

Minimum Evaporating Temp. With:

— 10 K Suction Superheat

— Maximum Evaporating Temperature

Suction Superheat 11.1K

Liquid Subcooling 8.3K

Evaporating Temperature, °C

Cond °C	Cooling Capacity, kW							
	-20.0	-15.0	-10.0	-5.0	0.0	5.0	10.0	12.5
27.0	11.80	14.65	18.00	21.80	26.20	31.20	36.90	40.00
30.0	11.40	14.25	17.50	21.20	25.50	30.30	35.80	38.80
35.0	10.65	13.45	16.60	20.20	24.30	28.90	34.10	36.90
40.0	9.77	12.55	15.65	19.10	23.00	27.40	32.30	34.90
45.0		11.55	14.60	17.95	21.70	25.80	30.50	33.00
50.0			13.35	16.65	20.20	24.20	28.60	30.90
55.0				15.15	18.65	22.40	26.60	28.80
60.0					16.80	20.40	24.40	26.50
65.0						18.15	21.90	23.90

50 Hz

ZP103KFE-TFD

R410A Dew Point

Cond °C	Power, kW							
	-20.0	-15.0	-10.0	-5.0	0.0	5.0	10.0	12.5
27.0	4.32	4.36	4.37	4.38	4.40	4.45	4.57	4.66
30.0	4.62	4.66	4.67	4.68	4.70	4.76	4.89	4.99
35.0	5.20	5.22	5.21	5.21	5.23	5.29	5.42	5.52
40.0	5.91	5.88	5.84	5.81	5.81	5.86	5.98	6.08
45.0		6.68	6.60	6.52	6.49	6.51	6.61	6.69
50.0			7.51	7.38	7.29	7.26	7.33	7.39
55.0				8.41	8.26	8.17	8.17	8.22
60.0					9.42	9.26	9.19	9.20
65.0						10.55	10.40	10.40

Cond °C	Current at 380 V, A							
	-20.0	-15.0	-10.0	-5.0	0.0	5.0	10.0	12.5
27.0	10.62	10.69	10.72	10.74	10.79	10.89	11.08	11.23
30.0	10.91	10.95	10.98	11.00	11.06	11.18	11.39	11.55
35.0	11.52	11.51	11.49	11.49	11.54	11.67	11.90	12.06
40.0	12.36	12.26	12.17	12.12	12.13	12.23	12.45	12.61
45.0		13.26	13.07	12.94	12.88	12.93	13.12	13.26
50.0			14.27	14.02	13.85	13.82	13.95	14.07
55.0				15.41	15.13	14.98	15.01	15.10
60.0					16.76	16.47	16.38	16.41
65.0						18.36	18.12	18.08

Cond °C	Suction Mass Flow, g/s							
	-20.0	-15.0	-10.0	-5.0	0.0	5.0	10.0	12.5
27.0	61.70	75.40	91.10	109.50	130.50	154.50	182.00	197.00
30.0	61.40	75.30	91.10	109.50	130.00	153.50	181.00	195.50
35.0	59.90	74.50	90.70	109.00	129.50	153.00	179.50	194.00
40.0	57.20	72.60	89.60	108.50	129.00	152.50	178.50	193.00
45.0		69.50	87.40	107.00	128.50	152.00	178.00	192.50
50.0			83.90	104.50	126.50	151.00	177.50	191.50
55.0				101.00	124.00	149.00	176.50	191.00
60.0					120.00	146.50	174.50	189.50
65.0						142.50	171.50	187.00

### **COMPRESSOR MECHANICAL AND PHYSICAL DATA**

Displacement @ 50 Hz, m <sup>3</sup> /h	16.8
Length/Width, mm	263/285
Height, mm	533
Net Weight, kg	60.8
Stub Suction, inch	1 3/8
Stub Discharge, inch	7/8
Oil Quantity, l	3.25
Base mounting (hole dia), mm	190 x 190 (19)
Sound Pressure @ 1m (HT), dBA	63
Sound Power (HT), dBA	74
Sound Conditions (HT, Temperatures: Evap./Cond./Suction at freq./speed)	7 / 54 / 18 °C at 50 Hz
PED Category	2
Max. Internal Free Volume, l	13.3
High Side PS gauge, bar	45
Low Side PS gauge, bar	29.5
Low Side TS Max., °C	50
Low Side TS Min., °C	-35
Refrigerant's GWP	2088
Refrigerant's classification	A1

### **COMPRESSOR ELECTRICAL DATA (380-420 V / 3~ / 50 Hz)**

Maximum Operating Current, A	19
Locked Rotor Current, A	127
Default Enclosure Class	IP 21 (IEC 34)

### **ACCESSORIES INCLUDED**


Discharge Temperature Protection	Internal Thermodisk
Mounting Grommets	Standard

### **ACCESSORIES OPTIONAL**

Crankcase Heater	90 W External
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### **MOTOR OPTIONS**

<b>Motor Code</b>	<b>Power Supply</b>	<b>Nominal Voltage, V</b>	<b>Start Connection</b>	<b>DOL Connection</b>	<b>Amps Factor</b>
TFD	380-420 V / 3~ / 50 Hz	380		Y	1.00

PART NUMBER	MODEL NUMBER	CUSTOMER CONNECTIONS	A	B	C	D	E	F	G	◆ H	MOUNTING KIT 	SPECIFICATIONS	
												ES NO.	DESCRIPTION
												ES92-155	CONVERSION-METRIC
497-1675-00	ZR84KC/KCE ZR94KC/KCE ZP90KCE ZH40KCE	BRAZED WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	476.3 [ 18.75 ]	444.3 [ 17.49 ]	93.6 [ 3.69 ]	201.5 [ 7.93 ]	19.1 [ 0.75 ]	-	-	28.49-28.67 [ 1.122-1.129 ]	527-0116-00		
497-1675-01	ZR84KC/KCE ZR94KC/KCE ZP90KCE ZH40KCE	ROTALOCK WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	476.3 [ 18.75 ]	444.3 [ 17.49 ]	93.6 [ 3.69 ]	201.5 [ 7.93 ]	19.1 [ 0.75 ]	-	-	-	527-0116-00		
497-1675-02	ZR108KC/KCE/KF/KFE ZR125KC/KCE ZR144KC/KCE ZP103KCE ZP120KCE ZP137KCE ZP144KCE/KFE ZH45KCE ZH50KCE	BRAZED WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	533.2 [ 20.99 ]	501.1 [ 19.73 ]	122.1 [ 4.81 ]	242.8 [ 9.56 ]	19.1 [ 0.75 ]	-	-	34.84-35.02 [ 1.372-1.379 ]	527-0116-00	⑦	
497-1675-03	ZR108KC/KCE/KF/KFE ZR125KC/KCE ZR144KC/KCE ZP103KCE ZP120KCE ZP137KCE ZP144KCE/KFE ZH45KCE ZH50KCE	ROTALOCK WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	533.2 [ 20.99 ]	501.1 [ 19.73 ]	122.1 [ 4.81 ]	242.8 [ 9.56 ]	19.1 [ 0.75 ]	-	-	-	527-0116-00	⑦	
497-1675-04	ZR160KC/KCE ZR190KC/KCE ZP154KCE/KFE ZP182KCE ZH64KCE ZH75KCE	BRAZED WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	551.4 [ 21.71 ]	519.3 [ 20.45 ]	140.3 [ 5.52 ]	261.0 [ 10.28 ]	33.3 [ 1.31 ]	-	-	34.84-35.02 [ 1.372-1.379 ]	527-0210-00	⑦ ⑧	
497-1675-05	ZR160KC/KCE ZR190KC/KCE ZP154KCE/KFE ZP182KCE ZH64KCE ZH75KCE	ROTALOCK WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	551.4 [ 21.71 ]	519.3 [ 20.45 ]	140.3 [ 5.52 ]	261.0 [ 10.28 ]	33.3 [ 1.31 ]	-	-	-	527-0210-00	⑦ ⑧	
497-1675-06	ZR84KC/KCE ZR94KC/KCE ZP90KCE ZH40KCE	BRAZED WITH SIGHTGLASS WITH OIL ADJUSTMENT	476.3 [ 18.75 ]	444.3 [ 17.49 ]	93.6 [ 3.69 ]	201.5 [ 7.93 ]	19.1 [ 0.75 ]	67.6 [ 2.66 ]	74.3 [ 2.93 ]	28.49-28.67 [ 1.122-1.129 ]	527-0116-00		
497-1675-07	ZR84KC/KCE ZR94KC/KCE ZP90KCE ZH40KCE	ROTALOCK WITH SIGHTGLASS WITH OIL ADJUSTMENT	476.3 [ 18.75 ]	444.3 [ 17.49 ]	93.6 [ 3.69 ]	201.5 [ 7.93 ]	19.1 [ 0.75 ]	67.6 [ 2.66 ]	74.3 [ 2.93 ]	-	527-0116-00		
497-1675-08	ZR108KC/KCE/KF/KFE ZR125KC/KCE ZR144KC/KCE ZP103KCE ZP120KCE ZP137KCE ZP144KCE ZH45KCE ZH50KCE	BRAZED WITH SIGHTGLASS WITH OIL ADJUSTMENT	533.2 [ 20.99 ]	501.1 [ 19.73 ]	122.1 [ 4.81 ]	242.8 [ 9.56 ]	19.1 [ 0.75 ]	92.3 [ 3.63 ]	92.3 [ 3.63 ]	34.84-35.02 [ 1.372-1.379 ]	527-0116-00 527-0182-01	⑥ ⑦	

NOTES:

① ALL TOLERANCES ± 1.5 [ 0.06 ] UNLESS OTHERWISE SPECIFIED. DUE TO ACCUMULATED ASSEMBLY TOLERANCES THE LISTED COMPONENTS MAY VARY FROM THE MOUNTING HOLES AS TABULATED.

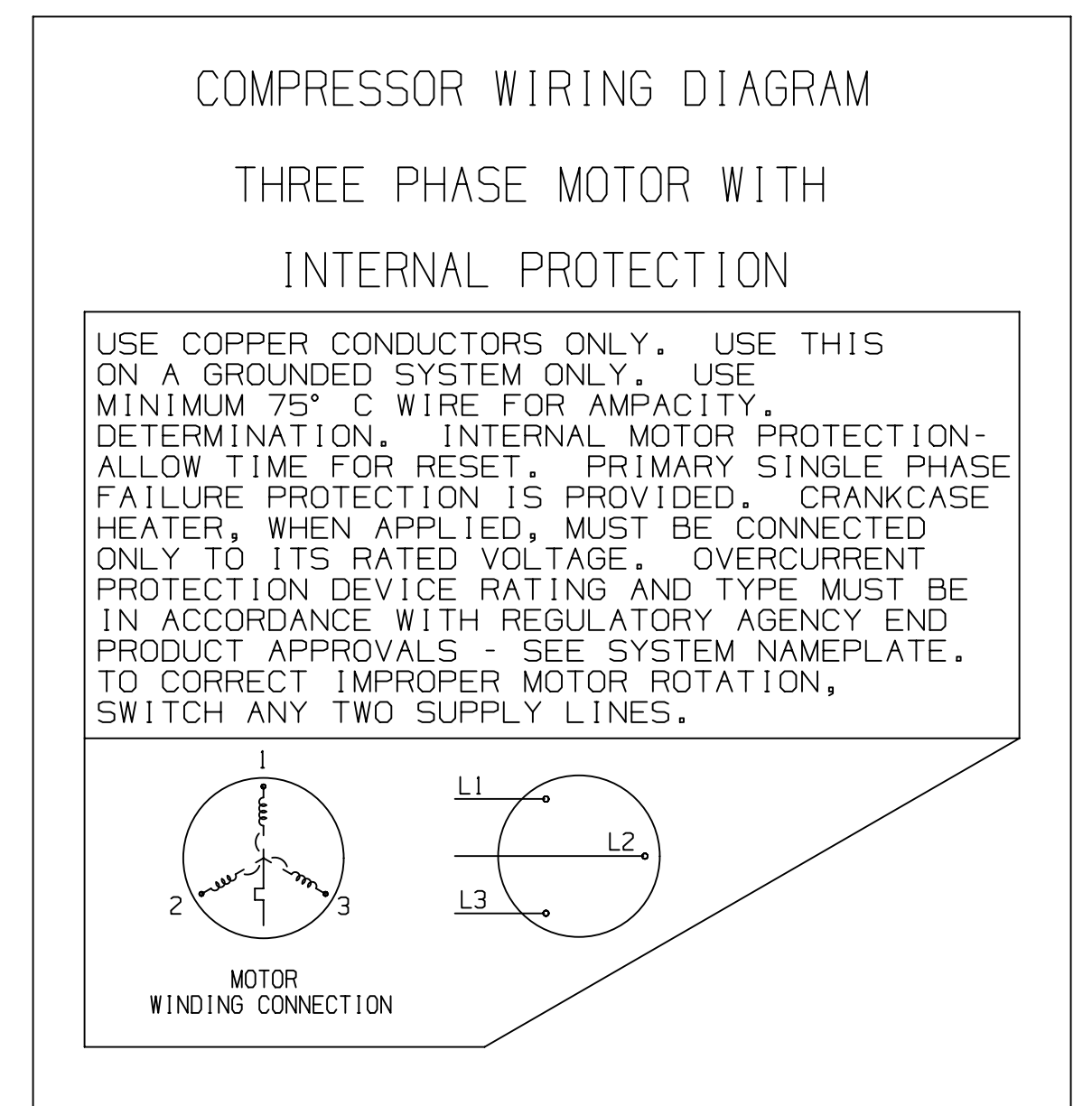
◆ SUCTION FITTING ± 3.0 [ 0.12 ]

◆ DISCHARGE FITTING ± 3.0 [ 0.12 ]

② MOUNTING KIT

3. TUBE ENDS MUST BE PLUGGED.

④ GROUNDING SCREW AND WASHER PER BOM.



ENG NOTICE NO.	REV.NO.	REVISIONS	DATE	BY	CHKD	APPR
ECN100001	8	ADD ZP154KFE	10-26-16	AZ	LG	AW
ECN201120	7	CHANGED DIMENSIONS	08-15-16	JLS	LLB	KJR
ECN102816	6	REDRAWN & ADDED 527-0182-01 IN MOUNTING KIT COLUMN	12-30-15	PLS	KRB	KJR
ECN008643	0	RELEASED	06-26-14	VPV	LLB	KJR

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MATERIAL SPECIFICATION	DRAWN BY	SUPERSEDES DWG. NO. / REV. NO.	
N/A	PLS	497-1675-00 / 005	
	DATE	SCALE	DATE FORMAT
	12-30-15	1:1	MM-DD-YY
TITLE	DRAWING NUMBER	SHEET 1 OF 3 DWG	
REF DWG-WELD COMP ASSM	497-1675-00	4	

EMERSON Climate Technologies

Copeland brand products

INTERPRET PER ASME Y14.5M-1994 AND EMERSON CLIMATE TECHNOLOGIES, INC. DESIGN STANDARDS DS2002

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

CRITICAL PRODUCT CHARACTERISTICS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE MILLIMETER OR ( INCH )

1-PLACE ±  
2-PLACE ±  
ANGULAR ±

①

EMERSON CLIMATE TECHNOLOGIES, INC. - CONFIDENTIAL

PART NUMBER	MODEL NUMBER	CUSTOMER CONNECTIONS	A	B	C	D	E	F	G	◆	H	MOUNTING KIT △ 2	
497-1675-09	ZR108KC/KCE/KF/KFE ZR125KC/KCE ZR144KC/KCE ZP103KCE ZP120KCE ZP137KCE ZP144KFE ZH45KCE ZH50KCE	ROTALOCK WITH SIGHTGLASS WITH OIL ADJUSTMENT	533.2 [ 20.99 ]	501.1 [ 19.73 ]	122.1 [ 4.81 ]	242.8 [ 9.56 ]	19.1 [ 0.75 ]	92.3 [ 3.63 ]	92.3 [ 3.63 ]	-	-	527-0116-00	⑦
497-1675-10	ZR160KC/KCE ZR190KC/KCE ZP154KCE/KFE ZP182KCE ZH64KCE ZH75KCE	BRAZED WITH SIGHTGLASS WITH OIL ADJUSTMENT	551.4 [ 21.71 ]	519.3 [ 20.45 ]	140.3 [ 5.52 ]	261.0 [ 10.28 ]	33.3 [ 1.31 ]	92.4 [ 3.64 ]	92.4 [ 3.64 ]	34.84-35.02 [ 1.372-1.379 ]	-	527-0210-00 527-0182-01	⑥⑦⑧
497-1675-11	ZR160KC/KCE ZR190KC/KCE ZP154KCE/KFE ZP182KCE ZH64KCE ZH75KCE	ROTALOCK WITH SIGHTGLASS WITH OIL ADJUSTMENT	551.4 [ 21.71 ]	519.3 [ 20.45 ]	140.3 [ 5.52 ]	261.0 [ 10.28 ]	33.3 [ 1.31 ]	92.4 [ 3.64 ]	92.4 [ 3.64 ]	-	-	527-0210-00	⑦⑧
497-1675-12	ZR84KC/KCE ZR94KC/KCE ZP90KCE	BRAZED WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	476.3 [ 18.75 ]	444.3 [ 17.49 ]	93.6 [ 3.69 ]	201.5 [ 7.93 ]	19.1 [ 0.75 ]	67.6 [ 2.66 ]	-	28.49-28.67 [ 1.122-1.129 ]	-	527-0182-01	⑥
497-1675-13	ZR108KC/KCE/KF/KFE ZR125KC/KCE ZR144KC/KCE ZP103KCE ZP120KCE ZP137KCE ZP144KCE/KFE	BRAZED WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	533.2 [ 20.99 ]	501.1 [ 19.73 ]	122.1 [ 4.81 ]	242.8 [ 9.56 ]	19.1 [ 0.75 ]	92.3 [ 3.63 ]	-	34.84-35.02 [ 1.372-1.379 ]	-	527-0182-01	⑥⑦
497-1675-14	ZR160KC/KCE ZR190KC/KCE ZP154KCE/KFE ZP182KCE	BRAZED WITHOUT SIGHTGLASS WITHOUT OIL ADJUSTMENT	551.4 [ 21.71 ]	519.3 [ 20.45 ]	140.3 [ 5.52 ]	261.0 [ 10.28 ]	33.3 [ 1.31 ]	92.4 [ 3.64 ]	-	34.84-35.02 [ 1.372-1.379 ]	-	527-0182-01	⑥⑦⑧
497-1675-15	ZR144KC/KCE	BRAZED WITHOUT SIGHTGLASS WITH OIL FITTING	533.2 [ 20.99 ]	501.1 [ 19.73 ]	122.1 [ 4.81 ]	242.8 [ 9.56 ]	19.1 [ 0.75 ]	92.3 [ 3.63 ]	-	34.84-35.02 [ 1.372-1.379 ]	-	527-0182-01	⑥⑦
497-1675-16	ZR160KC/KCE ZR190KC/KCE ZP154KCE ZP182KCE	BRAZED WITHOUT SIGHTGLASS WITH OIL FITTING	551.4 [ 21.71 ]	519.3 [ 20.45 ]	140.3 [ 5.52 ]	261.0 [ 10.28 ]	33.3 [ 1.31 ]	92.4 [ 3.64 ]	-	34.84-35.02 [ 1.372-1.379 ]	-	527-0182-01	⑥⑦

ECN100001	8	ADD ZP154KFE	10-26-16	AZ	LG	AW
ECN201120	7	CHANGED DIMENSIONS	08-15-16	JLS	LLB	KJR
ECN102816	6	REDRAWN & RELEASED -15 & -16	12-30-15	PLS	KRB	KJR
ECN008643	0	RELEASED	06-26-14	VPV	LLB	KJR
ENG NOTICE NO.	REV.NO.	REVISIONS	DATE	BY	CHKD	APPR

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MATERIAL SPECIFICATION	DRAWN BY	SUPERSEDES DWG. NO. / REV. NO.				
N/A	PLS	497-1675-00 / 005				
	DATE	SCALE	DATE FORMAT:			
	12-30-15	1:1	MM-DD-YY			
TITLE	DRAWING NUMBER	SHEET 2 OF 3			DWG	
REF DWG-WELD COMP ASSM	497-1675-00				4	
SIZE						

INTERPRET PER ASME Y14.5M-1994 AND EMERSON CLIMATE TECHNOLOGIES, INC. DESIGN STANDARDS DS2002





DO NOT SCALE DRAWING

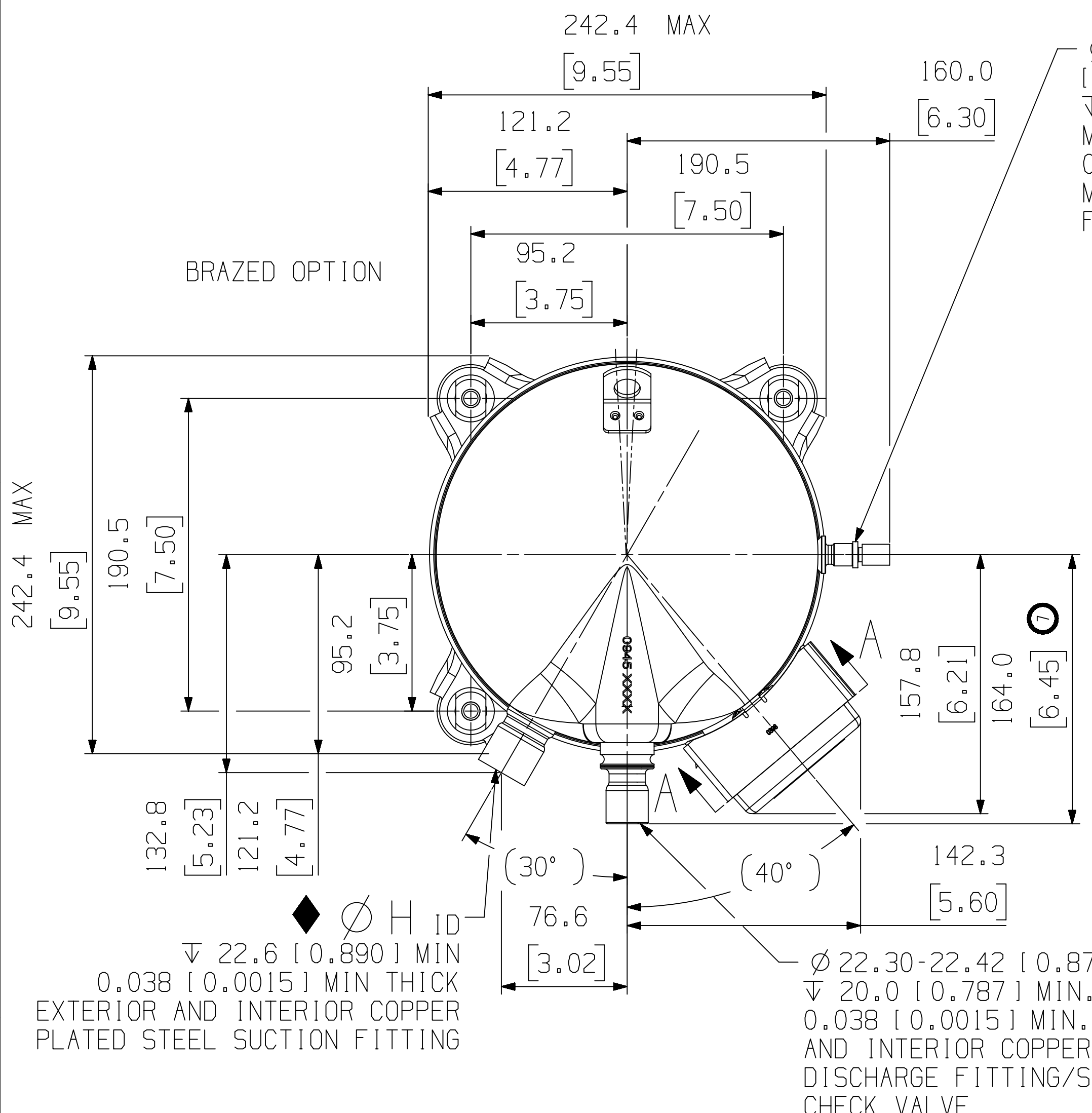
THIRD ANGLE PROJECTION

CRITICAL PRODUCT CHARACTERISTICS

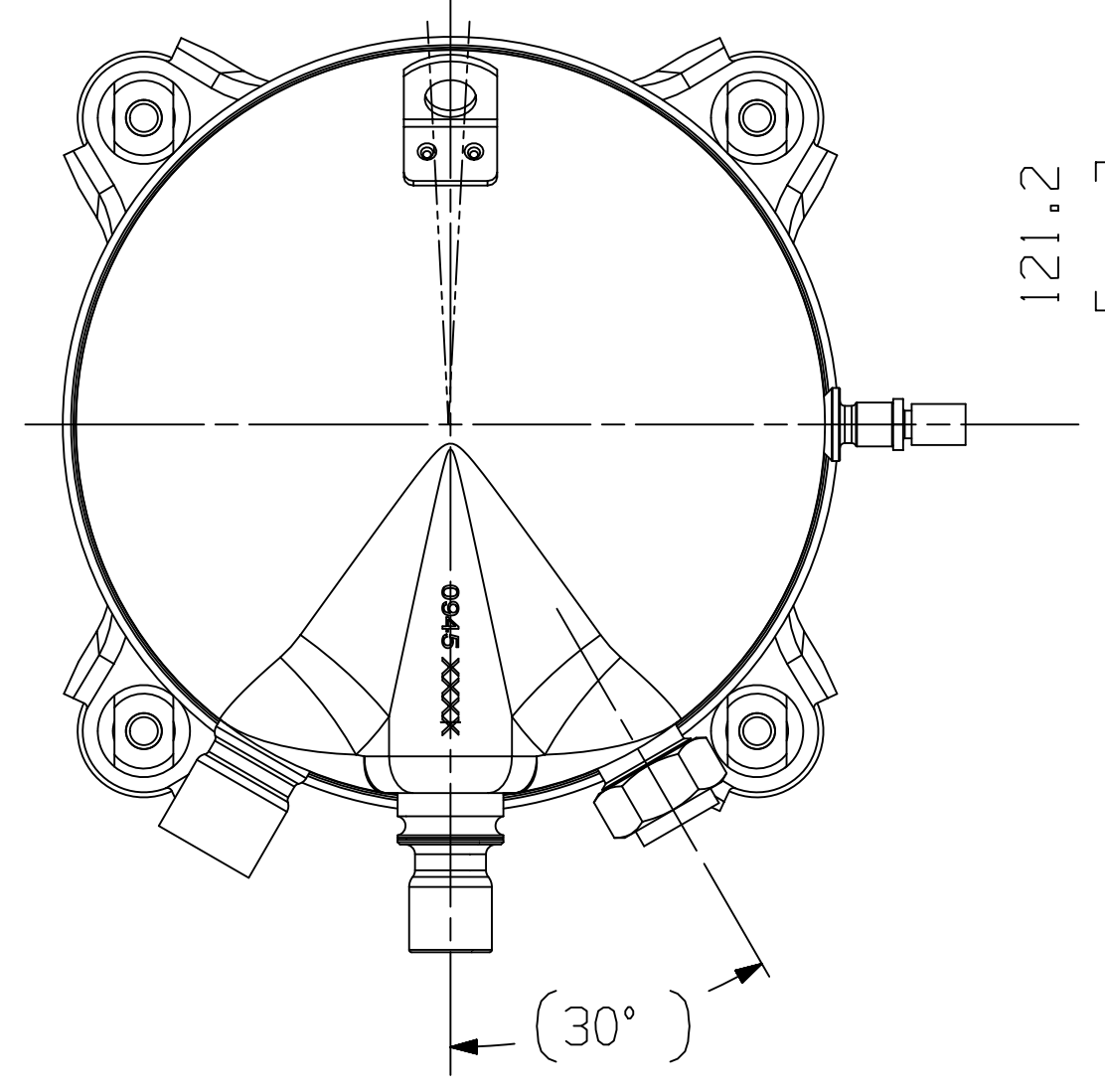
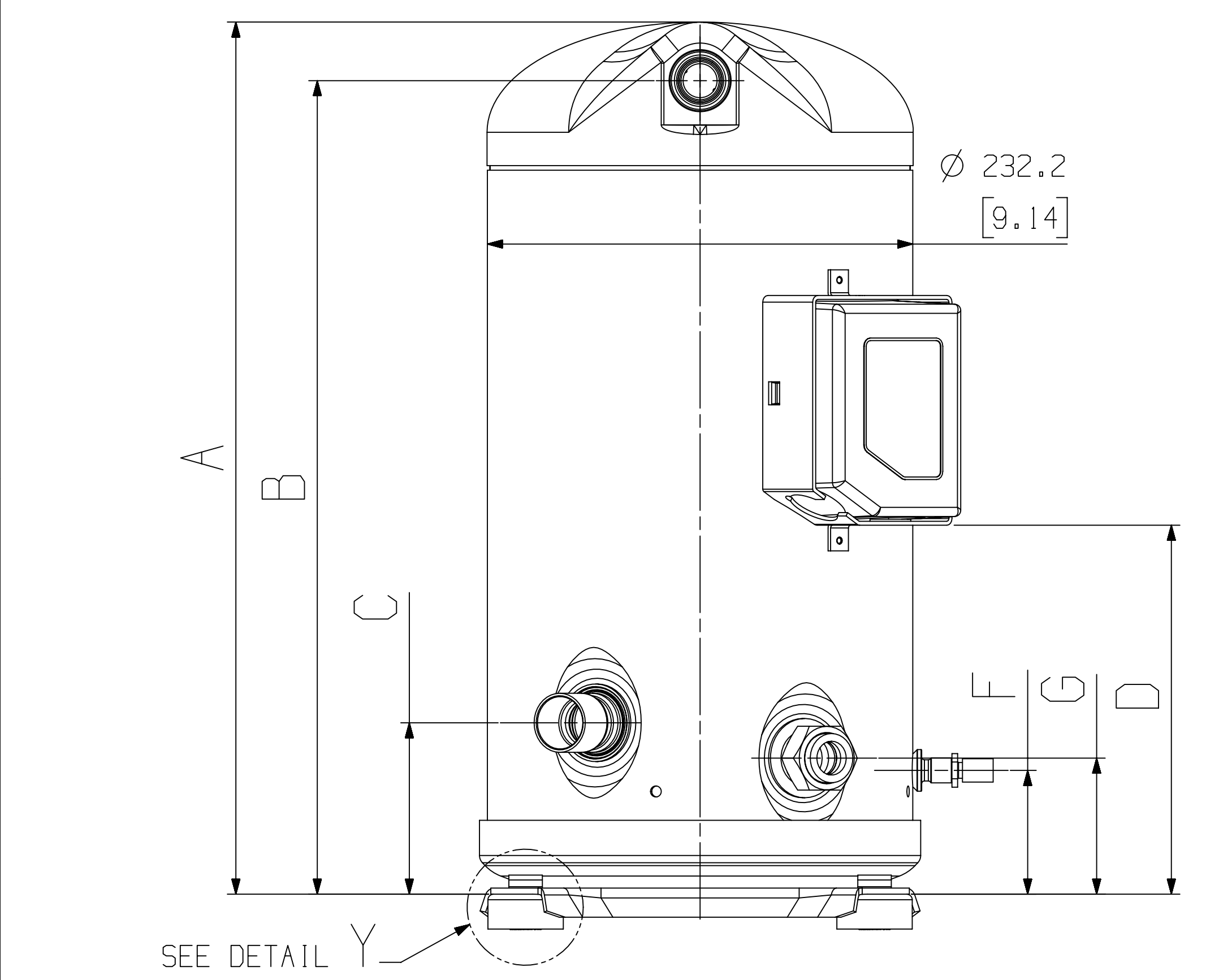
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE MILLIMETER OR (1 INCH)

1-PLACE ±  
2-PLACE ±  
ANGULAR ±

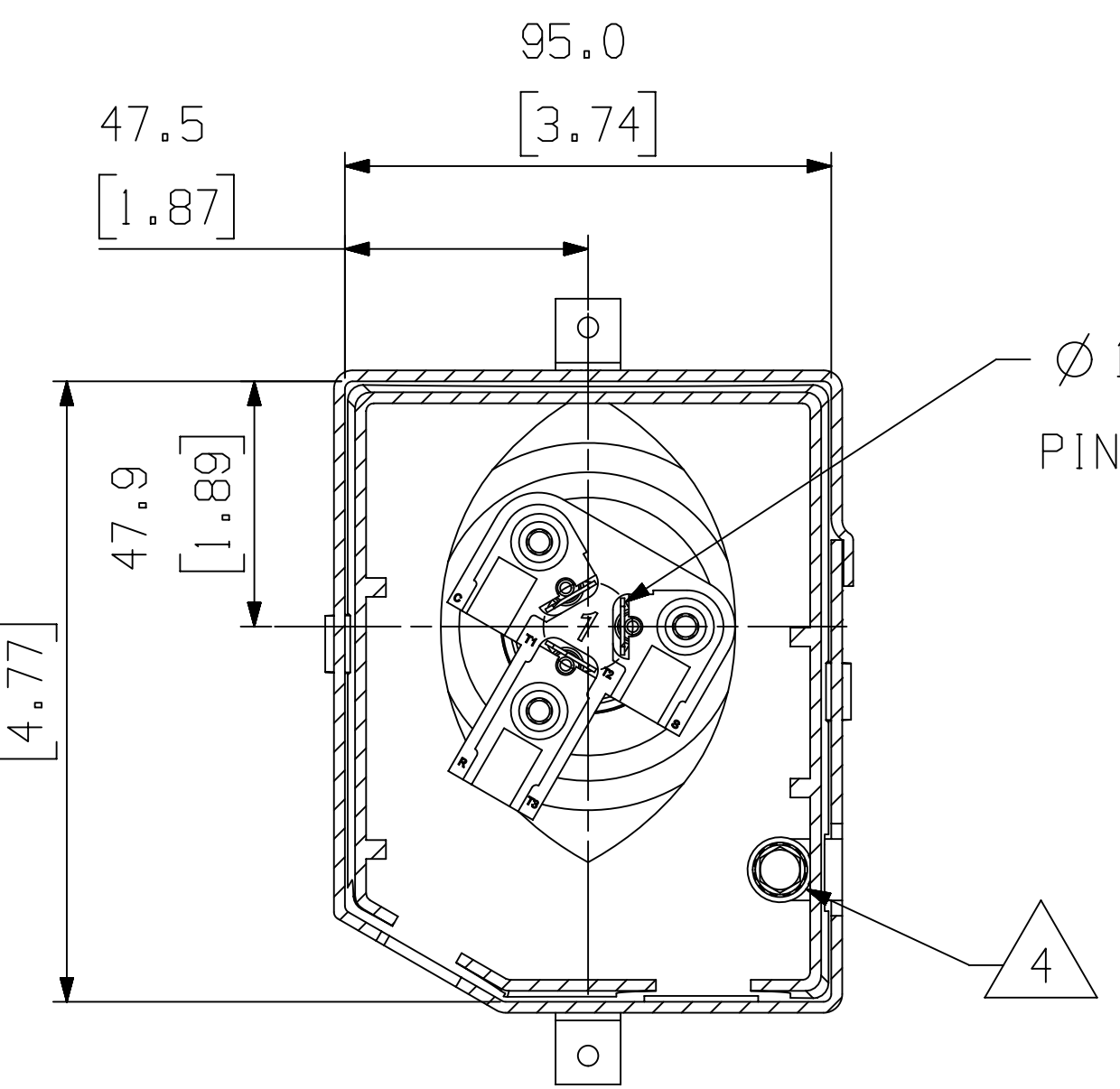







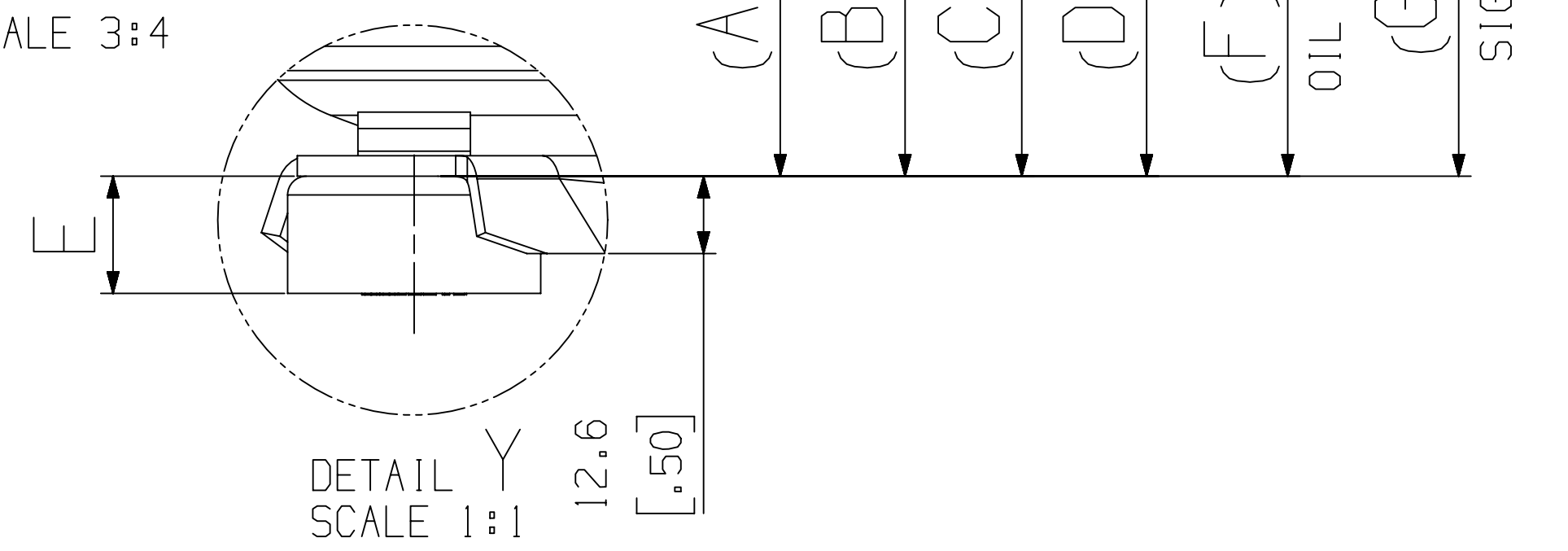
$\varnothing 9.60-9.78$  ID  $\blacklozenge$   
 [  $\varnothing 0.378-0.385$  ]  
 $\nabla 9.40$  [  $0.370$  ] MIN  
 M9 X 1.25-6G THRU  
 0.06 [  $0.002$  ] MIN THICK EXTERIOR AND 0.038 [  $0.0015$  ]  
 MIN THICK INTERIOR COPPER PLATED STEEL OIL LEVEL  
 FITTING. THREADS TO BE FREE OF COPPER PLATING.



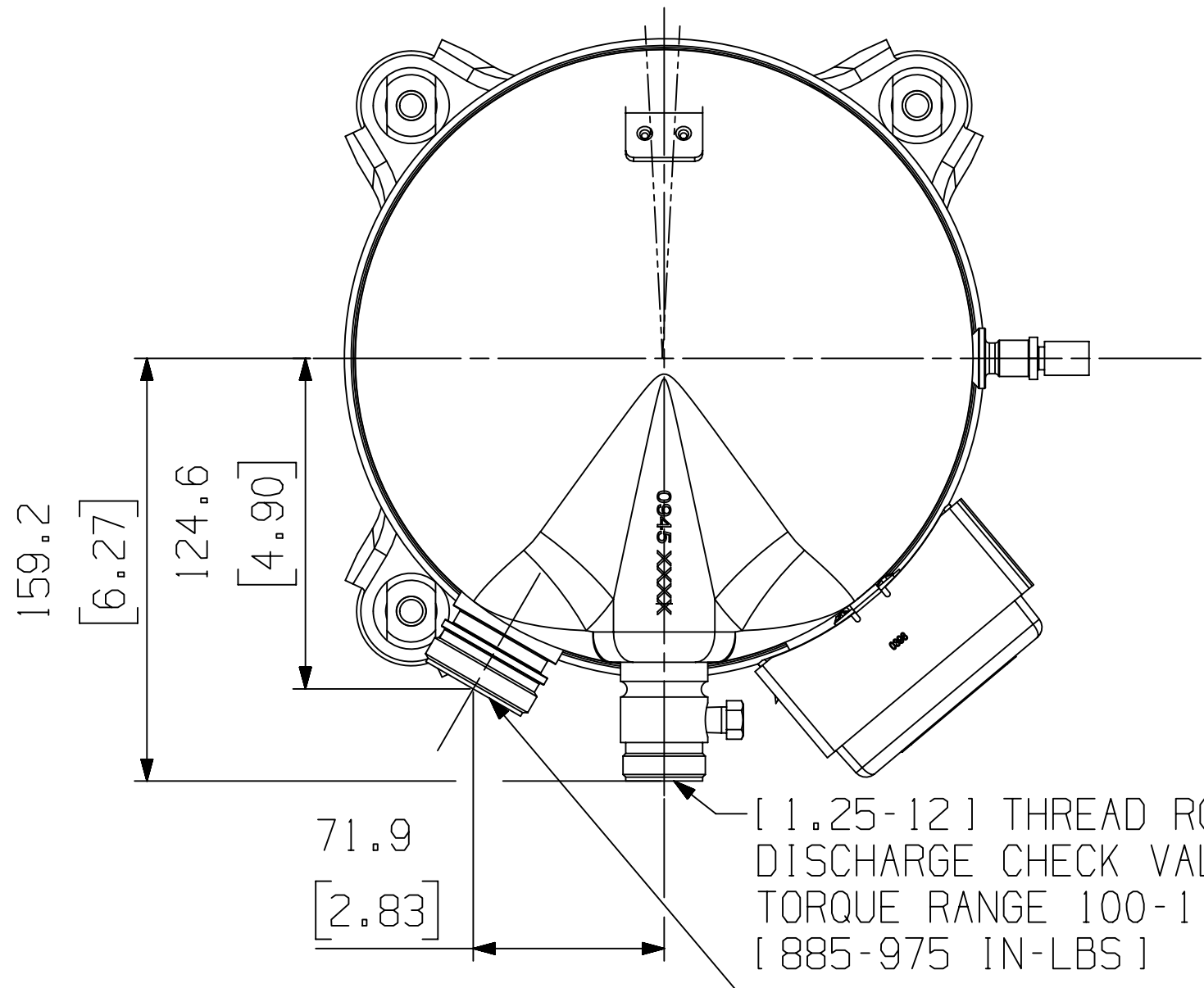
SIGHTGLASS LAYOUT  
T-BOX REMOVED



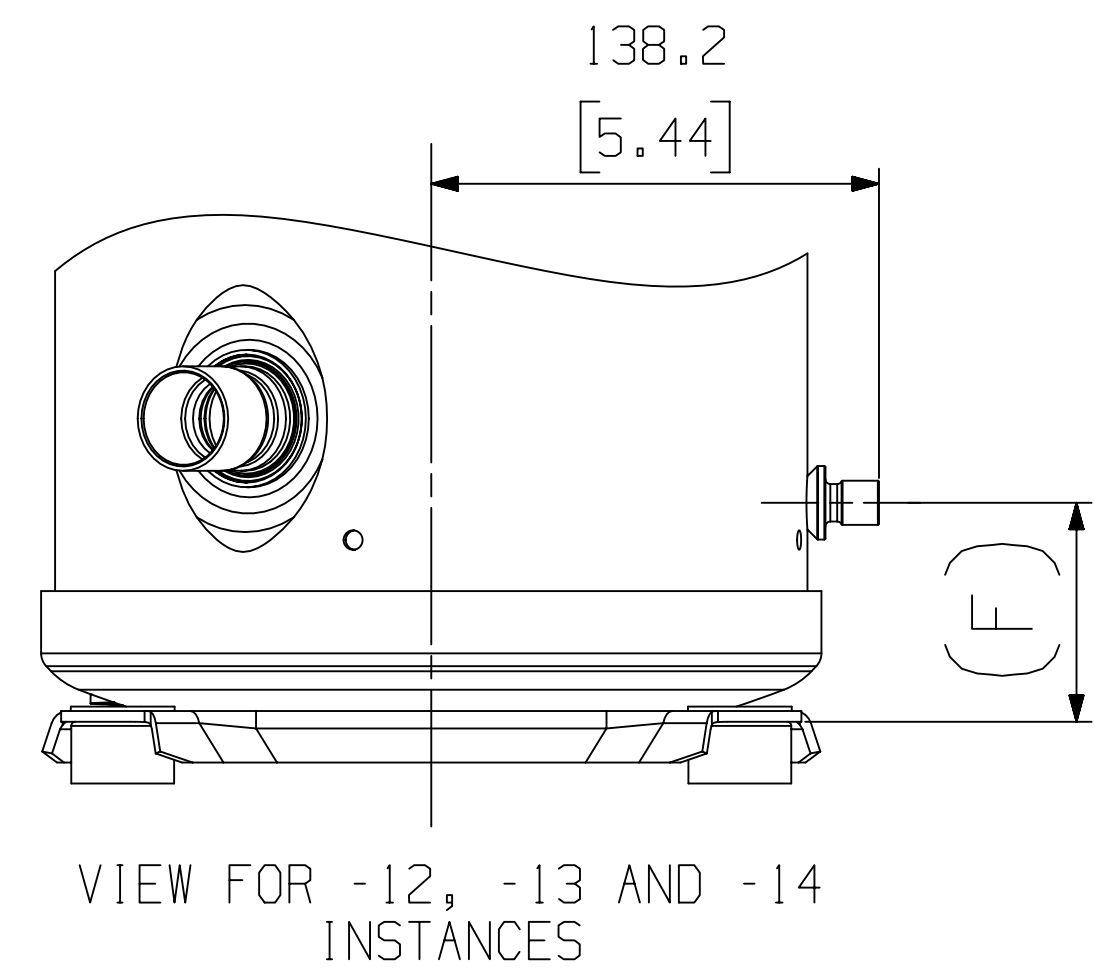
T-BOX LAYOUT STANDARD  
SECTION A-A  
SCALE 3:4



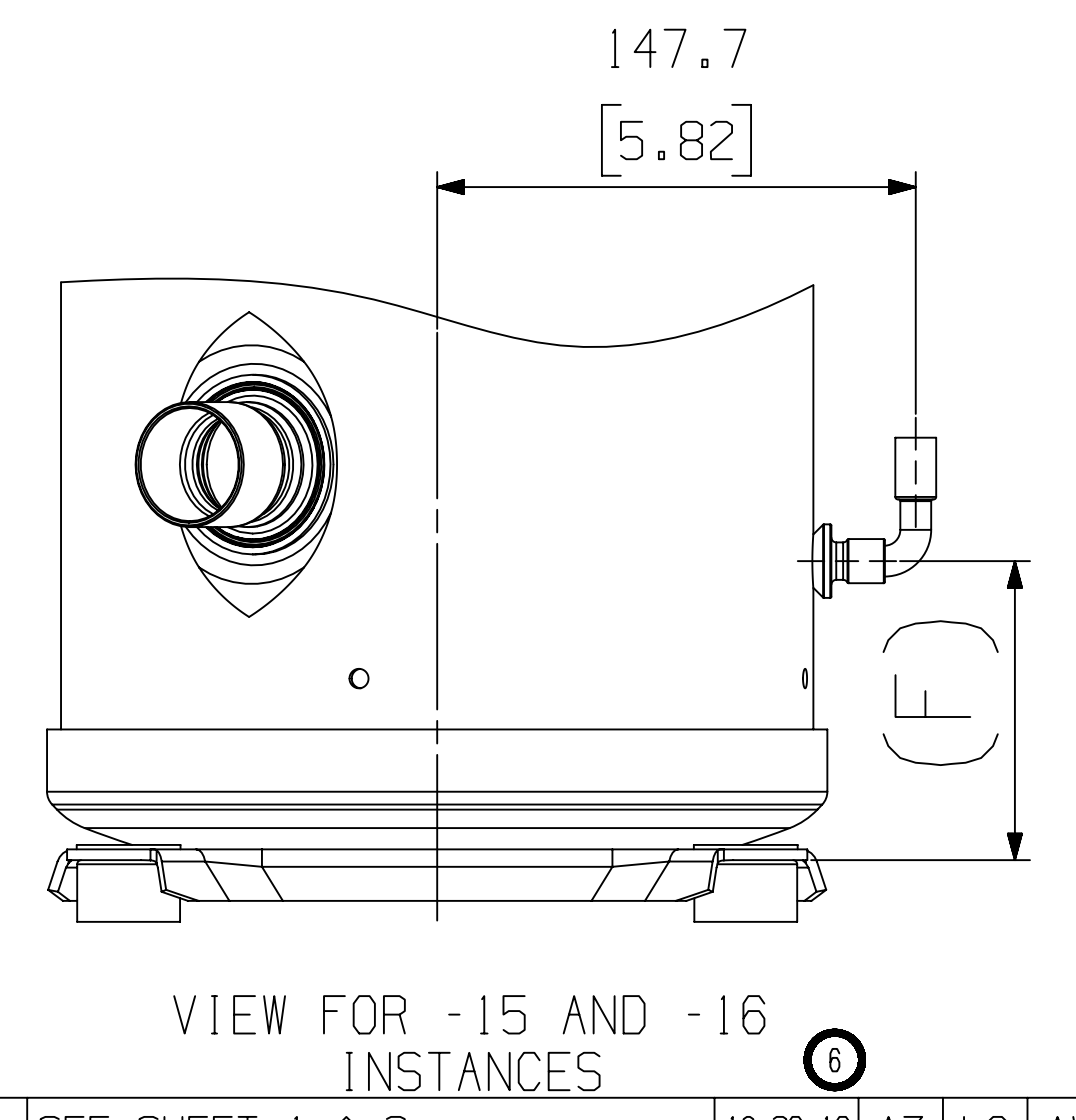
ROTALOCK OPTION



$\blacklozenge$  [  $1.75-12$  ] THREAD ROTALOCK SPUD  
 SUCTION FITTING  
 TORQUE RANGE 170-180 NEWTON-METERS  
 [ 1500-1590 IN-LBS ]



VIEW FOR -12, -13 AND -14  
INSTANCES



VIEW FOR -15 AND -16  
INSTANCES



INTERPRET PER ASME  
 Y14.5M-1994 AND  
 EMERSON CLIMATE  
 TECHNOLOGIES, INC.  
 DESIGN STANDARDS DS2002  
 DO NOT SCALE DRAWING  
 THIRD ANGLE  
 PROJECTION  
 CRITICAL PRODUCT  
 CHARACTERISTICS  
 UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE MILLIMETER OR (1 INCH)  
 TOLERANCES:  
 1-PLACE  $\pm$   
 2-PLACE  $\pm$   
 ANGULAR  $\pm$

ECN100001	8	SEE SHEET 1 & 2	10-26-16	AZ	LG	AW
ECN201120	7	CHANGED DIMENSION	08-15-16	JLS	LLB	KJR
ECN102816	6	REDRAWN & ADDED VIEW FOR -15 & -16	12-30-15	PLS	KRB	KJR
ECN008643	0	RELEASED	06-26-14	VPV	LLB	KJR
ENG NOTICE NO.	REV. NO.	REVISIONS	DATE	BY	CHKD	APPR

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	MATERIAL SPECIFICATION		DRAWN BY		SUPERSEDES DWG. NO. / REV. NO.
N/A		PLS		497-1675-00 / 005	
		DATE	SCALE	DATE FORMAT	
		12-30-15	3:7	MM-DD-YY	
TITLE			DRAWING NUMBER	SHEET 3 OF 3	
REF DWG-WELD COMP ASSM			497-1675-00	4	
					SIZE