

Nameplate Information

When you need information about the motor you are replacing, you'll always be able to find it printed on the motor nameplate. On A.O. Smith motors the nameplate is usually found on the side of the motor. Shown below are sample pool motor nameplates. As you read the nameplate, refer to the guide so that you can understand the meaning of each item that the manufacturer provides about its motor. Remember also that your dealer or distributor can help you choose the correct replacement motor.

Century Centurion
Pool and Spa Duty

CAT B638	PART B	-165118-04	HP 3/4	TYPE CX
VOLTS 208-230/115	AMPS SF 5.4-5.0/10.0	HZ 60		
RPM 3450	AMB. 50 °C SF 1.50	TIME CONT	CODE L	ENCL DP
FR L56J	FORM KJM	INSUL CLASS B	PH 1	SERIAL BN7-28
1081 POOL PUMP DUTY MOUNT HORIZ WITH VENT HOLES DOWN				

MADE IN USA

THERMALLY PROTECTED

LOW VOLTAGE
BROWN → 1
WHITE → 2

HIGH VOLTAGE
WHITE → 0
B → 1
L1 LINE
L2 LINE

178987-18
NON-REVERSIBLE

USE COPPER CONDUCTORS ONLY 174986-01

E44549 LR4642

MADE IN USA

WARNING: HAZARDOUS VOLTAGE CAN CAUSE SEVERE OR FATAL INJURY - MUST BE INSTALLED AND GROUNDED BY QUALIFIED PERSONNEL PER NATIONAL ELECTRICAL CODE AND LOCAL CODES - TERMINAL COVER MUST BE IN PLACE FOR SAFE OPERATION - DISCONNECT POWER BEFORE SERVICING UNIT - KEEP FINGERS AND FOREIGN OBJECTS AWAY FROM OPENINGS AND MOVING PARTS

1081/1795 Pump Duty

Century Pool/Jetted Tub Motor

CAT	PART B	-177894-20	FR W48Y	TYPE SP
HP 1.0	RPM 3450	HZ 60	PH 1	SF 1.00
VOLTS 115	AMPS 12.0	INSUL CLASS B	ENCL DP	CODE H
TIME CONT	AMB. 40 °C	FORM PHM	SERIAL BL10-11	
THERMALLY PROTECTED MA				

'PATENT PENDING'

MADE IN USA 178900H

ACCEPTABLE FOR FIELD WIRING

W/O AIR SWITCH
YEL/BLK → 1
RED → 4
BLUE → 5
YELLOW → 6
WHITE → 0

W/ AIR SWITCH
YEL/BLK → 1
RED → 4
BLUE → 5
YELLOW → 6
WHITE → 0

178984-01

LINE
ON/OFF AIR SWITCH
LINE
NEUTRAL

LR4642

E44549

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1081 DESIGN	ST 1072	
THERMALLY PROTECTED	SKCET53ABN	
MOD. C48K2N117A3	SER 8K00	
VOLTS 115/230	ENCL = DP	HP 3/4
ROT = CCWPE	PH 1	CODE L
RPM 3450	FR 56J	HZ 60
MAX LOAD	AMPS 14.6/7.3	SF 1.5
INSUL CLASS B	AMB 50 °C	TIME RATING CONT.
TYPE UAC	A.O. SMITH CORP. MEXICO	

AMB: The maximum ambient (surrounding) temperature in which a motor is designed to operate. It is shown in degrees Celsius rather than Fahrenheit.

Amps: Amps is the electrical current flowing through the conductors at rated load, rated voltage and rated frequency. Pool motors have service factor amps on the nameplate. This is amps at horsepower times service factor load and is the maximum acceptable current the motor should use.

Catalog Number: ("CAT"). This number indicates that the motor is a stock rating, readily available from standard inventory as a replacement motor.

Code: This is the NEMA code letter that specifies locked rotor kVA per HP (volts multiplied by locked rotor amps, divided by 1000 times rated HP). It is used to determine the correct size breaker needed in the electric box.

ENCL (Enclosure): Enclosure refers to the openings or lack of openings in the shell and end frames. Motors are either open or enclosed. There are different categories within each. Pool motors are usually open "dripproof".

FR (Frame): The Frame identifies the mounting and shaft configuration. It does not indicate the diameter of the shell.

Centurion and Centurion SE motors have a 6 1/2" diameter shell. Flex 48 and A.O. Smith two compartment motors have a 5 5/8" diameter shell. Either diameter can be 56C or 56J. That is because the shaft configuration and mounting holes are the same on both shell diameters. Square Flange motors, usually signified as 56Y or 48Y, mount the same regardless of the shell diameter. Square Flange motors are not recognized by NEMA, National Electrical Manufacturer's Association, so there are

no consistent frame size designations for them. However, Square Flange is an industry standard and all swim pool Square Flange motors mount the same. Note: A water systems manufacturer uses a square flange motor with a special shaft. Water system motors should never be used on swim pool applications.

HP (Horsepower): Conventional unit of measurement for power (One horsepower equals 746 watts output).

HZ: (Hertz): Measurement of frequency, equaling cycles per second of alternating current. The United States has 60 hertz current.

Insul Class (Insulation Class): This is the temperature rating of insulation used in the construction of the motor. Most pool and spa motors use class "B" or class "F" insulation.

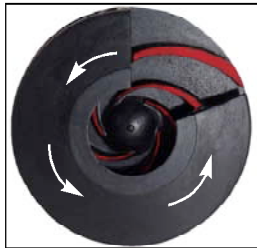
Part or Mod Number: This identifies the motor's specific design by part number. All motors have a model number. Only catalog motors have a catalog number.

PH (Phase): Denotes whether the motor operates on single-phase AC current or three phase AC current.

Rotation (Rot): Rotation is the direction the shaft turns. Almost all swim pool pump motors turn counterclockwise when looking at the motor from the end where the pump is located. This can be referred to as CCWPE.

RPM (Revolutions per minute): RPM is how many times the shaft makes one complete revolution in one minute at rated horsepower, voltage and frequency.

Serial: The serial code indicates the plant of manufacture and the date of manufacture. Each manufacturer is different. A.O. Smith has an explanation of the date code inside the front cover of the motor catalogs.



Impeller Rotation

SF (Service Factor): Service factor is a multiplier that when multiplied by the horsepower of the motor indicates the total permissible horsepower loading that may be carried when the motor is operating at rated voltage and frequency.

TIP: *The most important thing to remember when replacing a motor is that the replacement motor's horsepower times its service factor must be equal to or greater than the original motor's horsepower times its service factor.*

Time: Time indicates the duty cycle of the motor. Pool and spa motors are rated for continuous duty.

Type: This is a code for the electrical design of the motor. For example, A. O. Smith uses "CX" to identify its PSC switchless design. Other codes are "CS" for capacitor start; "SP" for split phase and "UAK" for capacitor start/capacitor run. Be sure to check with your dealer or distributor, because each manufacturer's type codes are different.

Volts: Voltage is the required electrical potential applied to the motor. It is the force that moves the current in an electrical conductor. Single phase Pool and Spa motors will be 115, 230 or dual voltage, 115/230 volt. Dual voltage motors are usually connected for 230 volt at the factory because if 115 volts are applied incorrectly in the field the motor will just hum or run slowly, get hot and trip on the overload. This does not harm the motor. If the motor was connected for 115 volt at the factory and 230 volts were mistakenly applied the motor will burn out immediately.

Motors are designed to run at plus or minus 10% of the nameplated voltage. A motor nameplated 230 volts will run from 207 to 253 volts. However, at 207 volts the motor amps will be slightly higher and the Rpm's will be slightly lower.

Some motors are rated 208-230 volts. These motors will operate in a range from 208 volts minus 10% to 230 volts plus 10% or 187 volts to 253 volts.

TIP: *Occasionally 200 or 208 volt motors are used. If a motor that has been designed for 200 volts or 208 volts is not readily available you can use a 230 volt motor with the next higher horsepower. For instance, a 1Hp 230 volt motor can replace a 3/4 HP 200 volt motor.*

TIP: *There are no energy savings when connecting the motor to 230 volts versus 115 volts or vice versa. The advantage to the higher voltage is you can use smaller wire to connect the motor to the service and it reduces light flicker or dimming when the motor starts.*

Warning Labels: Make sure you read and understand all the warning information on the motor. Always TURN THE POWER OFF before working on a pool or spa motor.

Wiring Diagram: On or near the nameplate is a schematic of how to connect the motor to the power source, change the voltage (if applicable), change the rotation (if applicable) or connect for different speeds (if applicable). When installing a replacement motor make sure the motor is connected for the same voltage as the power source.