

Students please affix one of your self adhesive identification labels to this space. Do not obscure other parts of this page with the label. If you do not have a self adhesive identification label, please complete the following information. Write your name as it appears on your badge.

Your _____

Name: _____

Participation Number: _____

Two letter state abbreviation. →

State code (0301, 0302, to 0350) ↑

Team member number (01, 02, 03, or 04) ↑

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Students please do not write or mark within this box.

Judges, after this skill sheet has been scored and double checked, write the total score for this activity in the blank below.

Skill Activity Score: _____

Judges Initials: _____

2022 National Agriculture Technology & Mechanical Systems Career Development Event Electrical Systems Skill Activity

Situation: You have been given the task of determining the correct overcurrent protection for the installation a 230 V, single phase, 1 hp electric motor for a hammer mill. The service entrance panel and the electric motor are already mounted in place. The new electric motor needs to be wired for high voltage and clockwise rotation.

Directions: You will wire the electric motor according to Article 430. Use the NEC and Agriculture Wiring Handbook as a reference to answer the questions. You will be determining overcurrent protection size, wire type and size, selecting correct overcurrent device and correctly making electrical connections in the service entrance and at the motor for this problem.

Answer the following questions about the electric motor circuit using the references provided and the name plate rating of the electric motor. Use information determined from these questions and the references provided to determine the correct size overcurrent protection and the correct size branch circuit conductor that should be used for this circuit.

- According to the motor nameplate what is the amperage for this motor when wired for 230V?
 - 9.06
 - 5.01
 - 4.53
 - 230
- According to NEC Article 430.6, for the purpose of determining conductor size what is the ampacity of this motor when wired for 230V?
 - 16 A
 - 8.8 A
 - 10 A
 - 8 A
- According to NEC Article 430.22, What is the full load rating for this motor for a continues duty application?
 - 10 A
 - 11 A
 - 12.5 A
 - 20 A
- Select the proper table in Section 34 of the Ag. Wiring Handbook to determine the minimum size THHW insulated **copper** conductor up to 400 amps that should be run if the distance from the service entrance to the motor is 165' based on 2% **voltage drop, 230-240 V, Single Phase**?
 - 8 AWG
 - 10 AWG
 - 12 AWG
 - 14 AWG
- According to NEC Article 240 what size overcurrent protection is required for the branch circuit conductor size determined in question #4
 - 15 A
 - 20 A
 - 30 A
 - 40 A

Skill: Complete each task as described:

1. Select correct overcurrent protection for this circuit.
2. Select correct wire size and type for this circuit.
3. Wire motor for high voltage
4. Wire motor clockwise rotation.

Chapter Name: _____			Points Possible	Points Earned
1.		Circuit Installation and Wiring		
	a.	Correct size overcurrent protection.	2	
	b.	Correct connections made in SEP 1pt. for each loose or bare copper	2	
	c.	Correct connection made between L1 and Motor Terminals 1pt. for each loose or poorly crimped connector	2	
	d.	Correct connection made between L2 and Motor Terminals 1pt. for each loose or poorly crimped connector	2	
	e.	Correct connection made between Equipment Ground and Motor Terminals 1pt. for each loose or poorly crimped connector	2	
	f.	Motor wired for high voltage.	4	
	g.	Motor wired for clockwise rotation.	6	
2.		Answers to Questions - 2 pts. Each	10	
Total Points			30	

SINGLE-PHASE
INDUCTION

MOTOR

NEMATM
Premium

TYPE	BEGS3910A		CAT. NO.	SPHT0014	
OUTPUT	1	HP	0.75	KW	FRAME 56H POLE 4
Hz	60		C. C. W. ROT.		
VOLTS	115/208-230				
AMP'S	9.06/5.01-4.53				
R. P. M.	1740	TEFC			
EFF.	80.0	%	INS.	F	115 V 208-230 V
BEARINGS	6204ZZ		Exchange T5, T6 To Change Rotation		
NUMBER	6203ZZ				
RATING	Cont.(S1)	C. S.	300	MFD	165 VAC
WEIGHT	38.9	LBS	C. R.	60	MFD 250 VAC
DATE	2021	SER. NO.		TN213015009	

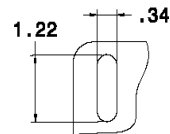
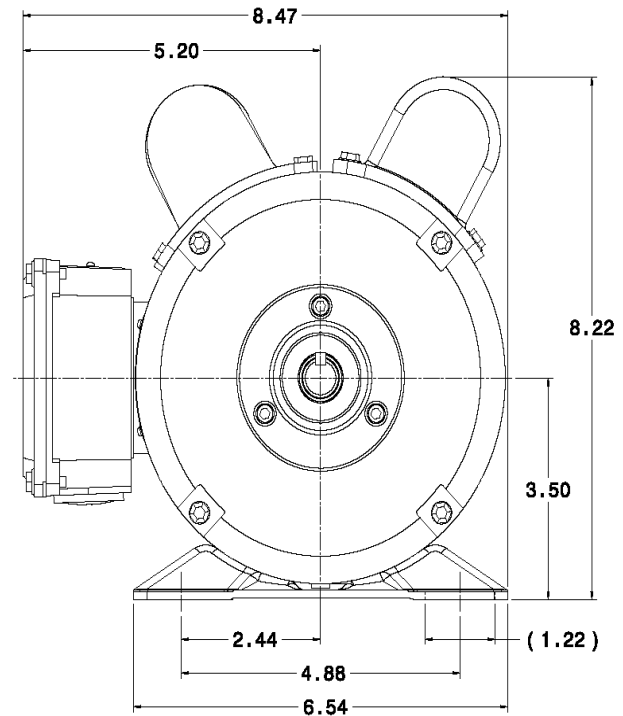
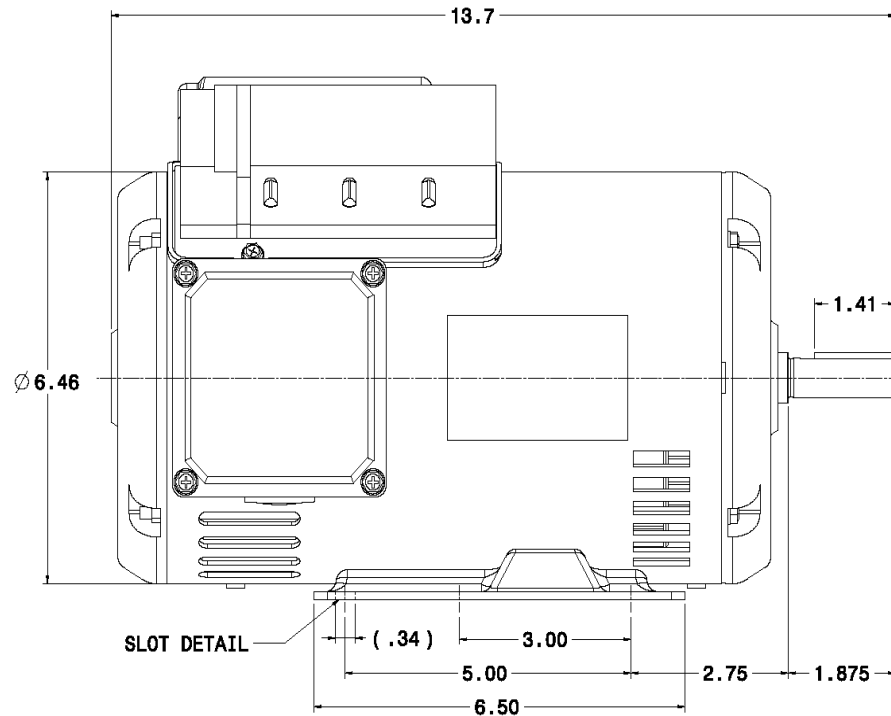
SP[®] US 171832

TECO[®] Westinghouse
MOTOR COMPANY
ROUND ROCK, TEXAS

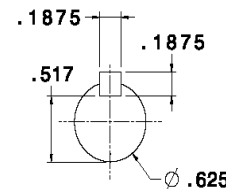
31045Z551MGWB

CATALOG #	TYPE	FRAME	OUTPUT		POLE	SYN. SPEED R.P.M.	VOLTAGE V.	Hz.	TIME RATING	INSULATION CLASS	SERVICE FACTOR	BEARINGS		WEIGHT LBS
			HP	kW								DE	NDE	
SPH0014	BSGS39	56H	1	.75	4	1800	115/208-230	60	CONT.	F	1.15	6204ZZ	6203ZZ	47

OPEN DRIP PROOF, SQUIRREL CAGE ROTOR



SLOT DETAIL
6X



SHAFT END
(ENLARGED VIEW)

NOTES:

1. DIMENSIONS IN INCH.
2. ENCLOSURE: IP22.
3. FOR BELT SERVICE OR DIRECT COUPLING SERVICE.
4. BI-DIRECTIONAL ROTATION.

REF: 39040001KF10A	REV. DATA				
	TECO  Westinghouse				
	REV NO			01	
	HVAC SINGLE PHASE OUTLINE DIMENSIONS		DWG NO.	SPH0014	
	DWN K. MILNER	091417	APPD T. FELPS	091417	
TECO-WESTINGHOUSE MOTOR COMPANY				ROUND ROCK, TEXAS	USA

APPR REV A