



BY JOHNSON CONTROLS

# SPECIAL INDUSTRIAL MODIFICATIONS FOR YK MOD H CENTRIFUGAL CHILLERS

APPLICATION DATA

New Release

Form 160.76-AD3 (615)

## COMPANY CONFIDENTIAL

The purpose of this document is to provide a description of the industrial modifications that are available on YK Centrifugal Chillers. This document does NOT provide pricing as current pricing can be obtained in YORKWorks or via an SQ (Special Quote) as indicated in this document.

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Special Industrial Modifications apply ONLY when ordered with, or as part of, the YK chiller.

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## A WORD ABOUT SPECIALS

This bulletin contains some of the more common “specials” requested by Industrial users of YK chillers. The key word here is Industrial. These are rarely required for air-conditioning applications. Even for Industrial customers, they often think they want the modifications (out of habit). But when they analyze their application, look at the price add and the lead time, these items are sometimes deleted.

As a Sales Engineer, you should be aware of Johnson Controls’ capabilities and when each is required for proper application. Even more important might be to know when they are NOT required. Competitors know what Johnson Controls can do, and will write specs to add cost and lead time to Johnson Controls’ offer. You should not volunteer any “special” until you know the application and the competition.

Most of these “specials” require interpretation as they are usually sold in combination with other “specials”. The notes are important for proper application. **Don’t assume anything. If there is a question...ask!**

Each special that requires Contract Engineering is shown with an asterisk (\*). The order form will show the unit is special by adding the letter “S” to the model number after the Design (Mod) Level; for example, YKERERQ7-CPGS. Some of these specials are selectable in YORKworks while others will require an SQ (Special Quote). Specials that require Contract Engineering often have additional lead times associated with them. **Each job should be individually evaluated by Customer Service to determine current lead time.**

There are other special options available in YORKworks that are not denoted with an asterisk (\*). These options will not have an “S” at the end of the nomenclature. While these options may not require Contract Engineering, they may have lead time adders associated with them. Each job should be individually evaluated by Customer Service to determine current lead time.

**SPECIAL CONTROL PANELS & WIRING\***

YORKworks provides an option for NEMA 1 (Standard), NEMA 4, NEMA 4X, or NEMA 12 Panel & Wiring. There is a choice for 40°F – 110°F (4.44°C – 43.3°C) ambient or 0°F – 110°F (-17.78°C – 43.3°C) ambient.

**DEFINITIONS:**

- A. **NEMA TYPE 1 – GENERAL PURPOSE – INDOOR (YORK Standard Construction):** Enclosures are intended for use indoors, primarily to prevent accidental contact of personnel with the enclosed equipment, in areas where unusual service conditions do not exist.
- B. **NEMA TYPE 4 – WATERTIGHT AND DUST-TIGHT – INDOOR AND OUTDOOR:** Enclosures are intended for use indoors and outdoors to protect the enclosed equipment against splashing water, seepage of water, falling or hose-directed water, and severe external condensation.
- C. **NEMA TYPE 4X – WATERTIGHT, DUST-TIGHT, AND CORROSION RESISTANT – INDOOR AND OUTDOOR:** Enclosures have the same provisions as Type 4 enclosures and, in addition, are corrosion-resistant.
- D. **NEMA TYPE 12 – INDUSTRIAL USE – DUST-TIGHT AND DRIP-TIGHT – INDOOR:** Enclosures are intended for use indoors to protect the enclosed equipment against fibers, flyings, lint, dust, and dirt, light splashing, seepage, dripping and external condensation of non-corrosive liquids.

**NOTES:**

1. Chiller certification to UL 1995 by a third party is not applicable when NEMA 4, 4X, or 12 Panel & Wiring Option is chosen.
2. Price does not include special paint, motor or motor modifications for outdoor applications. (See “2. Outdoor Applications” on page 10 for additional recommendations for Outdoor Applications).
3. **NEMA 4** includes the OptiView panel and VSOP Panel in special NEMA 4 enclosures; system wiring in liquid-tight flexible metal conduit (Type LFMC); oil heater, oil pump terminals, pressure transducers and temperature sensors in NEMA 4 boxes.
  - a. PRV and VGD actuators will be provided with a NEMA 4 rated gasket cover kit.
  - b. HGBP and orifice valve actuators will be furnished with NEMA 4 enclosures
  - c. The pressure transducers will be installed in individual NEMA 4 boxes that are installed directly on the angle stop valves using special adapters.
  - d. The flow switch cables will be suitable for outdoor unprotected installation. The exposed length of each cable will be limited to 18” maximum in order to connect to the NEMA 4 box on the adjacent water temperature sensor. A special adapter can be installed to enable the flow switch and cable to be completely enclosed protected and is available via Special Quote (SQ).
4. **NEMA 12** includes the OptiView panel and VSOP Panel in special NEMA 4 enclosures; system wiring in flexible plastic liquid-tight conduit; oil heater, oil pump terminals in NEMA 4 boxes; pressure transducers with DIN connections, standard temperature sensors with DIN connections, NEMA 4 boxes on water temperature sensors.
  - a. PRV and VGD actuators will be provided with a NEMA 4 rated gasket cover kit.
  - b. HGBP and orifice valve actuators will be furnished with NEMA 4 enclosures.
  - c. The flow switch cables will not be totally enclosed in conduit. The exposed length of each cable will be limited to 18” maximum in order to connect to the NEMA 4 box on the adjacent water temperature sensor. A special adapter can be installed to enable the flow switch and cable to be completely enclosed protected and is available via Special Quote (SQ).

5. **NEMA 4X** is the same as NEMA 4 except that the OptiView panel and all electrical boxes will be 304 Stainless Steel.
  - a. NEMA 4X PRV and VGD actuators are not available. The standard actuator will be provided with a NEMA 4 rated gasket cover kit. The cover is aluminum which is considered to be non-corrosive but can be painted with painted with epoxy paint if additional protection is required.
  - b. Standard NEMA 4X enclosures are not certified to UL. Special UL certified Hoffman enclosures are available via Special Quote (SQ).
  - c. NEMA 4X enclosures are available in 316L Stainless Steel via Special Quote (SQ).
  - d. NEMA 4X keypad is accessible behind a hinged window.
  - e. HGBP and orifice valve actuators will be furnished with NEMA 4X enclosures.
  - f. The pressure transducers will be installed in individual NEMA 4X boxes that are installed directly on the angle stop valves using special adapters.
  - g. The flow switch cables will be suitable for outdoor unprotected installation. The exposed length of each cable will be limited to 18" maximum in order to connect to the NEMA 4 box on the adjacent water temperature sensor. A special adapter can be installed to enable the flow switch and cable to be completely enclosed protected and is available via Special Quote (SQ).
6. For applications below 40°F (4.44°C) ambient, the OptiView panel includes a factory wired space heater and thermostat. An additional oil heater is also included.
  - a. For chillers with Q compressors, a 3kVA control transformer is required for the chiller 120 VAC control power supply. This must be included in the Electro-Mechanical starter quote.
  - b. For chillers with P, H, or K compressors, the 3-phase VSOP panel power supply must be sized to include 3 kVA for the second oil heater. This must be included in the Electro-Mechanical starter quote.
7. Rigid metal conduit (Type RMC) with up to 24" of liquid-tight flexible metal conduit (used only for final connections to devices that require flexibility for service or replacement) are available as a Special Quote (SQ) for those jobs that require it.
8. Low voltage Solid State Starters (SSS) are only available as NEMA 1.
9. Medium voltage Unit Mounted SSSs are only available as NEMA 1.
10. Medium voltage Floor Mounted SSSs are available standard as NEMA 1, and as NEMA 12 with a Special Quote (SQ).
11. Low voltage Variable Speed Drives (VSDs) are available standard as NEMA 1, and as NEMA 4 with a Special Quote (SQ). A NEMA 4 VSD includes a NEMA 4 (not certified) enclosure only. The circulating pump is rated for indoor use only but is considered to be adequately sealed for the application.
12. Medium voltage VSDs are only available as NEMA 1.

#### **SPECIAL CONTROL PANELS ONLY\***

YORKworks provides an option for NEMA 4 or NEMA 12 Panel only.

Provides added protection to OptiView control panel for those applications where standard NEMA 1 panel may not be adequate. Standard OptiView panel is mounted in a special enclosure. All other unit-mounted electrical wiring and controls remain NEMA 1.

1. Chiller certification to UL 1995 by a third party is applicable.
2. NEMA 4X Control Panel requires NEMA 4X wiring.

**SPECIAL MOTORS AND MODIFICATIONS – DESCRIPTIONS**

1. **Open Drip Proof Motors (ODP)** – The standard YORK open motors are Open Drip Proof. They can be used anywhere in a building where air is reasonably clean and non-corrosive and the motor is not subject to moisture condensing inside the motor. There are job applications, primarily in manufacturing plants and process applications, where more protection to the motor is required. Listed below are several alternatives.
2. **Weather-Protected Type I Motors (WP-I)\*** – A Weather-Protected Type I motor is an open machine with its ventilating passages constructed as to prevent the passage of a cylindrical rod  $\frac{3}{4}$ " in diameter. This affords protection against intrusion of rodents and some types of debris. They are regularly used in the pulp industry and where grime is present.

A Weather-Protected Type I motor has the following added features:

- a. An additional coating of epoxy on internal parts.
- b. Galvanized metal-wire rodent screens on air inlets and outlets.

Additional WP-I Motor notes:

- a. Contact factory as to whether chiller certification to UL 1995 by a third party is included.
  - b. D-Flange
  - c. WP-I enclosure has no effect on motor dimensions, weights or chiller sound levels.
  - d. Same kW, FLA, LRA, and sound as standard ODP motor.
  - e. Performance is AHRI certified.
  - f. WP-I motors are not approved for outdoor use.
3. **Weather-Protected Type II Motors (WP-II)\*** – Space heaters are required with WP-II, but are not included in the WP-II modifications. Space heaters must be ordered separately. A Weather-Protected Type II motor has, in addition to the enclosure defined for Weather-Protected Type I motor, ventilating passages at both intake and discharge so arranged that high-velocity air and air-borne particles, blown into the machine, can be discharged without entering the internal ventilating passages leading directly to the electric parts of the machine itself. The normal path of the ventilating air which enters the electric parts of the machine is so arranged by baffling or separate housing as to provide at least three abrupt changes in direction, none of which are less than 90 degrees. In addition, an area of low velocity not exceeding 600 fpm is provided in the intake air path to minimize the possibility of moisture or dirt being carried into the electric parts of the machine.

In addition, to WP-I features, WP-II includes:

- a. A special air-baffled sound hood on top of the motor.
- b. Stainless steel screens on air inlets and outlets.
- c. Filter racks with provisions for manometers (Galvanized air filters optional).

**There are certain situations (usually at smaller horsepower) where a TEFC motor may be a less expensive option than a WP-II motor.**

Additional WP-II Motor notes:

- a. Smaller low voltage WP-II motors are available on special request.
- b. The special enclosure will increase motor height by 7-12" thru the CB motor and 16" on DA thru DJ motors.

- c. Motor weight will also increase.
- d. The sound level will generally be 2-3 dBA higher than the standard ODP motor.
- e. Chiller certification to UL 1995 by a third party is not included.

4. **Totally Enclosed Fan-Cooled Motors (TEFC)\*** – TEFC motors are used where the location is extremely dirty, dusty, or wet, both indoors and outdoors.

A totally enclosed fan-cooled machine is so enclosed as to prevent free exchange of air between the inside and outside of the case but not sufficiently enclosed as to be termed air-tight. It is air-cooled by means of a fully guarded fan, mounted on the motor shaft external to the enclosing parts, which blows cooling air over the outside of the motor. TEFC motors may be louder than standard motors due to its larger fan. **TEFC motors require an SQ to determine pricing and lead time. There are certain situations (usually at smaller horsepowers) where a TEFC motor may be a less expensive option than a WP-II motor. Larger horsepower (above 900 hp) TEFC motors are not readily available and are typically very expensive. When TEFC motors are not available, TEAAC or TEWAC motors may be suitable options (see details below).**

**NOTE:** Chiller certification to UL 1995 by a third party is not included.

5. **Totally Enclosed Air-to-Air Cooled (TEAAC)\*** – TEAAC motors are used when the environment is dirty or corrosive.

A TEAAC motor is a totally enclosed machine which is cooled by circulating the internal air through a heat exchanger which, in turn, is cooled by circulating external air. It is provided with an air-to-air heat exchanger for cooling the internal air and a fan or fans, integral with the rotor shaft or separate, for circulating the internal air and a separate fan for circulating external air. **TEAAC motors require an SQ to determine pricing and lead time. This is an expensive option with a very tall hood, which will impact total chiller height, and should only be quoted if absolutely required. For motors less than 800 horsepower, you may want to consider a TEFC motor which may be less expensive.**

**NOTE:** Chiller certification to UL 1995 by a third party is not included.

6. **Totally Enclosed Water-to-Air Cooled (TEWAC)\*** – TEWAC motors are used when the environment is dirty or corrosive, in hazardous areas, or where minimum noise levels are required.

A TEWAC motor is a totally enclosed machine which is cooled by circulating internal air which, in turn, is cooled by circulating water. It is provided with an internal water-cooled heat exchanger for cooling the internal air and fans, integral with the rotor shaft for circulating the internal air. **TEWAC motors require an SQ to determine pricing and lead time. Cooling water temperature and working pressure must be specified (typically entering condenser water is used). This is an expensive option and should only be quoted if absolutely required. For motors less than 800 horsepower, you may want to consider a TEFC motor which may be less expensive.**

**NOTE:** Chiller certification to UL 1995 by a third party is not included.

## 7. Temperature Protection

Motors can be furnished by the manufacturer with Winding (stator) RTDs and/or Bearing RTDs.

**Winding (stator) RTDs:** Six (6) RTDs (Resistance Temperature Detectors), two per phase, embedded in the stator winding. RTDs are designed to sense high motor heat. RTDs are much higher in accuracy than thermistors, and normally are 100 ohm platinum devices.

As standard, leads are brought out to a separate auxiliary conduit box mounted on the motor ready for field connection to a remote monitor, usually supplied in remote E-M starter or BAS System. However, when the Motor Monitoring Board option is selected, the RTDs are wired into the MMB. The factory will then wire from the MMB to the OptiView panel. Readings, alarms, and trips will be viewable on the OptiView panel. A separate remote monitor is not required with the Motor Monitoring Board.

**Bearing RTDs:** Two (2) RTDs (Resistance Temperature Detectors), one located at each motor bearing. RTDs are designed to sense high bearing heat. Bearing RTDs will protect the motor against the possibility of severe motor damage that could occur should a bearing fail and not be immediately recognized, such as in locations where equipment operates unattended.

As standard, leads are brought out to a separate auxiliary conduit box mounted on the motor ready for field connection to a remote monitor, usually supplied in remote E-M starter or BAS System. However, when the Motor Monitoring Board option is selected, the RTDs are wired into the MMB. The factory will then wire from the MMB to the OptiView panel. Readings, alarms, and trips will be viewable on the OptiView panel. A separate remote monitor is not required with the Motor Monitoring Board.

## 8. Vibration Protection

When Vibration Protection is ordered, two industrial Accelerometers are mounted on the motor, one at each bearing. A cable is run back to the Motor Monitoring Board. The Motor Monitoring Board processes the accelerometer signals and develops a non-dimensional “g” equivalent value which may be used to evaluate the health of roller element ball bearings. This vibration system is not intended for sleeve bearing motors, which may apply on some large Contract Special projects. VSD vibration levels are affected by speed and any relative comparisons should be conducted at the same speed. The effectiveness of the Vibration Protection is reduced at lower speeds.

The vibration levels will display on the OptView. After initial startup, a base line must be set with the motor near operating temperature and the chiller running under load and near full speed. Once the baseline is set, alarm and trip levels are determined in the OptView. Should an alarm or trip occur further into the motor life, this would indicate a need for Service to use additional diagnostic services to evaluate the motor condition.

The Motor Monitoring Board is required when Accelerometers are ordered.

## 9. Motor Space Heaters

Motors can be furnished by the manufacturer with a space heater located inside the motor. The heater is energized when the chiller motor is not running, to heat the motor windings, and thereby prevent moisture from condensing and causing electrical damage when the motor is started. Space heaters are required for outdoor applications and for indoor applications where humidity is high, especially in coastal environments.

Leads are brought from a conduit box mounted outside the motor to the chiller OptView panel. Generally, the heaters are no more than 300 watts and may be powered by the OptView control power (115v). Where the customer may plan long seasonal outages with the OptView panel de-energized, the motor space heaters should be configured for relay control by the OptView, but powered by a separate source provided by others (specify 115 or 230 volts, single phase).

## 10. Additional Motor Modification Information

Changing from a standard YORK ODP motor to a WP-I, WP-II, TEFC, TEAAC, or TEWAC motor can be very expensive. The addition of special motor modifications and the added cost to monitor their signals (i.e., winding temperature or bearing temperature) must also be considered.

Special motors and modifications should not be offered unless the application requires it and then only when all other lower cost alternatives have been considered and rejected.

The use of TEFC and WP-II motors should be of particular concern. It is usually less costly to protect the chiller from the elements than to provide these special motors. TEFC, TEAAC, and TEWAC motors require an SQ to determine pricing and lead time.

**NOTE:** When in doubt, contact factory as to whether chiller certification to UL 1995 by a third party is included.

**AUTOMATIC HOT GAS BYPASS TO ZERO LOAD\***

Factory-mounted and wired automatic modulating Hot Gas Bypass (HGBP) valve sized for operation to zero load. The refrigerant cooled oil cooler will be replaced by a water cooled oil cooler. A separate water source by others will be required (See Form 160.75-PA1 for additional details).

**NOTES:**

1. Sales order must state the minimum ECWT at zero load to allow proper sizing of valve.
2. HGBP and orifice valve actuators will be furnished with appropriate gasketed enclosure.
3. Chiller certification to UL 1995 by a third party is not applicable.

Pricing for Hot Gas Bypass to 0% is available in YORKworks.

**SPECIAL PAINT - AMERLOCK 400 AND AMERSHIELD\***

**Indoor – Commercial blast cleaning of surfaces, Steel Structures Painting Council, SSPC-SP6, and one coat of Amerlock 400, high-solids epoxy coating.**

**TABLE 1 - AMERLOCK 400 RESISTANCE TABLE**

| ENVIRONMENT | IMMERSION | SPLASH & SPILLAGE | FUMES & WEATHER |
|-------------|-----------|-------------------|-----------------|
| Acidic      | NR        | F                 | G               |
| Alkaline    | NR        | E                 | E               |
| Solvents    | NR        | G                 | E               |
| Salt Water  | E         | E                 | E               |
| Water       | E         | E                 | E               |

**Indoor or Outdoor** - Same as above but with top coat of polyurethane “Amershield”.

**TABLE 2 - AMERSHIELD RESISTANCE TABLE**

| ENVIRONMENT        | SPLASH & SPILLAGE | FUMES & WEATHER |
|--------------------|-------------------|-----------------|
| Acidic             | E                 | E               |
| Alkaline           | E                 | E               |
| Salt Solutions:    |                   |                 |
| Acidic             | E                 | E               |
| Neutral            | E                 | E               |
| Alkaline           | E                 | E               |
| Seawater           | E                 | E               |
| Fresh Water        | E                 | E               |
| Solvents           | G                 | E               |
| Petroleum Products | E                 | E               |

F = Fair                      G = Good                      E = Excellent                      NR = Not Recommended

**This table is only a guide to show typical resistances of Amershield.**

**NOTE:** When thermal insulation (option) is factory installed, a special, rubber-based, grey vinyl paint will be used on insulation only.

Amerlock 400 and Amershield options are available in YORKworks.

## SPECIAL CONDENSER WATERSIDE CORROSION PROTECTION\*

Special construction and materials can be provided on the waterside of condensers to protect against corrosion. Generally, special tube material would also be supplied with the following options.

Epoxy coating of the tube sheets and/or waterboxes provides abrasion and corrosion protection to the steel. The steel surface is blast cleaned and coated with two coats of epoxy having a minimum total dry film thickness of at least 16 mils. The epoxy coating is a temporary protective coating and is not designed to last the life of the chiller. ***Re-coating of the epoxy may be required many times depending on the abrasive content of the water. The epoxy coating is only warranted for the standard 18 months from the factory ship date and cannot be included in the optional extended warranties.***

Epoxy coating should be used in conjunction with sacrificial anodes. Sacrificial anodes are available in YORKworks. When waterbox coatings are selected, 304 stainless steel vent and drain connections will be provided. Other vent and drain materials may be available via an SQ depending on the customer's determination. Water nozzles must use ANSI/AWWA C-606 couplings or factory mounted flanges. Welded connections are not allowed.

Ceramic coating of the tube sheets and/or waterboxes is another option that is more durable than the epoxy coating option. An SQ is required for ceramic coating.

Tubesheets can also be supplied with exotic material Detaclad applied to the carbon steel tubesheets, in lieu of epoxy or ceramic coated tubesheets. Similar materials are recommended when requesting Detaclad tubesheets and exotic tube materials. The cladding and tube material should be the same in order to prevent galvanic action between dissimilar metals. **An SQ is required for all Detaclad tubesheets.**

If epoxy coated waterboxes are required, the tubesheet must also be protected by either an epoxy or ceramic coating or Detaclad. Add 1" to the standard unit length to account for the Detaclad material.

The above comments are only recommendations. Material compatibility and water quality should be specified by the owner or a water quality expert.

Please refer to Form 160.00-AD5; Chiller Materials Application Guide, located on the portal for additional information.

## OUTDOOR APPLICATIONS/HIGH AMBIENT TEMPERATURES\*

As per the YK Engineering Guide, Form 160.76-EG1, chillers are designed for indoor locations where temperatures range from 40°F to 104°F (4.4°C to 40°C).

When chillers are going to be in environments with a high ambient temperature (greater than 104°F/40°C) or in outdoor environments, additional modifications to the chiller are required.

### 1. High Ambient Temperatures

The temperature limitations of various chiller components are as follows:

- Special drive motors are required above 104°F (40°C).
- H9 and K compressor evaporator design pressures must be increased for ambient temperatures above 112.8°F (45°C).
- The OptiView panel and low voltage VSD are suited for 122°F (50°C) ambient. Above 40°C and up to 50°C the panel should not be in direct sunlight.
- Low and medium voltage Solid State Starters must be de-rated and/or modified above 110°F (43.3°C).
- The free-standing medium voltage variable speed drive option must be de-rated above 104°F (40°C).

## 2. Outdoor Applications

Industrial plants in the south and southwest U.S. occasionally install equipment outdoors. YK chillers can usually be modified for this duty, although the modifications may be expensive.

To keep the cost reasonable, Johnson Controls recommends the chiller be installed under an open shed. A pre-fabricated metal structure designed to keep the chiller dry during a driving rain is recommended. This provides a sun screen for the control panel and some protection for the equipment and the operator.

Where an open shed is not supplied, a sun screen (by others) must be supplied to keep the OptiView panel under 122°F (50°C).

The optional thermal insulation is not designed for outdoor environments. While an open shed would provide some protection to the standard insulation, insulating materials suitable for outdoor use should be selected and installed by a qualified contractor.

The minimum chiller modifications required for outdoor applications are as follows:

1. Special NEMA 4 or 4X control panel and wiring (“SPECIAL CONTROL PANELS & WIRING\*” on page 3). (NEMA 1 enclosures are intended for indoor use only.).
2. Special motors and accessories (“SPECIAL MOTORS AND MODIFICATIONS – DESCRIPTIONS” on page 5).
  - a. WP-I and WP-II motors are not suitable for outdoor use. TEFC, TEAAC, and TEWAC motors can be used in outdoor applications.
  - b. Space heaters are required for outdoor applications or when in an area of high humidity and/or the motor is not going to run continuously.
3. Special paint (“SPECIAL PAINT - Amerlock 400 and Amershield\*” on page 8)
4. Special electro-mechanical starter and larger control transformer
  - a. See separate price sheets
  - b. Low voltage SSSs are only available as NEMA 1.
  - c. Medium voltage Unit Mounted SSSs are only available as NEMA 1.
  - d. Medium voltage Floor Mounted SSSs are available standard as NEMA 1, and as NEMA 12 with an SQ.
  - e. Low voltage VSDs are available standard as NEMA1, and as NEMA 4 with an SQ.
  - f. Medium voltage VSDs are only available as NEMA 1.
  - g. NEMA 1 enclosures are intended for indoor use only.

### BRINE PROGRAM SETTING AND LOW PRESSURE CUTOUT\*

The OptiView panel is programmed in the factory to allow extending the leaving brine temperature set point below 36°F. The low evaporator pressure cutout is factory programmed to the appropriate value depending on the percentage and type of brine solution.

Brine Program Setting & Low Pressure Cutout pricing is available in YORKworks.

**DUAL OIL FILTERS**

Dual oil filters with a multi-port changeover valve and manual shutoff outlet valves to allow changing of the filter while the chiller is operating (1/2 micron). Chiller certification to UL 1995 by a third party is not applicable.

Dual Oil Filter pricing is available in YORKworks.

**STAINLESS STEEL UNIT NAMEPLATE\***

Special stainless steel nameplates will contain information similar to that on the standard unit nameplate. The stainless steel nameplate does not include a motor connection diagram.

If a customer requires special information, such as TAG No. or CLIENT NAME, such requests will be handled via a Special Quote (SQ).

Stainless Steel Unit Nameplate pricing is available in YORKworks.

**GENERAL ARRANGEMENT (GA) DRAWINGS\***

General arrangement drawings show SQ items on a chiller drawing (ex: special motor). These are typically desired for installation preparation purposes and are usually ordered after securing an order, but before shipping the order.

Drawings will typically be mailed within 8 weeks of entering a clean and complete order. Drawing lead time depends on the availability of information for any vendor provided components, the complexity of the drafting work and current factory loading. Any revisions processed after release may affect the drawing lead time. Please contact Customer Service for a job specific lead time quote.

Pricing for General Arrangement Drawings is available in YORKworks.

**PROCESS & INSTRUMENTATION DIAGRAMS (P&IDS)\***

These diagrams show schematically the oil and refrigerant flow and instrumentation for a specific chiller. These diagrams are typically mailed out within 8 weeks after entering a clean and complete sales order but this may vary depending on Contract Engineering backlog. These drawings do not include a list of equipment. Pricing for Process & Instrumentation Diagrams is available in YORKworks.

**ASME MANUFACTURER'S DATA REPORT U-1**

The ASME Boiler and Pressure Vessel Code – Section VIII Division I requires an ASME stamped nameplate on YK heat exchangers. This nameplate is provided as standard. Each vessel is registered with the National Board of Boiler and Pressure Vessel Inspectors. A copy of the paperwork (ASME Manufacturer's Data Report U-1) will be provided to the customer after chiller shipment when so noted on the order form.

Pricing for ASME Manufacturer's Data Report U-1 is available in YORKworks.

**QC DOCUMENTS**

A copy of YORK's standard internal QC documents for a specific unit will be provided after chiller shipment. This is not a formal, signed document, but standard forms that follow a unit through manufacturing, pressure tests, and mechanical run-in. It also will show any deviations that were corrected.

All QC Documents with the exception of General Arrangement Drawings and Process & Instrumentation Drawings will be mailed on CD within 30 working days after the chiller has shipped.

Pricing for QC Documents is available in YORKworks.

Refer to the SQ Knowledge Base for other typical documentation that is available.

**CUSTOMER WITNESS OF STANDARD TESTS & FINAL INSPECTION**

The customer may opt to visit the plant to witness one or more of the chiller tests listed below or to visit the plant for a Final Inspection of the chiller after painting, prior to shipment. This assumes multiple units are inspected in one visit.

This should not be encouraged as it often leads to production delays in scheduling the witness. Generally one week per customer witness test is added to the chiller lead time. Contact Customer Service for actual chiller lead time.

Please note that if multiple tests are being considered that: (1) these tests may occur over an extended period of time and not consecutively and (2) they may not all occur in the same facility.

Typical options available for selection and pricing in YORKworks are:

- Panel: Panel Functional Test
- Compressor: Air Run-in Test
- Shells: Strength Test
- Shells: Refrigerant Leak Test
- Unit Assembly: Run-in Test
- Unit Assembly: Vibration Test
- Unit Assembly: Vacuum Hold Test
- Final Inspection

Pricing for Customer Witness of Standard Tests and Final Inspection is available in YORKworks.

