RANDOLPH AUSTIN COMPANY

www.RandolphAustin.com

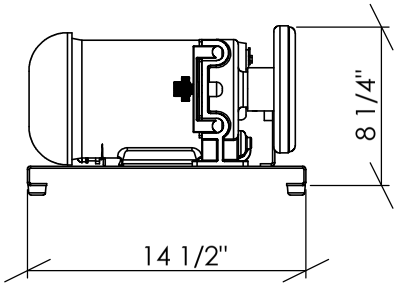
Operations Manual

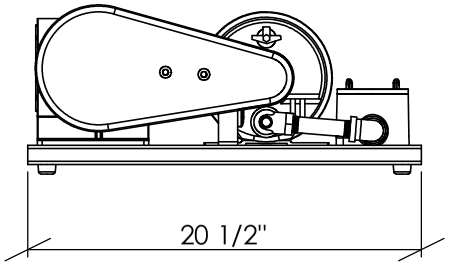
Pump Series: **610**

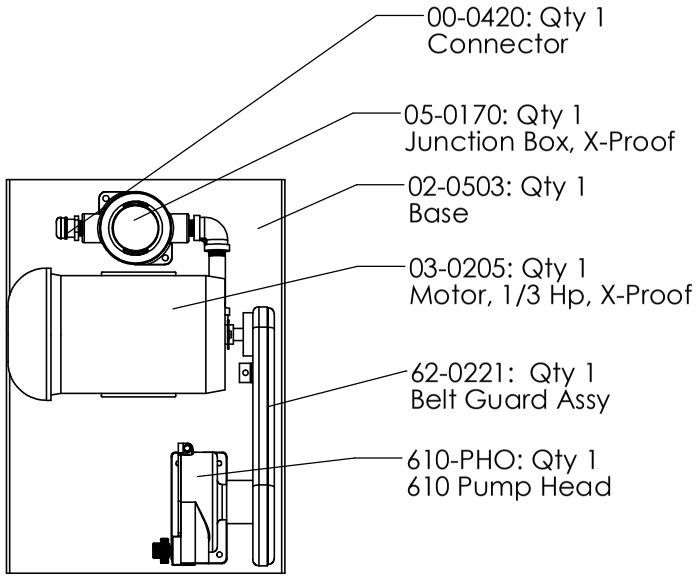
Model #610-200

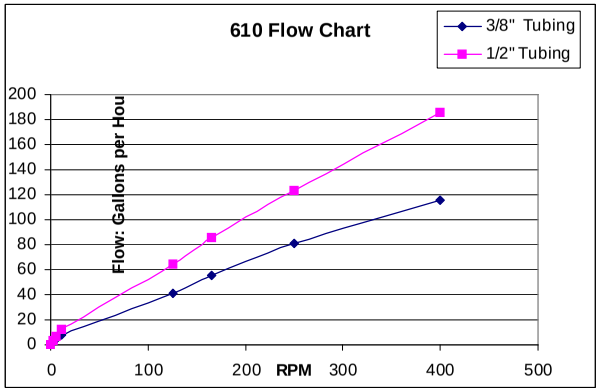
- 610 Pump Head
- Belt Driven, Explosion Proof Motor Assembly
- Class 1, Group D, 1/3 Hp, 1ph, 115/208-230VAC

Randolph Austin Company
2119 FM 1626
Manchaca, Texas 78652
(512) 282-1590









NEXT ASSY	USED ON
APPLICATION	

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/64
ANGULAR: MACH ± 1°
TWO PLACE DECIMAL ± .010
THREE PLACE DECIMAL ± .005

MATERIAL --

FINISH --

DO NOT SCALE DRAWING

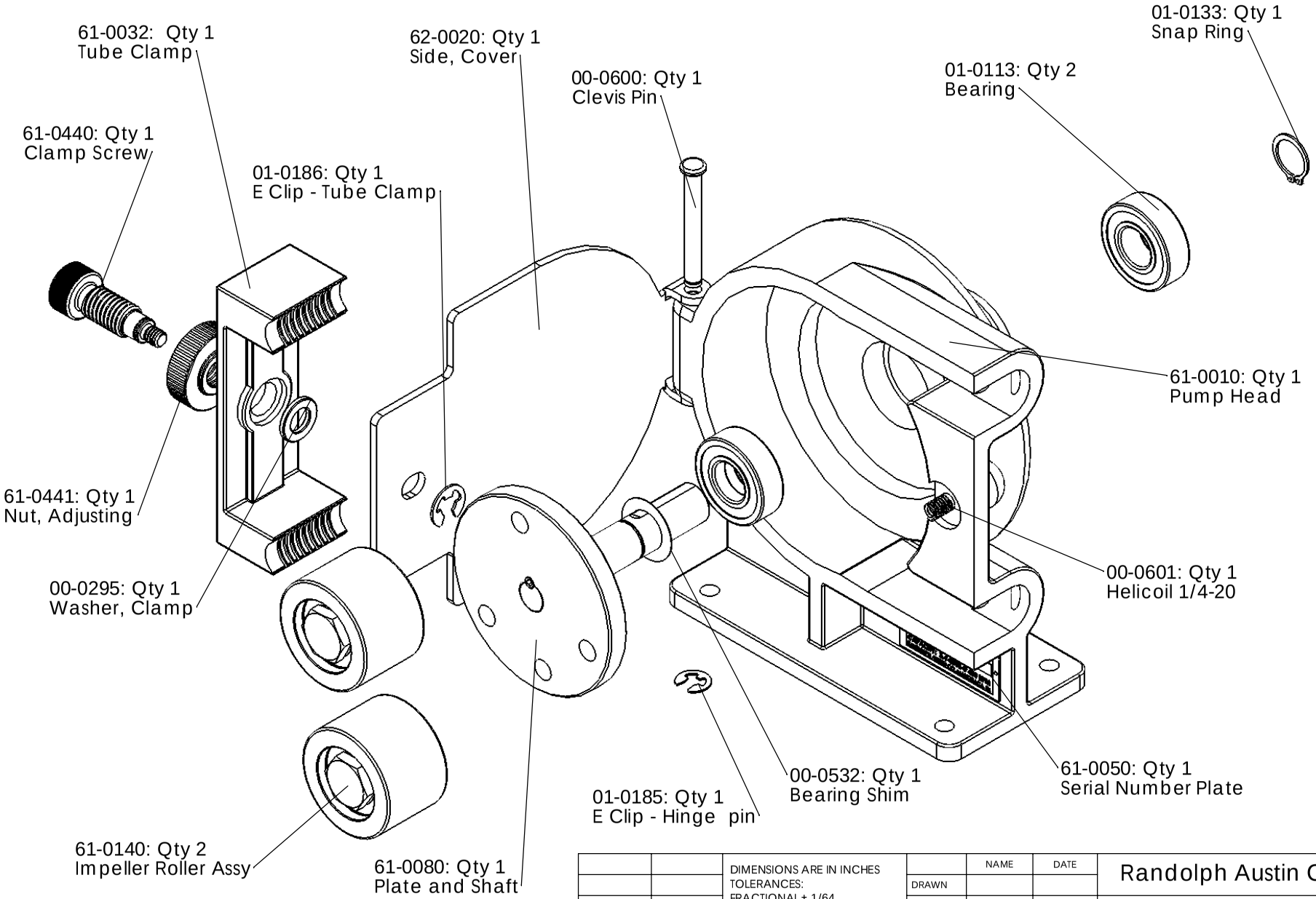
	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

Randolph Austin Company

610-200 Assembly

SIZE	DWG. NO.	REV.
A	610-200	
SCALE:1:10	WEIGHT:	SHEET 1 OF 1



NEXT ASSY	USED ON
APPLICATION	

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/64
ANGULAR: MACH ± 1°
TWO PLACE DECIMAL ± .010
THREE PLACE DECIMAL ± .005

MATERIAL --

FINISH --

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

Randolph Austin Company

610 Pump Head
Exploded Assembly View
Pumps after Aug-2008

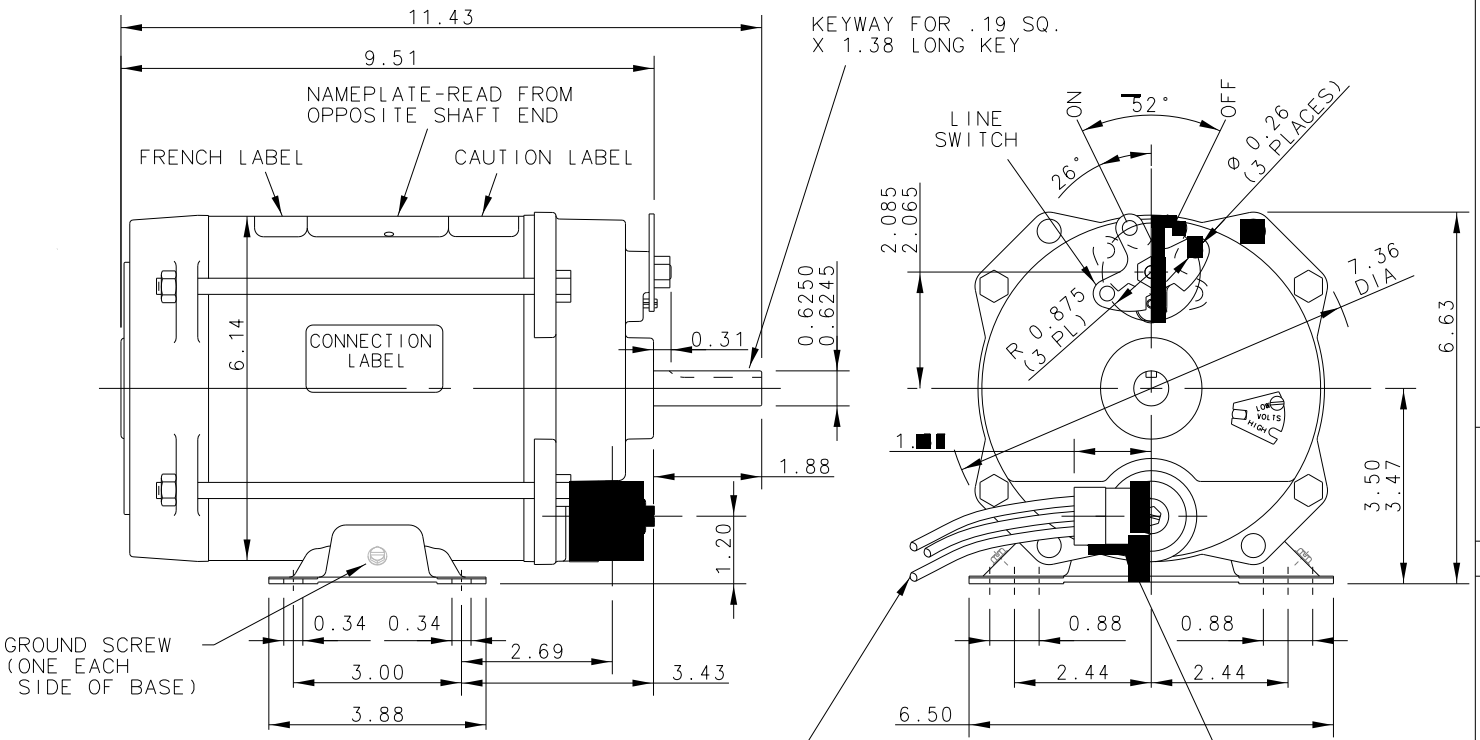
SIZE	DWG. NO.	REV.
A	610-PHO-XP	
SCALE:1:5	WEIGHT:	SHEET 1 OF 1

1121007434

UNLESS OTHERWISE SPECIFIED DIMENSIONS WITHOUT TOLERANCES ARE REFERENCE ONLY

NOTES

1. MOTOR LISTED FOR HAZARDOUS LOCATION - CLASS I, GROUP D.



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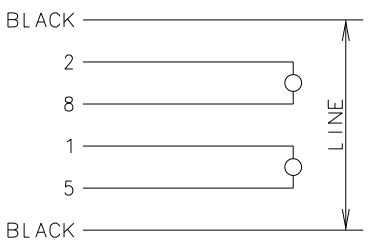
LEADS

SEE LEAD NOTE

EXTERNAL CONNECTIONS



TO REVERSE INTERCHANGE 5 AND 8

MOTOR DATA

TYPE	CSIR			ENCLOSURE	TENV X-PROOF	VIEWING LEAD END	MOTOR ROTATION REV
HP	1/3			BEARINGS	BALL		ASSEMBLY ROTATION REV
PH	1	HZ	60/50	PAINT	F.E. BLUE	ASSEMBLY VOLTAGE	LOW
RPM	1725/1425	SF	1.0	MOUNTING POSITION	HORIZONTAL	THERMALLY PROTECTED . .	AUTOMATIC
VOLTS	115/208-230			END CAP	N/R	WINDING AND TEST SPEC	338144
F.L. AMPS	5.0/2.5-6.0/3.0			ENVIRONMENTAL CONDITION	NORMAL	CUSTOMER NAME	FE STANDARD
S.F. AMPS	.			SHAFT MATERIAL	COLD ROLL STEEL	CUSTOMER PART NO.	51009
FRAME	56	TEMP CODE	T2A			DRAWN	LKW 12/31/97
TIME RATE	30 MIN.	MAX.AMB.	40°C			APPROVED	.
KVA CODE	M	INS. CLASS	B			RELEASED	12/31/97

PAR NO ECN NO	REV NO	CHANGE	FILM	DATE INIT
. .	.	.		. .

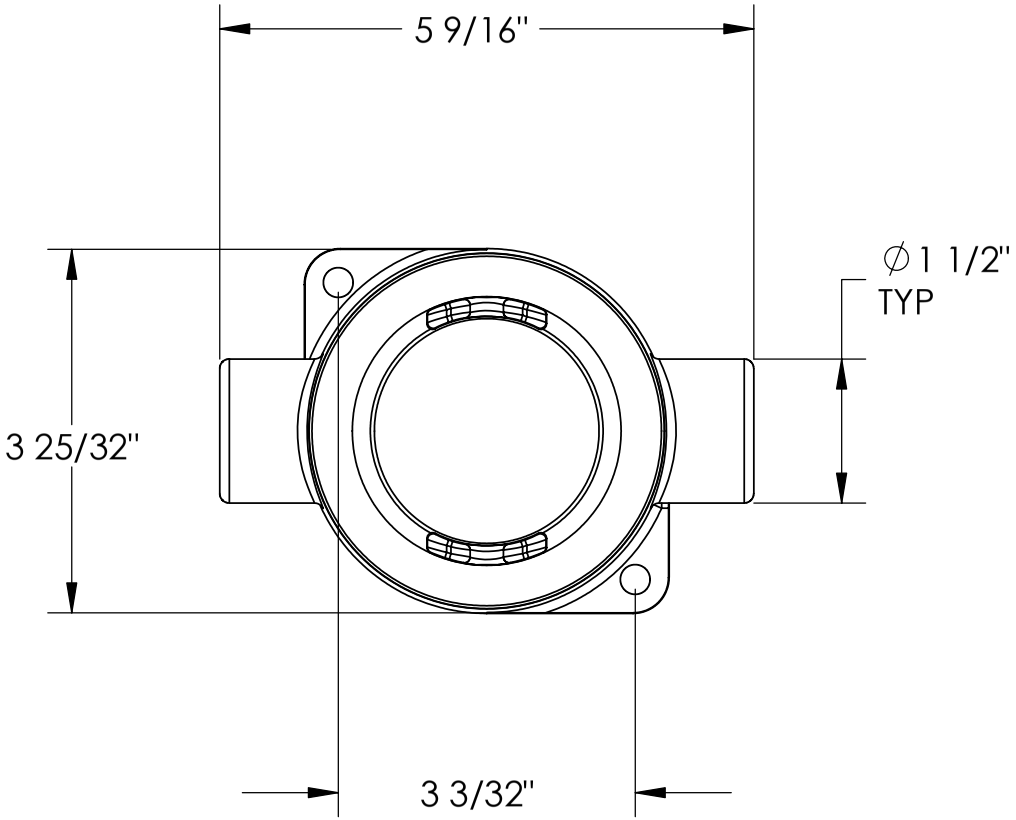
Franklin Electric
Bluffton, Indiana 46714

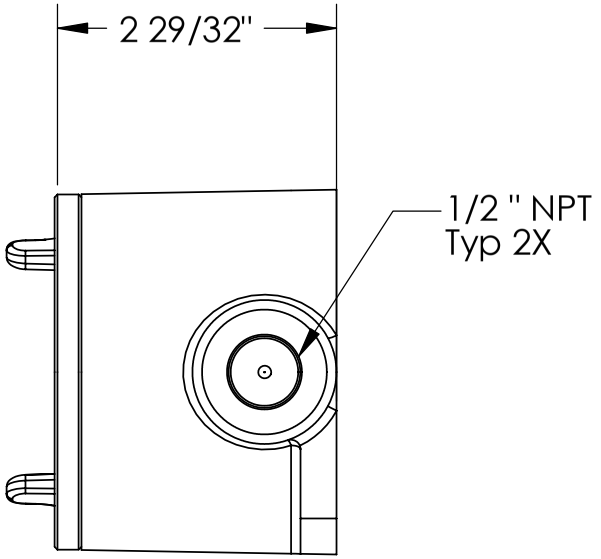
MODEL OUTLINE

1121007434

DIST: 1 3 21(2) 26 31 35(2) 40 46 62

ZONE	REV.	REVISIONS DESCRIPTION	DATE	APPROVED





Crouse Hines
EABC 16 - 1/2" NPT

NEXT ASSY	USED ON
APPLICATION	

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/64
ANGULAR: MACH ± 1
TWO PLACE DECIMAL ± .01
THREE PLACE DECIMAL ± .005

MATERIAL --

FINISH --

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

Randolph Austin Co

Conduit Box - 610-201

SIZE	DWG. NO.	REV.
A	05-0170	
SCALE:1:2	WEIGHT:	SHEET 1 OF 1

CES and CESD Arktite Receptacles

Delayed Action Circuit Breaking CPH Plugs

CESD – Cl. I, Div. 1 & 2, Group D*
CES – Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed

Application:

CES and CESD receptacles with CPH plugs are used:
- with portable electrically operated devices such as motor-generator sets, compressors, conveyors, portable tools, lighting systems and similar equipment
- in locations which are hazardous due to the presence of flammable vapors or gases
- in damp or corrosive locations
- at petroleum refineries, chemical and petrochemical plants, and other process industry facilities where similar hazards exist

Features:

- CES and CESD receptacles are equipped with a delayed action rotating sleeve which prevents complete withdrawal of the CPH plug in one continuous movement
- The delayed action feature permits the plug to be used as an emergency push-pull switch
- Details of operation are illustrated and described below:

Fig. 1

Fig. 2

Figure 1 above shows a CES receptacle assembly with CPH plug fully engaged.
Figure 2 shows the plug withdrawn until it is stopped by the delayed action sleeve. In this position the circuit has been broken and the arc has been snuffed in the contact chambers.
Figure 3 shows the delayed action receptacle sleeve rotated approximately 45° to allow withdrawal of plug from receptacle.

Fig. 3

Fig. 4

Figure 4 shows the plug completely withdrawn. To accomplish this, the delayed action sleeve must be rotated counterclockwise. The time required to actuate the mechanism permits dissipation of the arc-generated heat before contacts and arcing chambers are opened to the atmosphere.
When inserting the plug, the reverse procedure is followed.
- Receptacles are factory sealed to simplify installation and wiring. External seals are not required
- The 30 ampere receptacles are provided with pressure terminals for field connection. The 60 ampere receptacles have flexible leads. Plugs are equipped with solder terminals.
- Two arrangements are provided for the ¾″ and 1¼″ conduit hubs, as shown in the listings and dimensions on page 1012.

Grounding:

- NEC article 501 and CEC Part 1 Section 18 require that metal frames or exposed non-current-carrying metal parts of portable devices used in hazardous locations be grounded through an extra conductor in the portable cord.
- CES and CESD receptacles and CPH plugs are provided with an extra grounding pole for attachment of the grounding wire. In the plugs, provision is made for attachment of the grounding wire to the grounding pole. In addition, direct connection is provided between plug and receptacle housings and the ground pole. In the receptacles, grounding is accomplished through the conduit system.

Interchangeability of Plugs with Non-Hazardous Location Receptacles:

- CPH plugs can also be used with standard AR and NR receptacles of the same ampere rating, style and number of poles, thus permitting portable devices which are suitable for use in hazardous locatioins to be connected to receptacles in both hazardous and non-hazardous areas
- Portable devices for non-hazardous areas equipped with APJ and NPJ *Arktite* plugs *cannot* be used with CES and CESD receptacles

Standard Materials:

- Back boxes – *Feraloy*® iron alloy
- Receptacle housings – 30 ampere – copper-free aluminum; 60 ampere – *Feraloy*® iron alloy
- Plug bodies – copper-free aluminum
- Insulation – *Krydon*® fiberglass – reinforced polyester
- Contacts – brass or hard-drawn copper

Standard Finishes:

- *Feraloy* – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- *Krydon* material – red
- Brass and copper – natural

Electrical Rating Ranges:

- 30 and 60 amperes

Certifications and Compliances:

- NEC/CEC:
  CES – Class I, Division 1 and 2, Groups C,D;
  CESD – Class I, Division 1 and 2, Group D*
- ANSI/UL Standard: 1010
- CSA Standard C22.2 No. 182.1

* For U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.

Options:

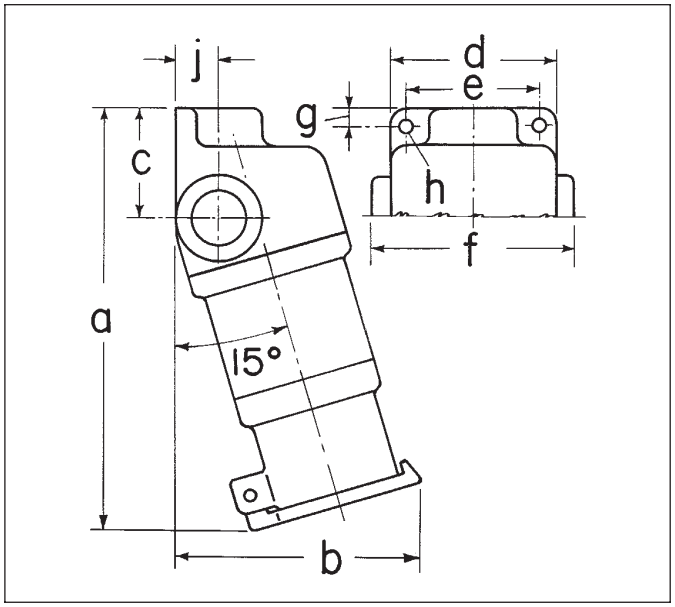
- The following special options are available from factory by adding suffix to Cat. No.:

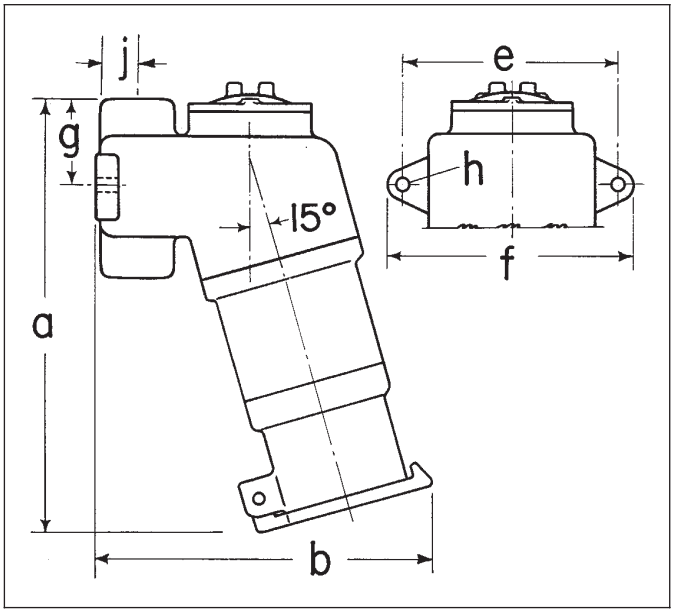
Description	Suffix to be Added to Cat. #
Special polarity – for use where two or more receptacles of the same ampere rating, style and number of poles are to be installed in the same area for use on different voltages. Available as follows: Receptacle interior rotated 22½ degrees clockwise when viewed from face and plug changed to match	S4

CES and CESD Arktite Receptacles

Circuit Breaking
Delayed Action, CPH Plugs
Dimensions

CESD – Cl. I, Div. 1 and 2, Group D*
CES – Cl. I, Div. 1 and 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed



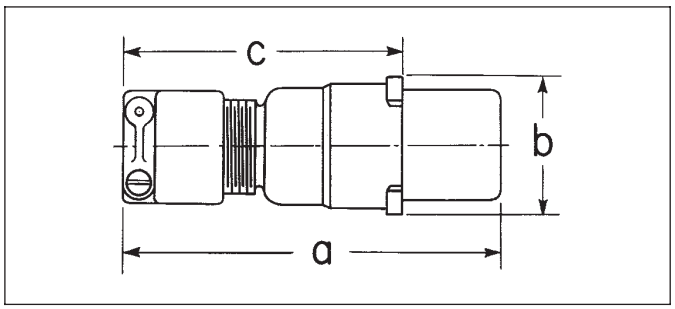


CES

Cat. #	a	b	c	d	e	f	g	h	j
CES2213									
CES2214	7 7/16	4 5/8	2 3/16	3 3/8	2 3/4	4 1/8	5/16	11/32	7/8
CES4233									
CES4234	12	7	2 7/8	5 1/4	4 3/8	6 1/8	7/16	13/32	1 1/8

CESD

Cat. #	a	b	e	f	g	h	j
CESD2213							
CESD2214	7 5/8	6 3/8	4 1/4	5	1 7/8	11/32	13/16
CESD4233							
CESD4234	13 1/2	9 5/8	6 1/4	7 1/4	3	13/32	1 3/16



CPH

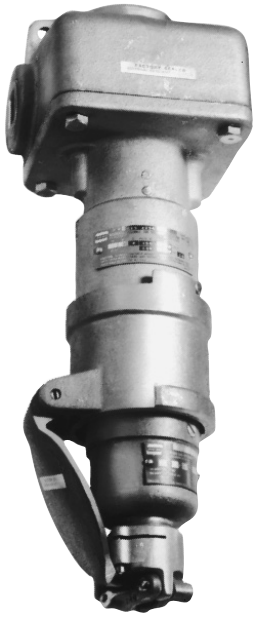
Cat. #	a	b	c
CPH7713	6	2 3/8	4 5/16
CPH7913	6 7/16	2 3/8	4 3/4
CPH7714	6	2 3/8	4 5/16
CPH7914	6 7/16	2 3/8	4 3/4
CPH7733	7 3/4	2 3/4	5
CPH7933	8 1/8	2 3/4	5 3/8
CPH7734	7 3/4	3 1/16	5
CPH7934	8 1/8	3 1/16	5 3/8

* In U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.

CES and CESD Arktite® Receptacles

Delayed Action
Circuit Breaking
CPH Plugs

CESD – Cl. I, Div. 1 & 2, Group D*
CES – Cl. I, Div. 1 & 2, Groups C,D
Explosionproof
Wet Locations
Factory Sealed



CES Receptacles with three hubs – one on each side and one at top – and two pipe plugs with CPH plug fully engaged

CESD Receptacles with vertical through feed hubs and one pipe plug. Removable threaded cover at top to facilitate pulling wires

CES/CESD Receptacles

Hub Size	Circuit	Phase	Max. HP	Max. Amps	Volts at 60 Cycles AC	CES Cat. #	CESD Cat. #
¾	2-wire, 3-pole	1	½	7	480①		
			1½	30	120 to 240	CES2213	CESD2213
¾	3-wire, 4-pole	3	1	7	480①		
			3	30	120 to 240	CES2214	CESD2214
1¼	2-wire, 3-pole	1	3	30	480①		
				60	120 to 240	CES4233	CESD4233
1¼	3-wire, 4-pole	3	5	30	480①		
				60	120 to 240	CES4234	CESD4234

CPH Plugs with mechanical cable grip and Neoprene bushing

CPH Plugs

Circuit	Phases	Max. HP	Max. Amps	Volts at 60 Cycles AC
2-wire, 3-pole	1	½	7	480①
		1½	30	120 to 240
3-wire, 4-pole	3	1	7	480①
		3	30	120 to 240
2-wire, 3-pole	1	3	30	480①
			60	120 to 240
3-wire, 4-pole	3	5	30	480①
			60	120 to 240

CABLE DIA.

.375 to .875	.500 to .875	.875 to 1.375
CPH7713		CPH7913
CPH7714		CPH7914
	CPH7733	CPH7933
	CPH7734	CPH7934

* In U.S. CESD are also suitable for Class I, Group C when used with immediately adjacent seals.
① CSA certified units are rated at 600 volts.

HOW TUBING IS INSERTED IN THE PUMP

1. Turn power off. Open the cover plate and tube clamp. Remove existing tubing by manually turning rollers while gently tugging on the tubing.
2. Clean any debris from pump race way and tube clamp with a clean rag or paper towel. A light detergent spray can be used as well. Avoid the use of solvents such as acetone as they will have an adverse effect on the paint.
3. Thread tubing back into pump. Start at the top of the pump and manually move the rollers so that they start occluding the tubing. Care should be taken to avoid pinching fingers with rollers. Align the tubing so that is in the center of the raceway.
4. Add lubricant. Close pump cover. Tighten tubing clamp to ensure the tubing is not fed through the pump.

Pump Series	**Tubing Size**
250	.062” (1/16”) ID X .187” (3/16”) OD
250	.125” (1/8”) ID X .250” (1/4”) OD
300	.250” (1/4”) ID X .437” (7/16”) OD
400	.250” (1/4”) ID X .437” (7/16”) OD
500	.187” (3/16”) ID X .375” (3/8”) OD
500	.250” (1/4”) ID X .437” (7/16”) OD
610,615,620, & 630	.375” (3/8”) ID X .625” (5/8”) OD
610,615,620, & 630	.500” (1/2”) ID x .750” (3/4”) OD
750	.625” (5/8”) ID X .937” (15/16”) OD
750	.750” (3/4”) ID X 1.062” (1 1/16”) OD
780	.750” (3/4”) ID X 1.062” (1 1/16”) OD
880	.750” (3/4”) ID X 1.25” (1 1/4”) OD
880	1.00” (1.00”) X 1.50” (1 ½”) OD

Randolph Austin Company
Tubing Chemical Resistance Chart

Code indicates the percentage weight gain or loss after 24 hours immersion in the fluid.
(B) Best = 1-4%, (G) Good = 5-10%, (F) Fair = 11- 15%, (P) Poor = 16%+

The data contained herein are based on tests conducted on representative samples and are considered accurate. The results should indicate liquids that could be used with the tubing. However no guarantee is given or implied regarding the application of this data to the safe use of the tubing. It is suggested that the purchaser conduct tests to determine if this material is suited to this application.

	Cilran™	ED-Plex™	Povinal ™	Prothane II ™	Vytex™
Aqueous Solutions					
Water	B	B	P	B	B
Sodium Chloride (Saturated)	B	B	F	B	B
Aluminum Sulfate	B	B	P	B	B
Acids & Bases					
Sulphuric Acid (66° Be)	B	B	P	G	B
Acetic Acid, Glacial	B	P	P	P	F
Hydrochloric Acid (30° Be)	B	B	P	P	G
Nitric Acid (40° Be)	B	B	P	P	G
Sodium Hydroxide (50% sol.)	B	B	P	B	B
Ammonia Hydroxide	B	B	P	B	B
Aliphatic Hydrocarbons					
Diesel Fuel	P	P	B	G	G
Naptha	P	P	B	G	G
Mineral Oil	P	P	B	G	B
Aromatic Hydrocarbons					
Toluene	P	P	B	P	P
Xylene	P	P	B	P	G
Chlorinated Solvents					
Trichloroethylene	P	P	B	P	P
Carbon Tetrachloride	P	P	B	P	P
Methylene Chloride	P	P	B	P	P
Ketones					
Acetone	B	B	F	P	P
Methyl Ethyl Ketone (MEK)	G	G	F	P	P
Esters					
Amyl Acetate	P	B	F	P	P
Butyl Acetate	P	B	F	P	P
Ethyl Acetate	P	F	F	P	P
Alcohol					
Butyl Alcohol	G	G	P	G	B
Isoproply Alcohol	G	B	F	B	B
Methyl Alcohol	B	B	F	G	B
Ethyl Alcohol (90%)	B	B	G	G	G
Glycol					
Ethylene Glycol	B	B	G	B	B
Glycerine	B	B	G	B	B
Vegetable Oil					
Safflower Oil	B	B	B	B	G

8-Mar-01

(800)-531-5263 - (512)-282-1590 – Fax (512)-280-0678

General Characteristics of Randolph Austin Tubing Materials

Cilran™ is made from a thermoplastic elastomer that possesses exceptional chemical resistance to acids and bases. **Cilran**™ has low gas permeability; good flex fatigue resistance and meets USP Class VI specifications. Ideal for use in many laboratory applications, it may be used in place of silicone for some applications. **Cilran**™ is translucent white in color.

Povinal™ is a polyvinyl alcohol based tubing which is excellent for use in applications with aliphatic, aromatic and chlorinated hydrocarbon solvents. **Povinal**™ has good flex fatigue resistance and is suitable for many industrial applications. It may be used as a substitute for fluroelastomer polymers in some applications. Not recommended for use with water or solutions containing concentrations of water. Pump tubing is teal in color. Transfer tubing is amber.

Vytex™ is a clear flexible polyvinyl tubing ideal for general-purpose usage in applications with dilute aqueous solutions (both acids and alkali's), and for food and beverage usage. Strong acid solutions may be used with **Vytex**™ for short intervals, but should be flushed with water after use. The smooth surface allows for easy flushing and cleanup for food and beverage applications. **Vytex**™ is a durable, high flex tubing with a Shore "A" durometer of 60 allowing a long life expectancy for continuous flexing where peristaltic pumps are used.

Prothane II™ is transparent, aqua blue, polyester polyurethane tubing that exhibits excellent abrasion resistance, has good low temperature properties and is resistant to ozone and oxidation. **Prothane II**™ exhibits an excellent resilience to continuous flexing and impacting experienced in peristaltic pumps. Along with these exceptional features **Prothane II**™ exhibits good hydrolic stability, good oil and fuel resistance, and high tensile and tear strength. **Prothane II**™ is resistant to diesel fuel, kerosene, motor oil, mild solvents, aromatic hydrocarbons, gasoline, and concentrated acid and alkaline solutions.

E-D Plex™ is multi-purpose tubing that is ideally suited for applications that range from transferring paint, ink, acids, and bases. Some oil and hydrocarbons will work with **E-D Plex**™, but should be tested before use. Combining the environmental resistance of EPDM with the chemical resistance of chloropreme, **E-D Plex**™ possesses similar elastomeric performance found in more expensive vulcanized rubber, while still maintaining high flex fatigue resistance. **E-D Plex**™ has been proven very successful in peristaltic pump applications where continuous flexing is required.