

Product Service Bulletin

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Ask the experts

Q: *How can I reverse the rotation of my three-phase motor?*

A: Interchanging any two of the three motor leads can reverse the electrical rotation of any three-phase motor. Note that although a motor may have more than three leads to accommodate dual voltages or starting schemes, it will always end up on three power leads to run.

Mechanical considerations must also be made such as directional fans and ratchets.



REVERSING THE DIRECTION OF ROTATION ON TEFC MOTORS

Emerson Motor Technologies integral horsepower totally enclosed, fan cooled (TEFC) motors are equipped with one of three types of external cooling fans:

1. Propeller type (most two pole and some slower motors)
2. Sirocco type (most four pole)
3. Radial type (some 2 and 4 pole, all 6 pole and slower)

The radial type is bi-directional. Reversing the direction of rotation simply requires exchanging any two of the three motor leads. The

airflow produced by the radial fan is the same quantity and flow in either direction of rotation.

The propeller and sirocco types are dependent on direction of rotation to produce airflow over the motor for cooling (unidirectional). These fans are used on larger and/or higher speed motors to reduce the air noise and provide more efficient cooling. To change the direction of rotation of a motor equipped with a propeller type requires a different fan having the blade angle reversed. These fans are available from Emerson Motor Company for retrofit.



Radial Fan
(Bi-Directional)

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on back >



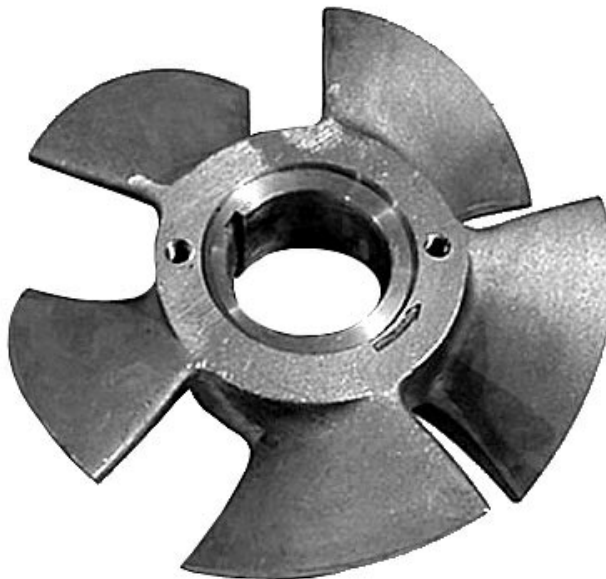
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The sirocco type can be reversed in the field by doing the following:

WARNING!: BE SURE THAT THE POWER IS OFF AND STEPS ARE TAKEN TO PREVENT ACCIDENTAL RE-STARTING OF THE MOTOR BEFORE ATTEMPTING ANY SERVICE TO THE MOTOR.

SUGGESTION: MATCHMARK ALL COMPONENTS TO MINIMIZE THE NEED FOR REBALANCING AFTER CONVERSION

1. Remove the fan cover guard to gain access to the fan.
2. Remove the fan from the shaft - this may require heating the fan hub to spring it loose from the shaft.
3. Remove the "baffle plate" from the fan casting and mount it on the opposite side. This will require drilling and tapping new mounting holes (use the "baffle plate" as a template).
4. Re-balance the re-worked fan assembly, if necessary.
5. Install the fan back onto the shaft with the "baffle plate" toward the motor.
6. Re-install the fan cover guard.
7. Remove any direction of rotation arrow(s), turn 180° and re-install.
8. Reverse the leads if required to obtain the desired direction of rotation.

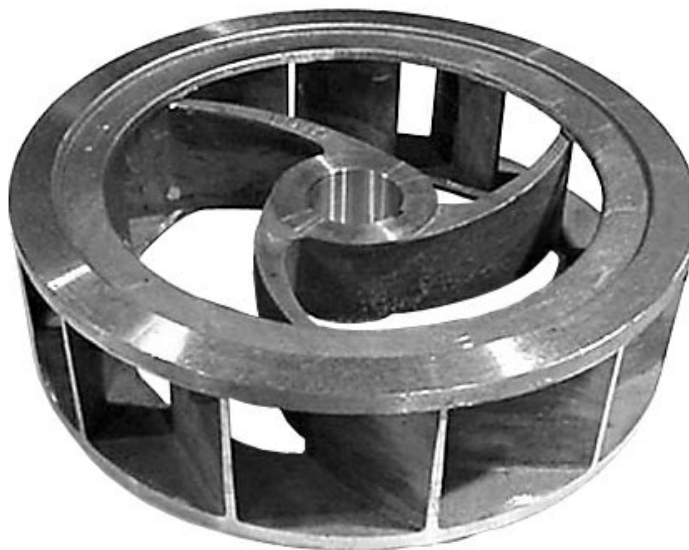


Propeller Fan (Uni-Directional)

NOTE: COOLING FAN ON THE DRIVE END (IF PROVIDED) CAN RUN IN THE REVERSE DIRECTION WITHOUT DAMAGING THE UNIT. DO NOT REMOVE OR ALTER THE DRIVE END COOLING FAN.

Article written by Jim Bryan

Reminder: We are still looking for all the bearings replaced during any warranty repair of US Motors. Please refer to the September 2003 *Product Service Bulletin* for details or call Cheri Newman at 314.595.8927 for instructions.



Sirocco Fan (Directional and Reversible)