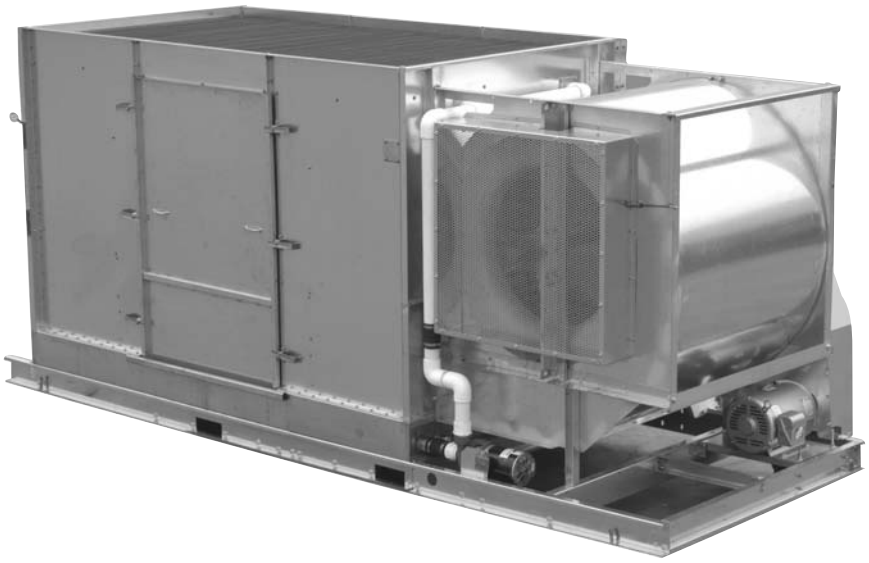
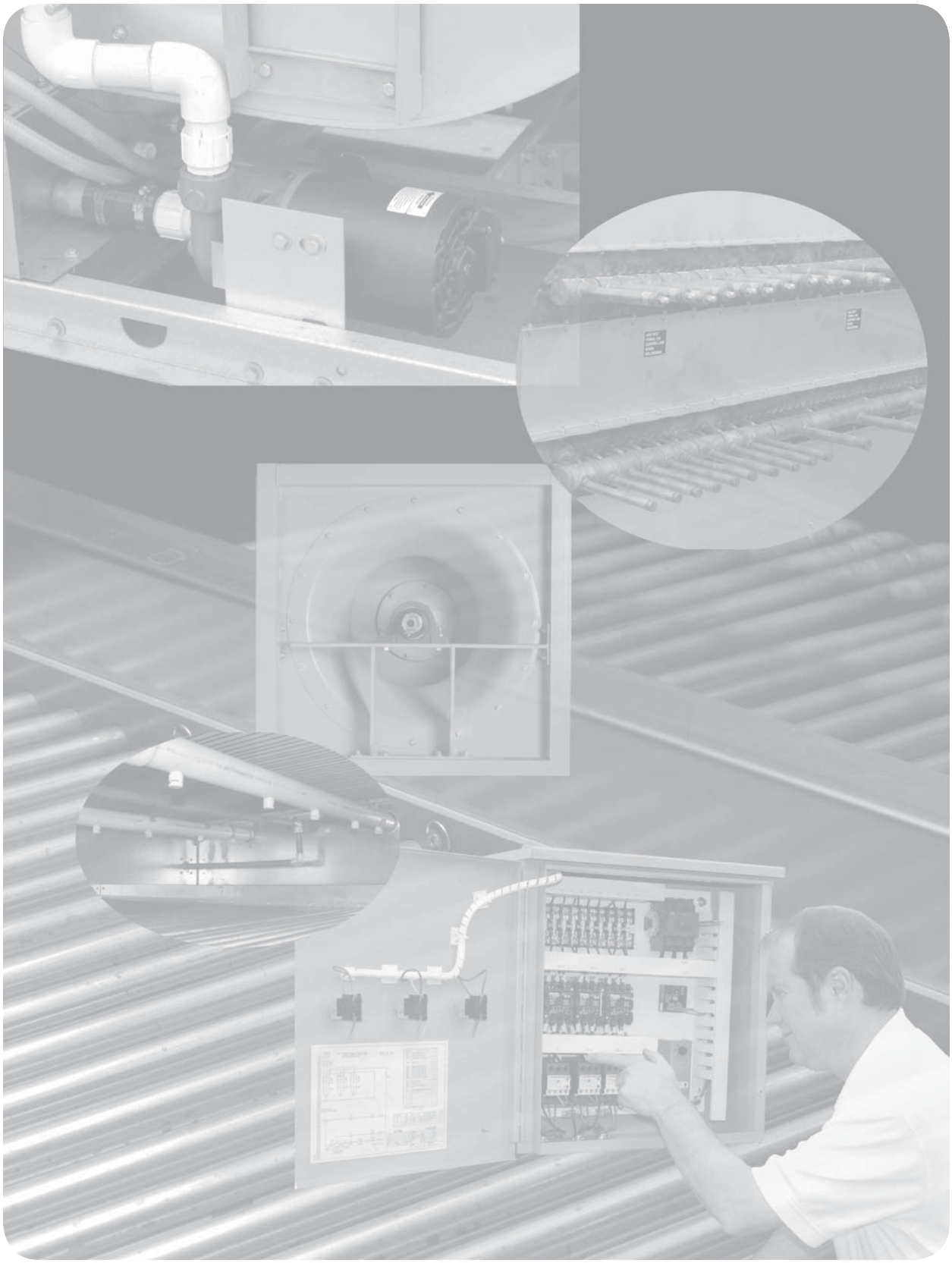
Form 360.10-SED1 (SEP 2004)
SPECIFICATIONS - ENGINEERING DATA - DIMENSIONS
Replaces: E200-205 SED (SEP 2004)

FRIGID COIL COPPER TUBE EVAPORATIVE CONDENSERS

YEC Series





CONTENTS

ALL YEC SERIES EVAPORATIVE CONDENSERS HAVE COPPER TUBING

Smart managers earn extra years of trouble-free operation
by choosing Copper Tube coil construction.

CHOOSE COPPER

- **Noncorrosive –** Copper tubing is classified as noncorrosive. This means more years of productivity and trouble-free operation. Copper tubing provides a clean interior surface for your process fluid system. Corrosion resistance means long service life.
- **Efficient Heat Transfer –** Copper is the most efficient heat transfer material available for evaporative condensers. This allows smaller units and lower energy consumption to produce the required heat transfer.
- **Design Flexibility –** Copper coil can be split into a large number of independent circuits to handle diverse applications and configuration requirements.

  Supermarkets often require multiple condensing circuits that function independently to match the configuration of refrigeration systems. The circuits must maintain a variety of products, from ice cream to produce, at different condensing temperatures.
- **Light Weight...Economical Installation –** Copper is a light weight material. It yields a more compact design that delivers results similar to other units using steel as the coil construction material. Less weight also means less required support structure and lower installation lifting costs.

CRITICAL HEAT TRANSFER POINT

Condensing Effectiveness Determines System Efficiency. If the condensing process is not functioning at the optimum level, the overall system costs more to operate.

Why? …The system works harder to achieve the same result.

SAFETY and DURABILITY

Prevent leaks and make your investment last.

Welded stainless steel sumps are superior. Welded closures are permanent. They are secure and eliminate the water leaks that develop over time with flanged and gasketed construction. No water, no rust, no bacteria or standing water in your equipment room. This also provides a safety bonus by removing hazards for your operators working near electrical wiring.

SERVICE ACCESS DETERMINES MAINTENANCE COST

Don't waste time trying to get to the equipment. Johnson Controls evaporative condensers provide easy access for maintenance. This means less hours invested by your maintenance team to keep equipment in prime condition and lower cost for your bottom line.

LONGEVITY

Stainless steel can also be used for Johnson Controls upper cabinet construction. If you have adverse water conditions in your facility (i.e. heavy water, chlorine, low pH, or alkaline conditions), stainless construction is for you. Stainless steel resists corrosion and provides many additional years of service. Standard construction is galvanized.

WHERE TO FIND US

In-store Retail Market

The mechanical systems in supermarkets are designed to provide cooling for multiple walk-in boxes, refrigerated cases, and specialty fixtures that commonly operate with different refrigerants and at different temperatures. Johnson Controls effectively and efficiently rejects heat into the atmosphere from your facility refrigeration load.

The use of a copper condenser coil allows for flexible multiple circuiting with headers external to the unit casing. This is the easiest way to accommodate the individual needs of each separate condensing circuit.

Supermarkets are often located next to neighborhood businesses and residences. The selection of an indoor condenser will eliminate the sound generated from a conventional outdoor installation and make the facility more acceptable to the location. Sightlines are enhanced also by locating the unit indoors rather than on the roof top.

The YEC copper tube condenser incorporates a forced-draft centrifugal fan design. The moist discharge air is ducted to the outdoors. As a result, the fan operates in a relatively dry entering-air stream and avoids corrosion from moist air in the condenser. Our forced draft blower design means the condenser may be located indoors as well as outside, improving facility aesthetics while it reduces noise.

Because the energy required to keep both products and customers cool is, by far, the greatest portion of the overall energy consumption for a typical supermarket, it makes sense to choose a condenser to deliver the maximum in heat transfer efficiency and the YEC can help you control costs.

Beverage Distributing Facility

Facilities such as these primarily use halocarbon refrigerants for relatively higher-temperature applications and are well-suited to copper tube evaporative condenser design. These systems are frequently sized to handle the infrequent pull-down loads associated with bringing warm product into the facility. This makes the use of the centrifugal fan design with optional pony motor especially desirable once the bottles or cans are in storage and the loads are reduced.

HVAC

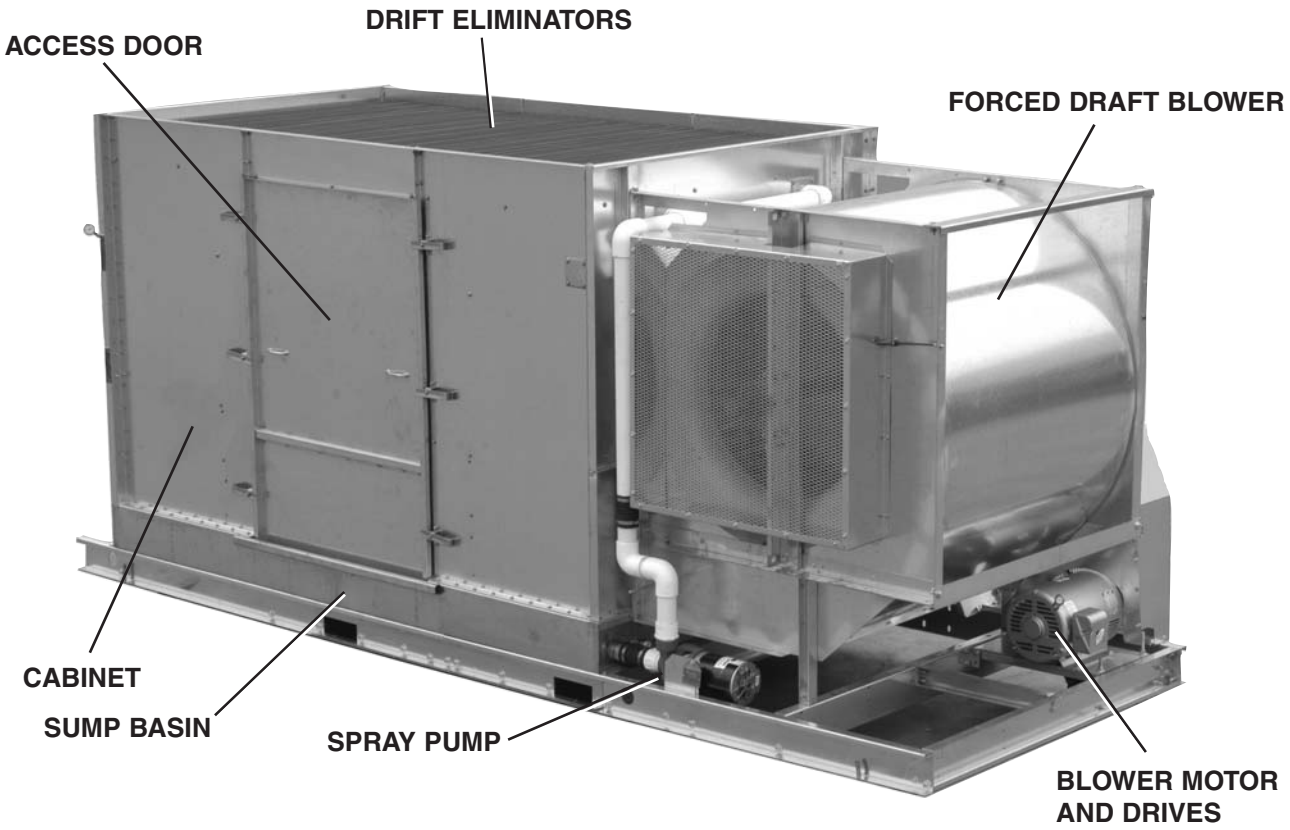
Johnson Controls copper evaporative condensers are available in sizes ranging from 10 to 625 tons nominal. This means there is a model for almost every air conditioning system, no matter how large or how small!

Although airconditioning applications are typically not as stringent as those involving product refrigeration, these systems are frequently required to operate over a wide range of ambient outdoor temperatures. By providing a thermostatically operated fan damper control package, Johnson Controls ensures that expansion devices will be furnished with a reliable supply of liquid refrigerant, day or night.

Office Building

The Johnson Controls YEC has a compact, forced-draft blower design that allows indoor installation. This makes it a desireable solution to satisfy architectural considerations. Our standard construction design and quality prehandles many of the issues that relieve the facility manager of troublesome maintenance and service issues. Optional features offered in our plus packages offer enhanced service that can add additional years of smooth operation. This equals peace of mind and one less worry for the property manager!

SPECIAL POINTS



BUILT IN BASICS

All of the standards you expect, and more.

Cabinet – Our standard construction is galvanized steel, flanged and gasketed to provide a watertight enclosure. All internal condensing coil support framing is constructed of stainless steel to avoid corrosion.

Access Doors – Gasketed, oversized stainless steel access doors are made for easy entry to clean the sump basin. Quick-acting latches mean superior serviceability and ensure a watertight fit.

Sump Basin – Say goodbye to leaks with welded stainless steel construction. Pan includes stainless steel drain connection with removable plastic overflow standpipe installed. Overflow standpipe is easy to remove by hand and makes draining the sump pan for cleaning a snap.

Condensing Coil Assembly – Copper tubes (5/8" OD) and return bends with silver brazed joints. Tubes are supported by rugged CPVC-insert tube sheets. All condensing coils are tested under water at 350 psig to ensure leak-free operation.

Spray System – Spray water system consists of a close-coupled centrifugal spray pump that draws water from the sump basin and distributes it over the entire condensing coil assembly. Spray headers and nozzles are durable ABS plastic and the nozzles incorporate large orifices to reduce the potential for clogging. Spray headers have easy-to-remove end caps located outside unit casing to facilitate service. Spray pump motors are available as either 208 or 230-460-volt, 60 cycle, 3 phase. Consult factory for alternate voltage or cycle characteristics.

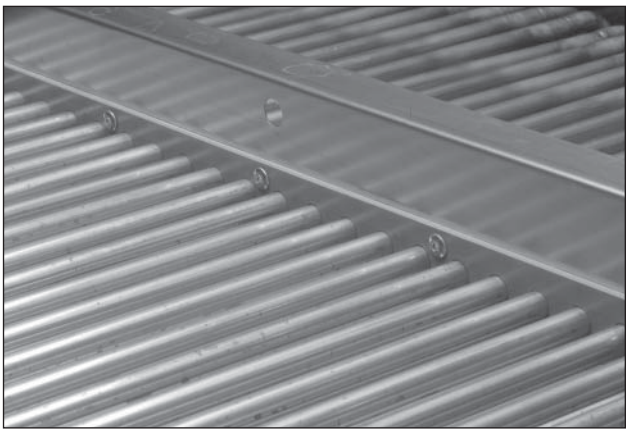


Figure 1 - Condensing Coil Assembly

Blower – Forward-curved centrifugal blower is constructed of galvanized steel. Wheels are balanced after unit assembly to enhance smooth operation. Blower wheels are keyed to a polished, precision-ground, solid steel shaft. Wheels are supported by rugged, prelubricated, self-aligning bearings, specially selected for long service life.

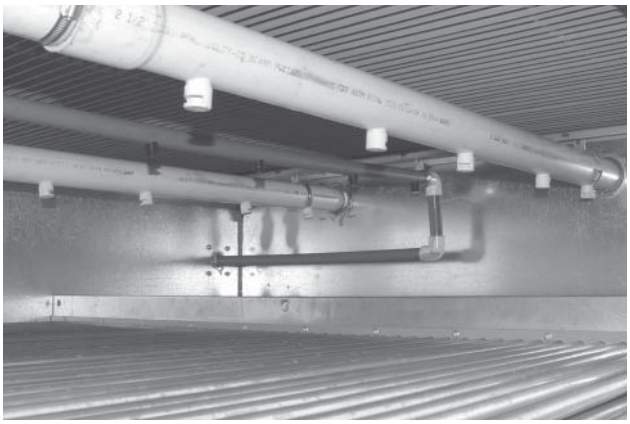


Figure 2 - Spray System

Blower Motors and Drives – 1800 RPM motors with 1.15 service factor are standard. Available as 208 or 230-460 volt, 60 cycle 3 phase. Consult factory for alternate voltage or cycle characteristics. All motors undergo complete factory run-testing prior to shipping.

Drive pulleys and V-belts are conservatively selected to provide continuous, trouble-free service. Motors mounted on heavy-duty adjustable base to allow for fan belt tension adjustment.

Drift Eliminators – Shipped in lightweight, easily removable sections constructed from corrosion-resistant polyvinyl-chloride (PVC). Efficient design ensures removal of entrained water droplets from the leaving air stream, limiting drift rate to 0.002% of recirculating water rate.

Bleed Control – Factory calibrated automatic bleed trough minimizes scaling without excessive water loss.

Water Makeup System – The water makeup system is comprised of a solid brass float valve and arm. Stainless steel baffles surround the float ball on three sides to isolate the float. This prevents the ball from being bounced by internal air stream turbulence and gives stable operation.

Extended lube lines – Run from bearing to outside of the fan guard. With this easy access position, the fan guard can be left in place during service. Just place grease gun against fitting and squirt.

INDIVIDUAL CONTROL OPTIONS

Long Life – Stainless Steel is recognized as corrosion resistant, lasting longer than most other construction materials.

- Use it for your unit casings to ensure extended service life.
- Select Stainless Steel for the Blower Scroll. Inlet venturis and bearing supports are fabricated from epoxy-coated galvanized steel. Blower guards may be constructed from stainless if desired.

Access Means Serviceability – A Johnson Controls exclusive, our optional extra access door is available for cabinet sizes 1 through 3 (single door is standard). Make it safe and easy for your service team and minimize costs as well.

On-line Service – Our optional external float assembly provides an external float chamber. It houses the solid brass float valve and arm outside of the turbulent basin water and fan discharge airstream. As a result, the float assembly can be serviced without shutting down the unit.

Dampers for Simple Temperature Management – Dampers are for less sophisticated applications. They are perfect for environments with relatively constant condensing temperature over a range of ambient operating temperatures. A thermostatically controlled damper motor modulates a damper in response to sump water temperature. An integral end switch, located within the damper motor, may be adjusted to cycle the blower motor **off** when the damper fully closes and **on** with subsequent temperature rise.

Lower Energy Usage – Reduce your capacity requirements with a secondary pony motor. Its reduced horsepower can operate the blower at a reduced speed during periods of lower ambient temperatures or standby conditions, leaving your primary motor on idle. Lower energy usage means lower costs. Pony motor is mounted with its own pulleys and V-belts on a common shaft with the primary blower motor.

The pony motor is generally sized to provide 50% of full airflow. The horsepower is consistent with established fan laws. Consult factory to obtain horsepower requirements for alternate airflow reductions.

Handle Higher Static Pressure – For applications that exceed the function of our standard units (up to 1/4" of external static pressure), the factory can resize blower drives to compensate for additional static pressure up to 1/2".

Motors for Special Needs – TEFC, Severe-Duty TEFC, Explosion-Proof, Multi-Speed, and Energy-Efficient (Super E) motors are available to meet your specifications.

No Fuss Motor Control – Make work simple with our optional electric motor control panel. Installed on your unit and factory prewired to the blower motor and spray pump, the panel includes a NEMA-3R duty enclosure, main disconnect switch, control circuit fusing, and transformer, as required. Service personnel have convenient access to fuses and starters for the blower, spray pump motors, and toggle-type control circuit switches are also installed on the face of the enclosure. Optional NEMA-12 and NEMA-4 enclosures are available.

Freeze Protection – Protect your sump water from freezing during low-ambient operation. Order a factory-installed, electric immersion heater (single or three-phase), control thermostat, and low-water-level cutout switch. This is protection you will be glad to have.

Prevent Heat Loss – Don't lose water heat during shutdown. The positive-closure damper option mounts on its own discharge hood. It is factory installed on the top of smaller-sized equipment, shipped loose for larger units. Johnson Controls recommends a single layer of closed-cell rubber foam, applied to the exterior of the unit casing with positive-closure damper option applications.

Reduce Debris – Keep unwanted debris and contaminants out of your system with a stainless steel screen-type pump inlet strainer.

SELECTION PROCEDURES

EVAPORATOR TON METHOD

The Evaporator Ton selection method uses the fact that the evaporative condenser model numbers represent a nominal tonnage of evaporator capacity. The method should NOT be used in conjunction with the Total Heat Rejection figures of Table 4. The Evaporator Ton selection method should only be used on systems utilizing open reciprocating compressors. The selection method is based on average horsepower requirements for open reciprocating compressors and cannot be considered as precise. Critical selections of this type should be checked by the Heat-Of-Rejection Method.

SELECTION PROCEDURE

1. Determine the evaporator capacity in tons of refrigeration (one ton = 12,000 BTUH).
2. Determine Design conditions (condensing temperature, suction temperature and wet bulb temperature).
3. Using Table 1, find the correction factor for condensing temperature and wet bulb temperature, and from Table 2 the correction factor for suction temperature.
4. Multiply evaporator capacity from Step 1. by correction factors from Step 3.
5. From Table 4 select the evaporative condenser whose model number equals or exceeds the corrected evaporator capacity calculated in Step 4.

SELECTION EXAMPLE
(Open reciprocating compressors only)

GIVEN:
R-22 Refrigerant
Evaporator Capacity 62 tons
Suction Temperature +30°F
Condensing Temperature 105°F
Wet Bulb Temperature 72°F

SOLUTION:

1. Determine the capacity factor for R-22 at 105°F condensing temperature and 72°F Wet Bulb Temperature from Table 1 = .86
2. Determine the suction temperature correction factor for 30°F from Table 2 = 1.03
3. Multiply 62 x .86 x 1.03 = 54.9 corrected tons.
4. From Table 4 select a unit equal to or larger, in this case YEC 3-57.

TABLE 1 – CONDENSER CAPACITY FACTORS / Refrigerant R-134A, R-22, R-404A & R-507

Cond. Temp. (°F)	Entering Air Wet Bulb Temperature (°F)											
	50	55	60	65	68	70	72	75	78	80	85	90
85	1.05	1.16	1.33	1.61	1.87	1.98	2.26	2.80	—	—	—	—
90	.90	.98	1.11	1.28	1.43	1.54	1.72	1.96	2.33	2.70	—	—
95	.78	.85	.93	1.04	1.12	1.18	1.28	1.39	1.59	1.75	2.50	—
100	.70	.75	.81	.88	.93	.97	1.03	1.11	1.22	1.32	1.70	2.53
105	.63	.66	.70	.76	.79	.83	.86	.93	1.00	1.05	1.27	1.67
110	.57	.60	.63	.67	.70	.72	.75	.80	.85	.89	1.02	1.26
115	—	.54	.57	.60	.63	.64	.66	.69	.73	.75	.84	.99
120	—	—	—	.53	.55	.56	.58	.60	.63	.65	.70	.81

TABLE 2 – SUCTION TEMPERATURE CORRECTION FACTOR

Suction Temp (°F)	-20	-10	0	+10	+20	+30	+40	+50
Capacity Factor	1.32	1.23	1.17	1.11	1.07	1.03	1.00	0.97

HEAT OF REJECTION METHOD

In a mechanical refrigeration system, the heat to be rejected by the evaporative condenser is equal to the heat input at the evaporator plus the energy input at the compressor. Therefore, in order to accurately determine the proper evaporative condenser required, it is necessary to establish the compressor energy input as well as the heat absorbed in the evaporator.

For open compressors:
Total heat of rejection = Compressor evaporator capacity BTUH +

(Compressor BHP x 2545)

For hermetic compressors:
Total heat of rejection = Compressor evaporator capacity BTUH +

(Compressor KW x 3415)

SELECTION PROCEDURE

1. Establish total Heat Rejection required by the system.
2. Determine the Design Conditions (condensing temperature, suction temperature and wet bulb temperature).
3. Determine the correction factor to be used from Table 3 based on condensing temperature and wet bulb temperature.
4. Multiply correction factor by the total system heat of rejection.
5. Select the condenser from Table 4 whose base heat rejection equals or exceeds the corrected heat rejection from Step 4.

SELECTION EXAMPLES
GIVEN:
R-22 Refrigerant, hermetic reciprocating compressor
Compressor evaporator capacity 62 tons
Compressor KW input = 45
Condensing Temperature = 105°F
Wet Bulb Temperature = 72°F

SOLUTION:

1. Determine the Heat Rejection
   Compressor evaporator capacity = 62 x 12,000 = 744,000
   Compressor KW Input = 45 x 3,415 = 153,675
   Total Heat Rejection = 897,675
2. Determine the Heat Rejection capacity factor for R-22 at 105°F condensing temperature and 72° wet bulb temperature from Table 3, which is .86.
3. Multiply 897,675 x .86 = 772,000 BTUH
4. From Table 4 select a unit with a base total heat rejection equal or greater than 772 MBH. In this case, select a YEC 3-57 with a Heat Rejection rating of 837.9 MBH.

TABLE 3 – HEAT REJECTION CORRECTION FACTORS/REFRIGERANTS R-134A, R-22, R-404A, R-507

Cond. Temp. (°F)	Entering Air Wet Bulb Temperature (°F)											
	50	55	60	65	68	70	72	75	78	80	85	90
85	1.10	1.22	1.39	1.67	1.94	2.13	2.45	2.94	—	—	—	—
90	.93	1.02	1.14	1.32	1.47	1.59	1.75	2.00	2.38	2.78	—	—
95	.80	.87	.95	1.08	1.16	1.22	1.32	1.45	1.61	1.79	2.56	—
100	.71	.76	.82	.89	.93	.98	1.03	1.12	1.23	1.33	1.72	2.50
105	.63	.66	.70	.76	.79	.83	.86	.93	1.00	1.05	1.27	1.61
110	.56	.59	.62	.66	.70	.71	.75	.79	.84	.88	1.01	1.19
115	—	.52	.55	.58	.60	.62	.64	.67	.70	.73	.81	.92
120	—	—	—	.51	.53	.54	.55	.57	.60	.62	.68	.75

YEC SERIES EVAPORATIVE CONDENSERS CAPACITY DATA

TABLE 4

YEC Model No.	Evaporator Nominal Tons*	Total Heat* Rejection	No. of Circuits	Total Heat* Rejection per Circuit
1-10	10	147,000	19	7,737
1-15	15	220,500	19	11,605
1-20	20	294,000	19	15,474
2-25	25	367,500	21	17,500
2-30	30	441,000	21	21,000
2-35	35	514,500	21	24,500
3-40	40	588,000	26	22,615
3-46	46	676,200	26	26,008
3-51	51	749,700	26	28,835
3-57	57	837,900	26	32,227
4-64	64	940,800	33	28,510
4-73	73	1,073,100	33	32,518
4-80	80	1,176,000	33	35,636
5-90	90	1,323,000	41	32,268
5-100	100	1,470,000	41	35,854
5-110	110	1,617,000	41	39,439
5-121	121	1,778,700	41	43,383

YEC Model No.	Evaporator Nominal Tons*	Total Heat* Rejection	No. of Circuits	Total Heat* Rejection per Circuit
6-135	135	1,984,500	50	39,690
6-150	150	2,205,000	50	44,100
6-165	165	2,425,500	50	48,510
6-180	180	2,646,000	50	52,920
6-200	200	2,940,000	50	58,800
7-240	240	3,528,000	70	50,400
7-272	272	3,998,000	70	57,114
7-285	285	4,190,000	70	59,857
8-320	320	4,704,000	70	67,200
8-350	350	5,145,000	70	73,500
9-375	375	5,512,500	76	72,533
9-400	400	5,880,000	76	77,368
10-425	425	6,247,500	76	82,204
10-450	450	6,615,000	76	87,039
11-475	475	6,982,500	76	91,875
11-525	525	7,717,500	76	101,546
12-560	560	8,232,000	76	108,316
12-625	625	9,187,500	76	120,888

***Standard Capacity for 78° W.B., 40° F Suction, 105° Condensing with Refrigerants R-134A, R-22, R-404A, R-507. Consult Factory for Ratings with Alternate Refrigerants**

MULTICIRCUITED CONDENSER COIL DESIGN CRITERIA

The Johnson Controls YEC, Evaporative Condenser can be furnished from the factory with individual refrigerant circuits for applications where a multiple of refrigeration systems are connected to a single unit. The procedure for selecting a multicircuited condenser is described in the "Selection Example" as outlined. For circuit identification purposes it is required that the circuits be arranged in numerical sequence. The connections will be numbered at the factory in this sequence, from left to right, with no. 1 circuit being on the extreme left.

SELECTION EXAMPLE
GIVEN:

Condensing Temperature 105°F
Wet Bulb Temperature 72°F

Five individual suction cooled hermetic compressors operating at suction temperatures and capacities as shown in the tabulation below. (Table 6)

PROCEDURE
1. Tabulate data in Columns 1, 2, and 3 making sure circuits are in correct numerical sequence.
2. From Table 5, select the Evaporator Temperature Capacity Factor applicable to each suction temperature listed in column 2, and enter in column 4.
3. From Table 3 select "Heat Rejection Capacity Factor" applicable to the design condensing temperature and the design wet bulb temperature, and enter in Column 5.
4. Multiply figures in Columns 3, 4 and 5 and enter in Column 6.
5. Add all the capacities in Column 6 to arrive at the Total Heat Rejection (BTUH) required and use the total to select the proper size condenser from Table 4.

SELECTION:
6. The Total Heat of Rejection for the five refrigeration systems adds up to 358,747. Table 4 shows that the smallest condenser that will meet the requirement is a model YEC 2-25 with a Total Heat Rejection of 367,500 BTUH.
7. Enter the capacity per circuit from Table 4 in Column 7. Divide Column 6 by Column 7 to get the number of tubes required and enter in column 8.
8. To assign the circuits properly, round the number in Column 8 to the nearest whole circuit and enter in Column 9. Each system must have a minimum of 1 whole circuit assigned to it.

NOTE: If the total number of circuits assigned are more or less than available on that unit, and no spares are desired, add or subtract circuits to effect a balance. However, if a reduction causes more than 10% reduction in any of the systems capacities, go to the next larger size unit and reassign tube circuits to give adequate capacity to every circuit.

TABLE 5 – EVAPORATOR TEMPERATURE CORRECTION FACTORS

Evap. Temp. °F.	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40
Open compressors	1.80	1.725	1.65	1.59	1.53	1.49	1.45	1.405	1.36	1.33	1.30	1.28	1.26	1.243	1.225
Hermetic Compressors	2.11	1.985	1.86	1.745	1.63	1.57	1.51	1.465	1.42	1.38	1.34	1.32	1.30	1.275	1.25

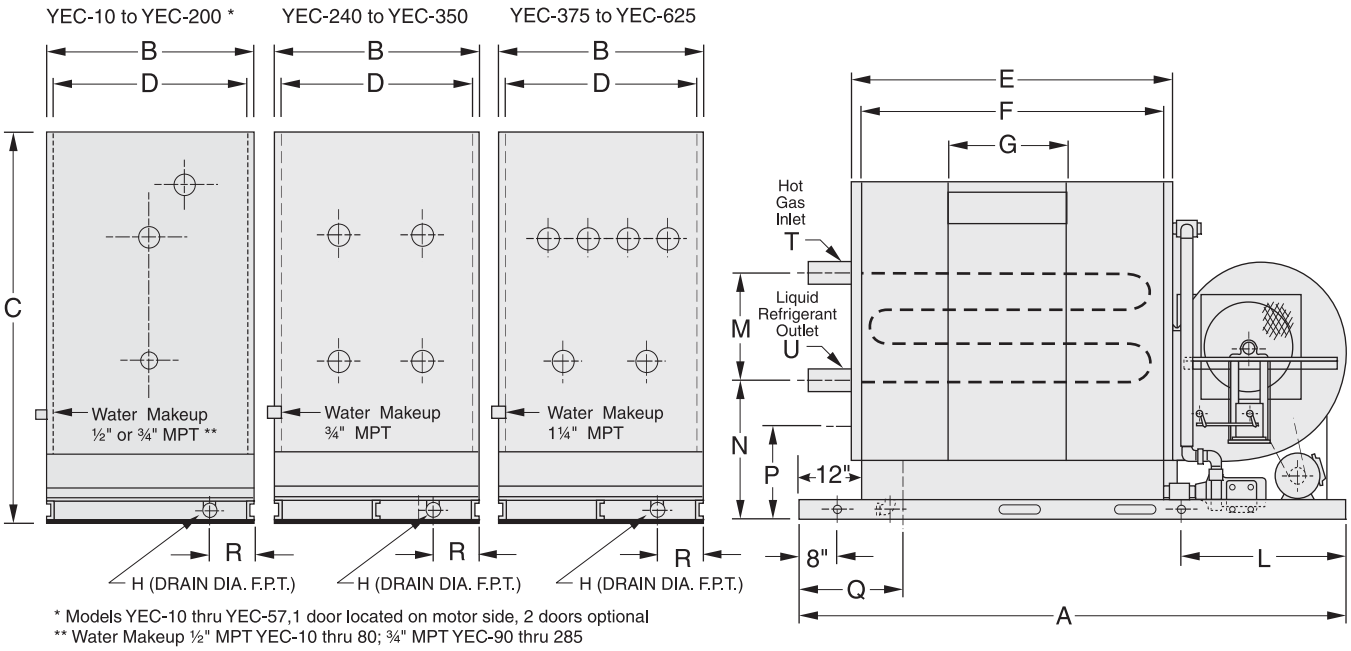
TABLE 6 – MULTICIRCUIT DESIGN CRITERIA

1	2	3		4		5		6		7		8	9
CIRC. NO.	EVAP. TEMP.	COMP. CAP. BTUH	X	TABLE 5	X	TABLE 3	=	THR @ 105° 78°, 40°	÷	CAPACITY PER CIRCUIT FROM TABLE 4	=	NUMBER CIRCUITS REQUIRED	NUMBER CIRCUITS ASSIGNED
1	-10	22,500	X	1.63	X	.86	=	31,540	÷	17,500	=	1.80	2
2	- 5	35,920	X	1.57	X	.86	=	48,500	÷	17,500	=	2.77	3
3	+30	64,000	X	1.30	X	.86	=	71,550	÷	17,500	=	4.08	4
4	+40	120,000	X	1.25	X	.86	=	129,000	÷	17,500	=	7.37	7
5	+10	64,000	X	1.42	X	.86	=	78,157	÷	17,500	=	4.47	5

Total 358,747 **TOTAL CIRCUITS ASSIGNED: 21**

PHYSICAL DATA

Model Number Nomenclature: YEC 6 – 2 0 0
Cabinet Size
Nominal Tons



* Models YEC-10 thru YEC-57,1 door located on motor side, 2 doors optional
** Water Makeup ½" MPT YEC-10 thru 80; ¾" MPT YEC-90 thru 285

TABLE 7

Model No.	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	T	U
YEC 1-10	80	28¾	63½	24½	47¾	44¾	23½	1½	24	9¾	34¼	18	17	23	1⅝	1⅜
1-15	80	28¾	63½	24½	47¾	44¾	23½	1½	24	11¼	32¼	18	17	23	1⅝	1⅜
1-20	80	28¾	63½	24½	47¾	44¾	23½	1½	24	20½	23½	18	17	23	1⅝	1⅜
2-25	90	31¼	65	27	53	50	23½	1½	22	14	31½	18	17	5	2⅛	1⅝
2-30	90	31¼	65	27	53	50	23½	1½	22	16¼	29¼	18	17	5	2⅛	1⅝
2-35	90	31¼	65	27	53	50	23½	1½	22	20½	25	18	17	5	2⅛	1⅝
3-40	110	37½	67½	33¼	65	62	23½	1½	28	14	33½	18	24	10	2⅝	2⅛
3-46	110	37½	67½	33¼	65	62	23½	1½	28	14	33½	18	24	10	2⅝	2⅛
3-51	110	37½	67½	33¼	65	62	23½	1½	28	16¼	31¼	18	24	10	2⅝	2⅛
3-57	110	37½	67½	33¼	65	62	23½	1½	28	20½	27	18	24	10	2⅝	2⅛
4-64	128	46¼	68	42	76¾	73¾	23½	2	32	16¼	33¼	19	24	12	2⅝	2⅛
4-73	128	46¼	68	42	76¾	73¾	23½	2	32	18¼	31¼	19	24	12	2⅝	2⅛
4-80	128	46¼	68	42	76¾	73¾	23½	2	32	20½	29	19	24	12	2⅝	2⅛
5-90	150	56¼	75¾	52	92	89	40	2½	45	11¾	42¾	19	24	12	3⅛	2⅝
5-100	150	56¼	75¾	52	92	89	40	2½	45	16¼	38¼	19	24	12	3⅛	2⅝
5-110	150	56¼	75¾	52	92	89	40	2½	45	20½	38¼	19	24	12	3⅛	2⅝
5-121	150	56¼	75¾	52	92	89	40	2½	45	20½	34	19	24	12	3⅛	2⅝
6-135	186	67½	81¾	63¼	115	112	40	2½	58	11¾	45¾	20	33	12	3⅛	2⅝
6-150	186	67½	81¾	63¼	115	112	40	2½	58	16¼	41¼	20	33	12	3⅛	2⅝
6-165	186	67½	81¾	63¼	115	112	40	2½	58	16¼	41¼	20	33	12	3⅛	2⅝
6-180	186	67½	81¾	63¼	115	112	40	2½	58	20½	37	20	33	12	3⅛	2⅝
6-200	186	67½	81¾	63¼	115	112	40	2½	58	20½	37	20	33	12	3⅛	2⅝
7-240	194	93	90	88¾	115	112	40	3	60	16¼	49¼	20	33	12	3⅛*	2⅝*
7-272	194	93	90	88¾	115	112	40	3	60	20½	45	20	33	12	3⅛*	2⅝*
7-285	194	93	90	88¾	115	112	40	3	60	20½	45	20	33	12	3⅛*	2⅝*
8-320	218	93	90	88¾	139	136	40	3	65	16¼	49½	22	25	12	3⅛*	2⅝*
8-350	218	93	90	88¾	139	136	40	3	65	20½	45	22	25	12	3⅛*	2⅝*
9-375	225	101	112	96¼	139	136	40	5	39	21	64	29	25	15	2⅝†	2⅝†
9-400	225	101	112	96¼	139	136	40	5	39	25¼	59¾	29	25	15	2⅝†	2⅝†
10-425	250	101	112	96¼	163	160	40	5	39	21	64	29	25	15	2⅝†	2⅝†
10-450	250	101	112	96¼	163	160	40	5	39	25¼	59¾	29	25	15	2⅝†	2⅝†
11-475	275	101	112	96¼	187	184	40	5	39	21	64	29	25	15	2⅝†	2⅝†
11-525	275	101	112	96¼	187	184	40	5	39	25¼	59¾	29	25	15	2⅝†	2⅝†
12-560	299	101	112	96¼	211	208	40	5	39	21	64	29	25	15	3⅛†	3⅛†
12-625	299	101	112	96¼	211	208	40	5	39	25¼	59¾	29	25	15	3⅛†	3⅛†

*** Models 7-240 thru 8-350 have two inlet and two outlet connections as standard.**
†Models 9-375 thru 12-625 have four inlet and two outlet connections as standard.

OPERATIONAL DATA

TABLE 8

YEC MODEL NO.	FAN MOTOR H.P. (2)	PUMP MOTOR H.P.	SPRAY WATER GPM	AIR FLOW CFM	REFRIGERANT CHARGE (LB)				SUMP HEATER KW (3)	MIN. WALL CLEARANCE (INCHES)	APPROXIMATE WEIGHT (LB)	
					R-134A	R-22	R-404A	R-507			SHIP	OPER.
YEC 1-10	½	⅓	40	2,380	32	32	27	27	1.0	8	725	1,040
1-15	1	⅓	40	2,950	37	37	31	31	1.0	8	750	1,070
1-20	1½	⅓	40	3,150	54	53	45	45	1.0	8	800	1,150
2-25	2	⅓	45	4,800	51	50	43	43	1.5	10	1.100	1,510
2-30	3	⅓	45	5,950	57	56	48	48	1.5	10	1,250	1,680
2-35	3	⅓	45	4,800	66	65	55	55	1.5	10	1,330	1,780
3-40	3	½	72	7,200	78	77	66	66	2.0	10	1,250	1,850
3-46	3	½	72	8,000	88	86	74	74	2.0	10	1,300	1,900
3-51	5	½	72	8,450	85	83	71	71	2.0	10	1,400	2,020
3-57	5	½	72	8,300	100	99	84	85	2.0	10	1,450	2,080
4-64	5	¾	85	9,600	132	130	111	111	2.6	12	1,800	2,690
4-73	5	¾	85	11,500	143	141	120	121	2.6	12	1,900	2,810
4-80	7½	¾	85	13,000	153	151	129	129	2.6	12	1,950	2,870
5-90	7½	1	112	17,900	159	157	134	134	4.0	16	3,200	4,460
5-100	7½	1	112	17,000	208	205	175	175	4.0	16	3,400	4,710
5-110	10	1	112	19,800	195	192	164	164	4.0	16	3,650	4,984
5-121	10	1	112	19,400	230	226	193	194	4.0	16	3,800	5,160
6-135	10	1½	182	26,500	243	239	205	205	5.7	20	4,900	6,850
6-150	10	1½	182	24,800	319	314	268	268	5.7	20	5,100	7,090
6-165	10	1½	182	25,700	308	303	259	260	5.7	20	5,250	7,280
6-180	10	1½	182	24,300	358	352	301	301	5.7	20	5,400	7,450
6-200	15	1½	182	29,500	345	339	290	291	5.7	20	5,500	7,570
7-240	20	3	300	37,200	430	423	361	362	8.0	28	7,680	10,640
7-272	20	3	300	36,600	508	500	427	428	8.0	28	8,060	10,910
7-285	25	3	300	39,000	490	482	412	413	8.0	28	8,200	11,050
8-320	30	5	355	48,000	523	515	440	441	10.0	30	9,390	13,000
8-350	30	5	355	47,000	607	598	511	512	10.0	30	10,000	13,500
9-375	30	5	365	56,450	573	564	482	483	12.0	40	10,500	15,200
9-400	30	5	365	59,000	666	655	560	561	12.0	40	11,000	15,720
10-425	40	5	400	66,200	679	668	571	572	14.0	40	11,400	17,000
10-450	40	5	400	68,900	788	776	663	664	14.0	40	12,000	17,600
11-475	50	5	450	75,000	785	772	660	661	16.0	40	12,350	18,750
11-525	50	5	450	78,000	911	896	766	767	16.0	40	13,050	19,450
12-560	60	7½	510	79,000	894	880	752	753	18.0	40	13,425	21,190
12-625	60	7½	510	81,900	1038	1022	873	875	18.0	40	14,240	21,980

1. Design Specifications are subject to change without notice.
2. For higher static pressure use next size motor.
3. Optional item

Protect Your New Equipment for Long Service Life Maintain Regularly

CRITICAL PROTECTION PACKAGES (CPP)

All Johnson Controls Evaporative Condensers are factory engineered to provide years of efficient operation and service. Our standard design incorporates serviceability, innovations such as man-sized access doors with quick-acting latches, and extended lubrication lines for fan bearings.

The following options packages are suggested as ways to optimize the lifetime and performance efficiency of your heat transfer products.

DURA-PLUS CPP

Highly recommended for applications where more stringent durability requirements apply.

- Cabinet casing material is upgraded to stainless steel to match the standard sump basin and access doors. Virtually every water contact surface is fabricated of corrosion-resistant stainless steel.
- The top four rows of copper condensing coil are upgraded to a heavy-wall 0.049" thickness tubing specification. Designed for refrigeration-duty applications involving higher compression ratios and corresponding superheat temperatures.
- A screen-type pump inlet strainer fabricated of stainless steel protects the spray pump from incoming debris.

CONTROL-PLUS CPP

When unit control is a priority, designed for applications.

- Factory prewiring
  - Customer only has to make a single power wiring connection to the unit. Weather-resistant, UL-approved motor control panel is prewired.
  - All motors are factory-wired to the control panel.
- Fan damper control package maintains a relatively constant process fluid temperature over a range of ambient operating temperatures.
- Convenience outlet furnished in a weather-tight housing, affixed to the outside of the control panel. Supplies power for customer's water treatment components or light-duty accessories such as service lights.

SERVICE-PLUS CPP

Put the focus on convenience. Makes service easier and more efficient.

- Additional access door supplied for the smaller sized units (cabinets #1 through #3).
- Dual sump drain configuration allows for quick draining of the unit. Fan and pump operation are not interrupted.
- External float chamber allows adjustment and service of the water makeup float valve while the fan and pump are running.

WEATHER-PLUS CPP

This option is the best protection for installations in extreme, cold-weather climates.

- Electric immersion-style sump heater, single-phase or three-phase, offers freeze protection for sump water.
- Closed-cell foam insulation, affixed to the outside of the cabinet and sump basin, holds the heat provided by the electric heater element within the unit.
- Positive-closure motorized damper is mounted atop a tapered discharge hood. Damper closes automatically when the unit is not operating. Maintains the correct minimum temperature within the unit for maximum protection against freezing process fluid and consequential equipment damage.

Ask your representative about the Critical Protection Package options.
These groupings are exceptional values when added to the initial specification.

Form 360.10-SED1 (904)
Supersedes: E200-205 SED (904)
Subject to change without notice
Published in USA • GUI 500 708 1.20

Johnson Controls

JOHNSON CONTROLS
1590 Dutch Road
Dixon, IL 61021
Phone: 815-288-3859 • FAX: 815-288-1665
www.johnsoncontrols.com