# AC Condenser Clip

2541 W. Dunnellon Road Dunnellon, FL 34433

www.metalshop.org

Phone: 888-441-2492 Fax: 352-522-0007

# Notes

- I. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 7th EDITION FLORIDA BUILDING CODE, 2020, BUILDING VOLUME AND ASCE 7 2016 MINIMUM DESIGN LOADS ON BUILDINGS AND OTHER STRUCTURES.
- 2. IF, IN THE CONTRACTORS OPINION, ANY WORK THAT IS INDICATED IN THE DRAWINGS, OR SPECIFIED IN SUCH A MANNER WILL MAKE IT IMPOSSIBLE TO PRODUCE A FIRST CLASS PIECE OF WORK, OR SHOULD DISCREPANCIES APPEAR IN DIMENSIONS OR DETAILS THEY SHALL BE SUBMITTED TO OWNER BEFORE PROCEEDING WITH WORK.
- 3. ANY CHANGE FROM THE DRAWINGS AND / OR FIELD CHANGE CONDITIONS, MUST BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER SO THAT NECESSARY CHANGES CAN BE MADE AND INTENT OF THE DESIGN IS CARRIED OUT TO ITS FULLEST EXTENT.
- 4. ALL ANCHOR/CONNECTION BOLTS SHALL BE IN ACCORDANCE WITH ASTM A-307 OR A-325 F.
- MINIMUM DESIGN LOADS: DEAD LOADS AND LIVE LOADS IN ACCORDANCE WITH THE 2020 FLORIDA BUILDING CODES, CHAPTER 16.
- 6. SEE MANUFACTURE INSTALLATION FOR AC CONDENSER UNIT.
- DESIGN AND ENGINEERING IS FOR THE METAL SHOP ANCHOR CLIP ONLY. SEE MANUFACTURE INSTRUCTIONS AND CERTIFICATIONS FOR PROPER INSTALLATION OF AC UNIT.

METAL SHOP # 171 - 4" ANCHOR CLIP METAL SHOP # 173 - 6" ANCHOR CLIP METAL SHOP # 883 - 8" ANCHOR CLIP

## **Anchor Clip Notes:**

- 1. The anchor clip shall be 16 gauge, G-90 Hot Dipped galvanized steel, rated for coastal applications.
- 2. The anchor clips shall be installed with #14-3/4" self tapping sheet metal screws.
- 3. Anchor clip is intended for AC Condenser mounting installations only.
- 4. For ground installations, shall be installed on 2000 psi minimum strength concrete pad of concrete slabs ONLY. Other pads or installation configurations must be custom designed.
- 5. Minimum 4 clips required per ac condenser unit. Clip anchors shall be equally space around base of condenser unit. See detail on A-4 for number of #14-3/4" self tapping screws corresponding to clip size. Self tapping screws to have neoprene washers. Anchor clip shall be anchored to the concrete pad with 1/4" Tapcons 1 3/4" min. embedment.
- 6. Attach Tapcon anchor into concrete base per Tapcon installation instructions. Do not over tighten anchor.
- 7. All hardware must be fastened prior to connecting refrigerant lines and electrical power to the unit.
- 8. 196 MPH Ultimate wind speed rating is based on 3-second gust on a condenser unit 10.2 sq-ft surface area facing the wind. calculations are based on ASCE 7 and chapter 16 of 2020 FBC for exposure C, risk category II, unit weight 500 lbs.
- 167 MPH Ultimate wind speed for 10.2 sf-ft of surface area facing the wind for exposure D, risk category III and IV for a unit weight of 500 lbs.



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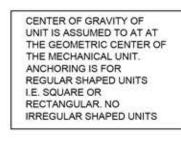
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CONCRETE BASE OR HOST STRUCTURE TO BE DESIGNED BY OTHERS, CONCRETE MUST BE 2000 PSI MINIMUM, SEE ENGINEERING FOR ROOF TOP MOUNTING APPLICATIONS OR WOOD SUPPORT MEMBERS

THIS ANCHORING DETAIL WILL WITHSTAND A MAXIMUM DESIGN WINDSPEED OF: 165 MPH Exp C, Cat II STRUCTURES. MAX WINDSPEED OF: 143 MPH for EXP D, Cat II STRUCTURES. SITE SPECIFIC ENGINEERING REQUIRED FOR CATEGORY III AND IV BUILDINGS.

EXTERIOR EQUIPMENT TIE DOWN

GENERAL NOTES: I. THIS PRODUCT HAS BEEN DESIGNED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2020 FLORIDA BUILDING CODE, 7th EDITION FOR USE WITH ASCE 7-16. THIS PRODUCT MAY BE USED WITHIN AND OUTSIDE THE HIGH VELOCITY HURRICANE ZONE.

CONDENSER UNIT

THE METAL SHOP CLIP MODEL 771, 773

ONE ANCHOR CLIP PER SIDE OF UNIT. (4)

TOTAL (16 GA.) SEE DETAIL ON A-4 FOR

FASTEN TO BASE OF CONDENSER. ATTACH

TO CONCRETE PAD/SLAB USING 1/4"x 1

CORRECT NUMBER OF #14-3/4" TO

OR 883 CLIP ANCHOR AND FASTENERS.

- 2. NO 1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS ANCHOR SYSTEM.
- 3. ALLOWABLE DESIGN SHOWN ON TABLES IS BASED ON ALLOWABLE SHEAR AND TENSION LOADS OF MECHANICAL FASTENERS.
- 4. MAXIMUM & MINIMUM DIMENSIONS AND WEIGHT UNITS SHALL CONFORM TO SPECIFICATIONS STATED ON THESE ENGINEERING SHEETS
- 5. ALL MECHANICAL SPECIFICATIONS, CLEAR SPACE, TONNAGE, ETC. SHALL BE AS PER THE MANUFACTURER RECOMMENDATIONS AND ARE THE EXPRESS RESPONSIBILITY OF THE MIN. UNIT WEIGHT: 130 lbs contractor.
  - 6. FASTENERS TO BE # 14x3/4" SELF TAPPING SHEET METAL SCREWS. UNLESS NOTED
  - 7. TAPCONS SHALL BE ITW BUILDEX OR ELCO BRAND, AND SHALL BE 1/4"x1 3/4" INSTALLED TO 2000 PSI MINIMUM COMPRESSIVE STRENGTH. SEE ANCHOR SCHEDULE FOR ANCHOR REQUIREMENTS.
  - 8. ALL STEEL CLIPS SHALL BE ASTM A283 STEEL WITH Fy = 33 KSI. ALL STEEL MEMBERS SHALL BE PROTECTED AGAINST CORROSION WITH G90-RATED GALVANIZED COATING, SUITABLE FOR ALL COASTAL INSTALLATIONS.
  - 9. INSTALL AN ELECTRICAL GROUND, WHEN REQUIRED. ALL ELECTRICAL CONNECTIONS INCLUDING GROUNDS TO BE DESIGNED & INSTALLED BY OTHERS.
  - IO. THE ADEQUACY OF ANY EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS SHALL BE VERIFIED AND IS NOT INCLUDED IN THIS CERTIFICATION. EXCEPT AS EXPRESSLY PROVIDED HEREIN, NO ADDITIONAL CERTIFICATIONS OR AFFIRMATIONS ARE INTENDED.
  - II. THE SYSTEM DETAILED HEREIN IS A GENERIC UNIT INSTALLATION. THIS INSTALLATION DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC INSTALLATION. FOR SITE CONDITIONS DIFFERENT FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE IN CONJUNCTION WITH THIS DOCUMENT.

SCALE:

ANCHOR CLIPS:

3/4" TAPCON.

STANDARD ANCHOR SCHEDULE

SUBSTRATE	ANCHOR				
CONCRETE: (4" THICK MIN, 3192KSI MIN.)	(1)-1/4" x1 3/4" ITW BUILDEX OR ELCO TAPCON, 1 3/4" FULL EMBED TO CONCRETE, 2-1/2" MIN. EDGE DISTANCE, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.				

MAXIMUM ALLOWABLE LATERAL WIND PRESSURE (ANCHOR TO CONCRETE PAD) ONE (1) CLIP AT EACH CORNER (TOTAL OF 4 CLIPS PER UNIT.)

MAXIMUM SURFACE AREA OF UNITS			(1) CLIP AT EACH CORNER			
	UNIT	UNIT	TOTAL OF 4 CLIPS			
LARGEST FACE	HEIGHT	WIDTH	1/4" TAPCON TO CONCRETE BASE			
6 FT2	24' MAX	12" MIN	43 PSF			
9 FT2	32" MAX	15' MIN	32 PSF			
4 FT2		24° MIN	9Ø PSF			
6 FT2			60 PSF			
9 FT2	48' MAX		40 PSF			
12 FT2	Special Market		30 PSF			
16 FT2	Ŕ.		V/////////////////////////////////////			
2Ø FT2	8	48' MIN	29 PSF			
25 FT2	60' MAX		V/////////////////////////////////////			
3Ø FT2	DE TIAL		VIIIIIIIIIIII			
36 FT2	11		<i>7777777777777777777777777777777777777</i>			

RECOMMENDED FASTENERS

1/4" x 1 3/4" TAPCON

MAXIMUM ALLOWABLE SHEAR LOAD FOR 1/4" DIA CONCRETE FASTENERS IN 2000 PSI MINIMUM STRENGTH CONCRETE IS: 325 LBS. PULL OUT (TENSION LOAD) STRENGTH OF TAPCON IS 505 LBS WITH 1 3/4" MIN. EMBEDMENT:

SINGLE SHEAR: 325 LBS TENSION: 505 LBS

TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (2)-#14x3/4" STS GRADE 5 SHEET METAL SCREWS. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:

ALUMINUM FRAME OR EXTERIOR HOUSING SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH Fty=30 KSI, 0.0625" MIN. THICKNESS. STEEL HOUSING UNITS SHALL BE 33KSI MIN . STEEL, GRADE 33, 22GA MIN. (t=0.0299").

MAXIMUM ALLOWABLE WIND PRESSURES MAY BE EQUIVALENT DUE TO THE LIMITING CAPACITY OF THE 1" CLIP.

A MAXIMUM ALLOWABLE VALUE OF 200 PSF HAS BEEN UTILIZED; FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.

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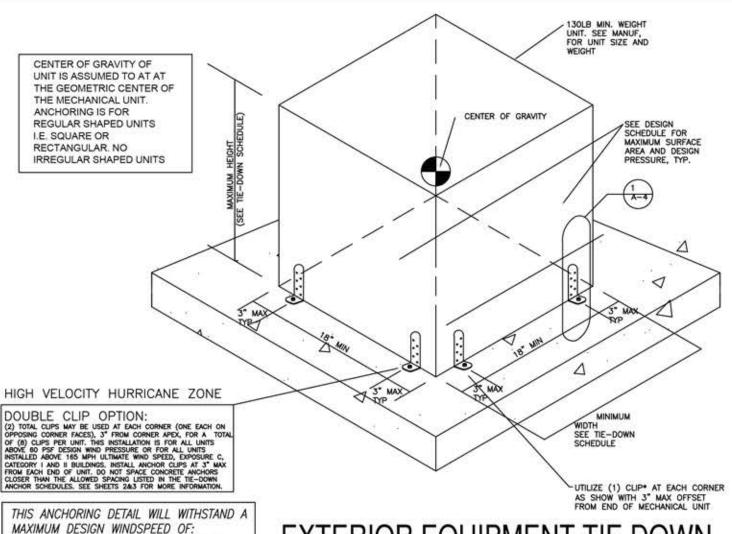
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# EXTERIOR EQUIPMENT TIE DOWN

SCALE: N.T.S.

## STANDARD ANCHOR SCHEDULE

192 MPH Exp C, Cat II STRUCTURES.

Cat II STRUCTURES. SITE SPECIFIC

AND IV BUILDINGS

Max WINDSPEED OF: 167 MPH for EXP D,

ENGINEERING REQUIRED FOR CATEGORY III

SUBSTRATE	ANCHOR			
CONCRETE: (4" THICK MIN, 3192KSI MIN.)	(1)-1/4" x1 3/4"ITW BUILDEX OR ELCO TAPCON, 1 3/4" FULL EMBED TO CONCRETE, 2-1/2" MIN. EDGE DISTANCE, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.			

WANTED OFFI			(2) CLIPS AT EACH SIDE		
MAXIMUM SURFACE	UNIT	UNIT	TOTAL OF 8 CLIPS		
AREA OF UNITS LARGEST FACE	HEIGHT	WIDTH	1/4" TAPCON TO CONCRETE BASE		
6 FT2	24' MAX	12" MIN	81 PSF		
9 FT2	32' MAX	IB' MIN	60 PSF		
4 FT2		17-CA 20074C	ITØ PSF		
6 FT2			113 PSF		
9 FT2	48' MAX	24" MIN	75 PSF		
12 FT2	- PORTON PROPERTY		56 PSF		
16 FT2			42 PSF		
2Ø FT2			52 PSF		
25 FT2	60' MAX	48' MIN	44 P9F		
3Ø FT2	DE MAX	46 I'IIN	37 PSF		
36 FT2			3Ø PSF		

- TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (2)-#14x3/4" STS GRADE 5 SHEET METAL SCREWS. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:
- A). ALUMINUM FRAME OR EXTERIOR HOUSING SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH Fty=30 KSI, 0.0625" MIN. THICKNESS.
- B). STEEL HOUSING UNITS SHALL BE 33KSI MIN . STEEL, GRADE 33, 22 GAGE MIN. (t=0.030").
- MAXIMUM ALLOWABLE WIND PRESSURES MAY BE EQUIVALENT DUE TO THE LIMITING CAPACITY OF THE 1" CLIP. A MAXIMUM ALLOWABLE VALUE OF 200 PSF HAS BEEN UTILIZED; FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.

## **GENERAL NOTES:**

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- 2. NO 1/3 % INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS ANCHOR SYSTEM.
- 3. ALLOWABLE DESIGN SHOWN ON TABLES IS BASED ON ALLOWABLE SHEAR AND TENSION LOADS OF MECHANICAL FASTENERS.
- 4. MAXIMUM & MINIMUM DIMENSIONS AND WEIGHT UNITS SHALL CONFORM TO SPECIFICATIONS STATED ON THESE ENGINEERING SHEETS
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- 6. FASTENERS TO BE # 14x3/4" SELF TAPPING SHEET METAL SCREWS. UNLESS NOTED OTHERWISE.
- 7. TAPCONS SHALL BE ITW BUILDEX OR ELCO BRAND, AND SHALL BE 1/4" WITH I 3/4" MIN. EMBEDMENT. INSTALLED TO 2000 PSI MINIMUM COMPRESSIVE STRENGTH. SEE ANCHOR SCHEDULE FOR ANCHOR REQUIREMENTS.
- 8. ALL STEEL CLIPS SHALL BE ASTM A283 STEEL WITH Fy = 33 KSI. ALL STEEL MEMBERS SHALL BE PROTECTED AGAINST CORROSION WITH G90-RATED GALVANIZED COATING, SUITABLE FOR ALL COASTAL INSTALLATIONS.
- 9. INSTALL AN ELECTRICAL GROUND, WHEN REQUIRED. ALL ELECTRICAL CONNECTIONS INCLUDING GROUNDS TO BE DESIGNED & INSTALLED BY OTHERS.
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### RECOMMENDED FASTENERS

1/4" x 1 3/4" TAPCON

MAXIMUM ALLOWABLE SHEAR LOAD FOR 1/4" DIA CONCRETE FASTENERS IN 2000 PSI MINIMUM STRENGTH CONCRETE IS: 325 LBS. PULL OUT (TENSION LOAD) STRENGTH OF TAPCON IS 505 LBS WITH 1 3/4" MIN. EMBEDMENT:

SINGLE SHEAR: 325 LBS TENSION: 505 LBS



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USE MIN. OF 2- #14x3/4" SCREWS FOR 4" CLIP TO CONDENSER USE MIN. OF 2- #14x3/4" SCREWS FOR 6" CLIP TO CONDENSER USE MIN. OF 3- #14x3/4" SCREWS FOR 8" CLIP TO CONDENSER

USE 1/4" x1 3/4" TAPCON TO CONCRETE PAD

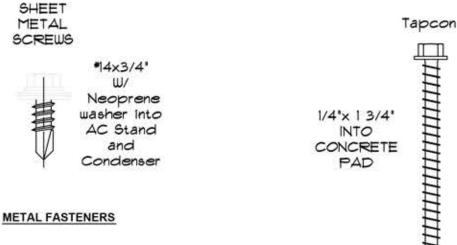
METAL SHOP # 771 - 4" ANCHOR CLIP

METAL SHOP # 773 - 6" ANCHOR CLIP

METAL SHOP # 883 - 8" ANCHOR CLIP

MAX UPLIFT: 505# WITH 2- #14x3/4" SCREWS PER CLIP

## A/C ANCHOR CLIP



RECOMMENDED FASTENERS 1/4" x 1 3/4" TAPCON

MAXIMUM ALLOWABLE SHEAR LOAD FOR 1/4" DIA CONCRETE FASTENERS IN 2000 PSI MINIMUM STRENGTH CONCRETE IS: 325 LBS. PULL OUT (TENSION LOAD) STRENGTH OF TAPCON IS 505 LBS WITH 1 3/4" MIN. EMBEDMENT:

SINGLE SHEAR: 325 LBS TENSION: 505 LBS

LOAD CAPACITIES FOR TAPCONS

	Anchor Size	Emd. Depth	2,000 psi Concrete	4,000 psi Concrete	6,000 psi Concrete	Concrete Block	Red Brick
Tension Load (lbs.) 1/4"	1/4"	l"  -1/4"	760 1,090	930 1,540	1,140	720 880	940 1,160
	./	1-1/2"	1,520	1,850	2,210	1,090	1,320
		1-3/4"	2,020	2,330	2,740	1,290	1,420
Shear							1
Load (lbs.)	TZME	1-1/4"	725 1,053	1,420	2,140	69 <i>0</i> 925	1,720
	1/4	1-1/2"	1,270	2,270	2,580	1,125	1,930
		1-3/4"	1,305	2,390	2,840	1,305	2,130

The values listed above are ultimate load capacities for TAPCONS which should be reduced by minimum safety factor of 4 or greater to determine the allowable working load. Refer to the section on product selection quidelines for details. The consistency of hollow block and brick varies greatly. The load capacities listed above for hollow block and brick should be used as quidelines only. Job site tests should be conducted to determine the actual load capacities in these materials.

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1. Alternative fasteners may be used as shown in the details. All fasteners must meet or exceed the safe working load values specified by the manufacturer, and shall be approved by the building official.