC S.S.
19T2025B0105	1	BEARING BRACKET ASSEMBLY FOR P24
19T2163D0302	1	TINES DISC, P24 CYLINDER ICE
19T4130C02	1	P24/34 TINES DISC HUB SPACER
19T4090S03	1	P24/34 CUTTER SHAFT
19T4065R01	1	P24/34 CUTTER RETAINING SPACER
19T2165K2434	1	P24/P34 CUTTER REPAIR KIT
		Kit Contains Items for Cutter Maintenance and Rebuild

#### Water Tank/Circulating Water

Part Number	Reg'd	<u>Description</u>
19T2165C03	1	S.S. CUTTER/TANK ASSEMBLY FOR P24
		Includes complete cutter assembly and drive train, water tank
		tines disc, & bearing support. Does not include water pump
		or internal water piping (specify tube size when ordering)
12A2600G09	1	WATER TANK GASKET 30" x 27" x 3/16"
12A4200H0606	1	VALVE, FLOAT, ROBERTS 3/4" MPT, LEAD FREE BRASS
		Current Valve since 1994 (Requires 21" Water Box Width)
12A4200HP01	1	STEM FOR ROBERTS FLOAT, 10" LG x 1/4-20 THREAD BRASS
12A4200HP02	1	FLOAT FOR ROBERTS, 4" CYL x 6" LG W/1/4-20 THREAD
12A4200H0801	1	FLOAT VALVE, HUDSON 1" FPT
127668	1	FLOAT VALVE MCDONNELL & MILLER 27W, 3/4" FPT
12A4200A0607LF	1	VALVE, WATER, 3/4", LEAD FREE, GRANZOW, LESS COIL
		Water Tank Flush Valve (Replaces Sporlan & Jakes Evans)
12A2105C42K	1	ASSEMBLY, COIL, 230/240V GRANZOW
12A2105C41K	1	ASSEMBLY, COIL, 110/120V GRANZOW
126223	1	COIL FOR SPORLAN SOLENOID, 230V/60HZ
12A2105C06	1	COIL FOR SPORLAN SOLENOID, 120 VOLT, 50/60 HZ
12A2105C17	1	COIL, J/E #G-23, 208/230V.,50/60
12A4170T01	1	THERMOMETER, WEKSLER, 2" DIAL, 4" STEM 25-125 DEG F.
12A4205G0601LF	1	3/4" STOP VALVE, LEAD FREE BRONZE
12A4181T09	16	TUBING, PLASTIC, CLEAR, 2" ID x 3/16" THK
		Circulating Water (Priced per ft.)
12A4181T06	12	TUBING, TYGON B-44-3, 1-1/2" OD x 1-1/4" ID
		Overflow (Prior to 1994) (Priced per ft.)
12A4181T09	12	TUBING, PLASTIC, CLEAR, 2" ID x 3/16" THK
		Overflow (After 1994) (Priced per ft.)
12A4078C03	1	CURTAIN, P24 SPLASH
12A4020S02	1	PUMP, 1 1/2HP SCOT #AVF51 230/380/460V-3P-50/60HZ
		Cast Iron Housing, Sidewall Mount
12A2600G03	1	PUMP SUCTION GASKET, 7 1/2" x 4 1/2" x 3/16"
12A4020G16	1	PUMP, GOULD SSH, 2HP 208-230/460V-3P-50/60HZ
		Stainless Steel Housing, Bottom Flange Mount
12A4080S13		SEAL, PUMP FOR GOULD 2 & 3HP PUMP
12A2600R08	1	GASKET RED RUBBER 2"ID X 6 1
		Pump Discharge Gasket for S.S. Water Pump
12A2600R09	1	GASKET, P24/P34 S.S. PUMP
		Pump Suction Gasket for S.S. Pump
12A2532F0706	1	FLANGE, ROUND P.V.C., THREADED P24 -PUMP DISCHARGE
12A2450E12	1	ELL, PVC, 90 DEG. 2" MPT X 2" INSERT

# **Liquid Line**

Part Number	Reg'd	<u>Description</u>
12A4200C0604	1	EXPANSION VALVE, HANSEN 3/4" SOCKET WELD
12A4200A06	1	VALVES, SOLENOID, HANSEN #HS7, 3/4" PORT
		Replaces Alco M511 & Hansen HS8
12A4140S05	1	STRAINER, HANSEN #ST100D, 3/4"
12A2538S0106	1	FLANGE SET, 3/4" FPT, HANSEN 2-BOLT
12A2600F01	2	FLANGE GASKET FOR 3/4" & 1" 2-BOLT FLANGE
12A4200B0602	1	CHECK VALVE, HANSEN, 1-1/4" PORT WITH ADAPTOR RING
126229	1	COIL, HANSEN, 208/240V-50/60HZ
12A2105C08	1	COIL, HANSEN, 115V-50/60HZ (1/2" FITTING)
12A4199V52	1	REPAIR KIT FOR HANSEN HS7
12A7500E22	1	FLOAT SWITCH, HANSON #HLL (DIFFERENTIAL SET @ 1/2")
		Replaces Alco FS1A or RS Type LL
12A7500E24	1	SWITCH ASSEMBLY #HLL-SW FOR HANSON
		Also can be used on RS Type LL
12A7509E17		HEATER, HANSEN #HTR2 FOR 12A7500E22 FLOAT SWITCH
		Optional - Heater for Refrigerant Float Switch Asembly

## **Thawing Gas Line**

Part Number	Req'd	<u>Description</u>
12A4200D1402	1	REGULATOR, HANSEN HA40S 2" 240V COIL
		Replaces Hubbell PHS, Alco FA5-18 & RS #A40AS
19T2535H0200	1	ADAPTOR RING, HUBBELL TO HANSEN-2"
12A4199V34H	1	REPAIR KIT FOR 2" HANSEN HA40S REGULATOR
126229	1	COIL, HANSEN, 208/240V-50/60HZ
12A2105C08	1	COIL, HANSEN, 115V-50/60HZ (1/2" FITTING)
126246	1	COIL, RS #201402 (240/60HZ) FOR S4AE & S7A
126247	1	COIL, RS #201406, A3M PKGD, (230/50HZ) FOR S4AE & S7A
12A4140S18	1	STRAINER, HANSEN ST200 2"
12A4200B1403	1	CHECK VALVE, HANSEN 2" (9-7/8" LONG, FEMALE FLGS)
		Note: Henry & Hubbell check valves both obsolete

# **Valves-Flanges-Gaskets**

Part Number	Req'd	<u>Description</u>
12A4200G021		VALVES, 1/4" MPT x 1/4" FPT ANGLE
12A4200G0202		ANGLE VALVE, 1/4" MPT x 1/4" FPT
12A4200G0407		VALVES, GLOBE, HANSEN 1/2" SOCKET WELD
12A4200G0402		ANGLE VALVE, 1/2" MPT x 1/2" FPT
12A4200G0409		VALVES, ANGLE, HANSEN, 1/2" FPT X 1/2" FPT
12A4200G0603		ANGLE VALVE, 3/4" FPT x 3/4" FPT
12A4200G0606		VALVES, ANGLE, 3/4" HANSEN SOCKET WELD
12A4200G0608		VALVE HANSEN 3/4" ANGLE THREAD
12A4200G1406		VALVE, 2" SOC WELD HANSEN GS20
12A4200G1408		VALVE, ANGLE, 2" SOCKET WELD W
12A4200G1604		VALVE, 2 1/2" SOCKET WELD HANS
12A4200G1806		VALVES, GLOBE, STOP 3" WELD HANSEN
12A4200G2104		VALVES, ANGLE STOP 4" B.W. HAN
12A4200D1601		3" DUAL PRESS REG. HANSEN HA4AD W/STRAINER-230V
12A4200D1701		4" DUAL PRESS REG. HANSEN HA4AD W/STRAINER-230V
12A2538S0106		FLANGE SET, 3/4" FPT, HANSEN 2-BOLT
12A2538S0107		FLANGE SET, 1" FPT, HANSEN 2-BOLT
12A2530G0206		FLANGE, 2" HENRY GROOVE SOCKET WELD
12A2530T0206		FLANGE, 2" HENRY TONGUE SOCKET WELD
12A2535T0106		FLANGE ADAPTOR, 2" MALE TO MALE
12A2530G0208		FLANGE, 2-1/2" HENRY GROOVE SOCKET WELD
12A2530T0208		FLANGE, 2-1/2" HENRY TONGUE SOCKET WELD
12A2530G021		FLANGE, 3" HENRY GROOVE SOCKET WELD
12A2530T021		FLANGE, 3" HENRY TONGUE SOCKET WELD
12A2530G0212		FLANGE, 4" HENRY GROOVE SOCKET WELD
12A2530T0212		FLANGE, 4" HENRY TONGUE SOCKET WELD
12A2600F01		FLANGE GASKET FOR 3/4" & 1" 2-BOLT FLANGE
12A2600F04		GASKET, 2" HENRY
12A2600F05		GASKET, 2-1/2" HENRY
12A2600F06		GASKET, 3" HENRY
12A2600F08		GASKET, 4" HENRY

# Pressure Line & Fittings

Part Number	Reg'd	<u>Description</u>
12A4182S03		TUBING, 1/4" OD TYPE 304 STAINLESS (PRICED PER FT)
12A2452M02		CONNECTOR, MALE, 1/4" MPT x 1/4" TUBING
12A2452E01		ELL, 90 DEG 1/4" MPT X 1/4" TUBING
12A2452F01		CONNECTOR, FEMALE 1/4" FPT x 1/4" TUBING
12A2452T01		TEE, UNION, 1/4" x 1/4" x 1/4" TUBING
12A2452T02		TEE, 1/4" TUBING x 1/4" TUBING x 1/4" MPT
12A2100C0303		CLAMPS, 1/4" OD TUBING