TurfBreeze®

2026
Product Manual

SubAir®

SubAir Systems, LLC
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Graniteville, SC 29829
866-641-6663
www.turfbreeze.com
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Thank you.

We appreciate your choosing TurfBreeze®, the pioneer and leader in surface aeration technology. Your TurfBreeze product was built to the highest standards in the industry, and has been meticulously engineered to provide reliable, trouble free service. However, as with any power equipment product, customer safety and satisfaction largely depend upon understanding the product's intended use and operation. Negligence or being unfamiliar with the equipment, or how to use it properly, can result in personal injury or damage to the equipment, in addition to a misleading impression of quality or performance. We urge you to read this manual before installing or operating your new equipment, and always follow the operating instructions, and safety precautions herein.

Please consider this owner's manual a permanent part of your TurfBreeze product, and always keep it available for reference.

TurfBreeze products are always backed by the TurfBreeze customer support team which is here to offer you fast, courteous service. For more information visit our website at www.TurfBreeze.com , or call 1-866-641-6663. If you would prefer to write to us, direct your letter to:

SubAir Systems, LLC
Customer Service
1164 Industrial Avenue
Graniteville, SC, 29829 USA.

Notice

This document is intended to aid in the proper installation and use of TurfBreeze fans. It is intended to provide general guidance based on our experience, and should not replace any industry standards or other pertinent regulations.

Precautions

Federal regulations covering safety for construction are published in the Safety and Health Regulations for Construction under the Department of Labor, Occupational Safety and Health Administration (OSHA). All electrical installations must be made by licensed electricians and must conform to all applicable federal and local electrical codes.

Warranty

SubAir Systems LLC warranties are contingent upon proper design and installation of not only the materials and equipment provided by SubAir, but also the connecting electrical systems that become part of the complete system. See the warranty section of the operating manual for full details.

SubAir is not responsible for injury or damage resulting from improper installation, any noncompliance with the guidelines in this document, or from any use outside of the application for which it was sold.

State of California

Proposition 65

⚠ **WARNING**

- ***This product contains or emits chemicals or substances that have been determined by the state of California to cause cancer or birth defects or other reproductive harm.***

NOTICE: TurfBreeze TB-59-G model fans for sales in the state of California meet or exceed CARB requirements.

CONTENTS

Receiving, Handling, and Storage

Receiving

Immediately after accepting delivery, note any damage or shortage on the Bill of Lading, and file any claims for damage or loss in transit.

TurfBreeze fans are carefully inspected before leaving the factory, but all nuts, bolts, and fasteners should be checked prior to installation to ensure that nothing has become loose, or been tampered with during shipping.

Handling

It is recommended that equipment featuring fork truck or similar equipment be used to unload the pallet as it was shipped from TurfBreeze. If fork truck or similar equipment is not available then remove the peripheral components (fan pole, control package, etc.) from the pallet, and then unload the fan by itself using the lifting lug on the top of the housing.

IMPORTANT: Note that this lifting point is only designed to support the combined weight of the fan and oscillating assembly. The fan pole, shipping pallet, or any other items that may be contributing additional weight should be disconnected and or removed before lifting by the housing's lifting lug.

Use of a TurfBreeze fan trailer is the safest and most likely the easiest way to transport fans longer distances. However, if any other type of equipment is going to be used be sure to add additional support straps to provide lateral and rotational stability. This will help reduce the risk of damage due to spinning, swinging, or other instability while underway. Care must be taken to NEVER DROP THE FAN. This will almost always cause the housing to become out of round, which will negatively affect the performance in addition to potentially causing interference damage between the housing and the blades. If a fan is accidentally dropped always be sure to check the impeller (fan blade) tip clearance prior to operating the fan.

Make absolutely certain that there is no contact between the fan housing and fan blade anywhere in the rotation.

Catastrophic failure will likely occur if the blade makes contact with the housing at any time during operation.

Storage

If the fans are to be stored for an extended period, such as over the winter, it is recommended that they be cleaned and coated with a rust inhibiting aerosol lubricant such as WD-40 prior to storing. The fans should be stored in a dry area shielded from the weather. If a protected storage area is not available TurfBreeze fan covers, custom tailored for each model fan, are available. The fan blade should be rotated at least once a month to keep bearing grease from settling. As the grease settles it allows corrosion to form on any uncoated surfaces inside the bearing. If power is not available in the storage location to rotate the fans, then rotating the blades by hand for 20 seconds will suffice.

For more information call (866) 641-6663, or visit us on the web at www.turfbreeze.com.

General Service and Maintenance

Lubrication

All TurfBreeze motor bearings are lubricated during assembly, and unless they are stored for an extended time prior to operation, do not require any lubrication prior to initial use. Refer to the guidelines below for re-lubrication specifications.

Lubrication Intervals

• Seasonal Use*, All Motors and Shaft Bearings

  - Re-lubricate annually just prior to operation

• Continuous Use, 1800 RPM Motor and Shaft Bearings

  - Re-lubricate every 6,000 Hrs.

• Continuous Use, 1200 RPM Motors

  - Re-lubricate every 9,000 Hrs.

* Both used and new motors left idle for 6 months or more should be lubricated before use.

Recommended Lubricants

• Exxon Mobil Polyrex EM

• Shell Dolium R

• Chevron SR1 2

Amount to add (all motors) - 0.16 fluid ounces

TIP - Measure the fluid ounces of grease discharged per stroke from your grease gun, and then determine exactly how many strokes are required to get 0.16 fluid ounces. For example, if you measure 0.0624 fl.-oz. out of one full stroke then it will require (0.16/0.0624) = 2.6 strokes.

Pillow Block Bearings

All belt drive TurfBreeze fan models utilize high quality, sealed pillow block bearings that require no further lubrication for the life of the fan.

Oscillating Assemblies

The linkage components should be inspected for looseness and corrosion monthly during operation. If evidence of corrosion is detected then a topical coating of a corrosion inhibiting spray is recommended. Sprays or chemicals that dry to a film or waxy finish are preferred as they will collect less airborne dust and debris.

The main oscillating hub should be greased annually by removing the center cap, and simply topping off the inner bearing compartment with common wheel bearing grease. Note that it is not recommended that grease be injected under pressure, or through a grease fitting.

General Wiring and Controls

Wire terminals, circuit components, and wire insulation should be inspected initially prior to startup, and then annually thereafter. During subsequent inspections also check for any signs of melting, arcing, smoke, and wire or component discoloration due to heat in addition to connection fastener tensions. These are often signs of a degrading contact point and are always precursors to component failure.

Installation & Startup

Installation

1. A valve box as shown below is recommended, but not required. Keep in mind that it is suggested that ground and fan pole be oriented such that the control package and wiring are facing away from the green. This is to provide a cleaner appearance from the area of play. Once the ground pole has been placed in the concrete and angled and leveled properly with a bubble level, allow the concrete to cure for at least two weeks before continuing on to step two.

Ground pole concrete must cure for a minimum of two weeks prior to installing the fan pole and fan.

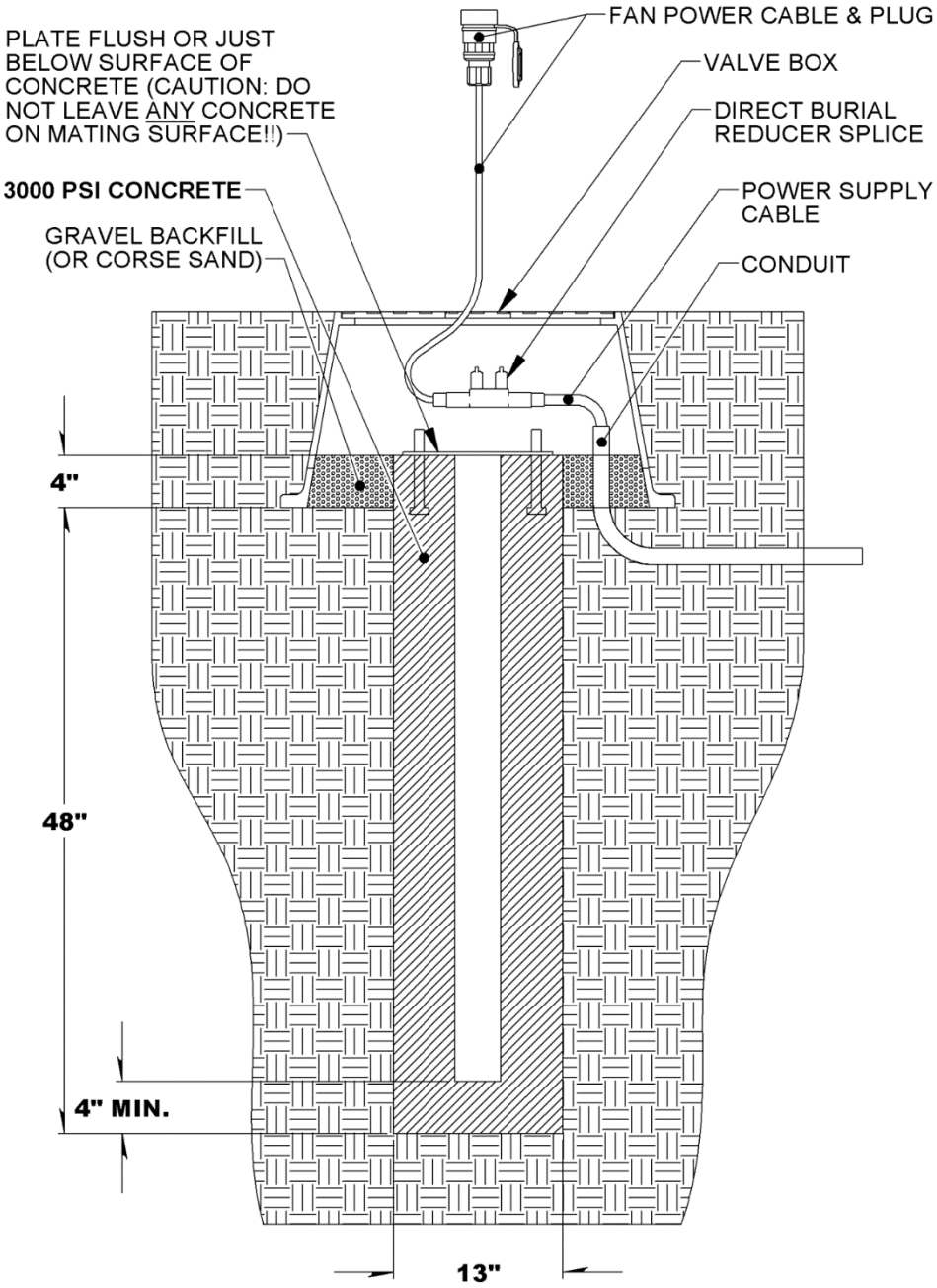
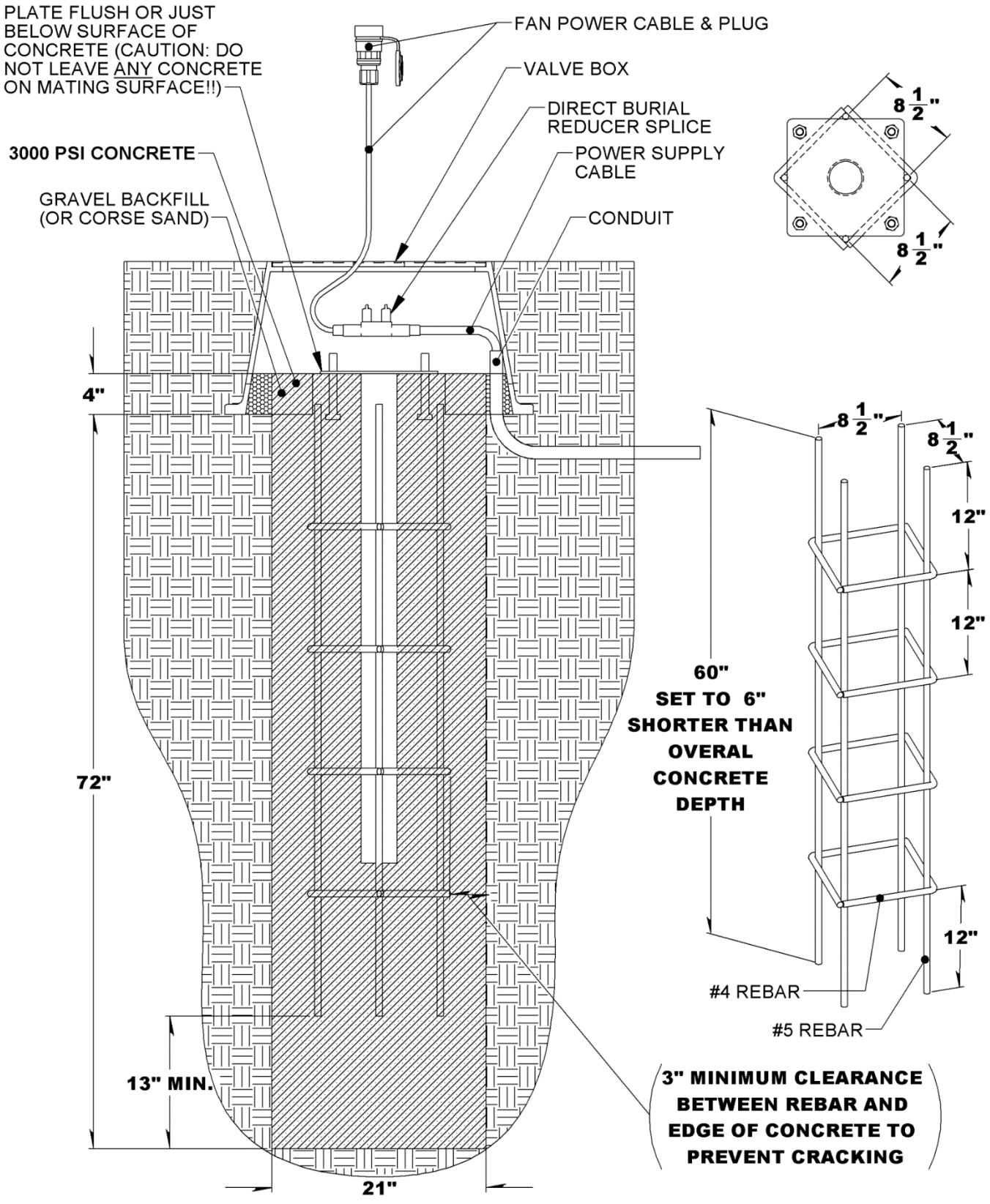
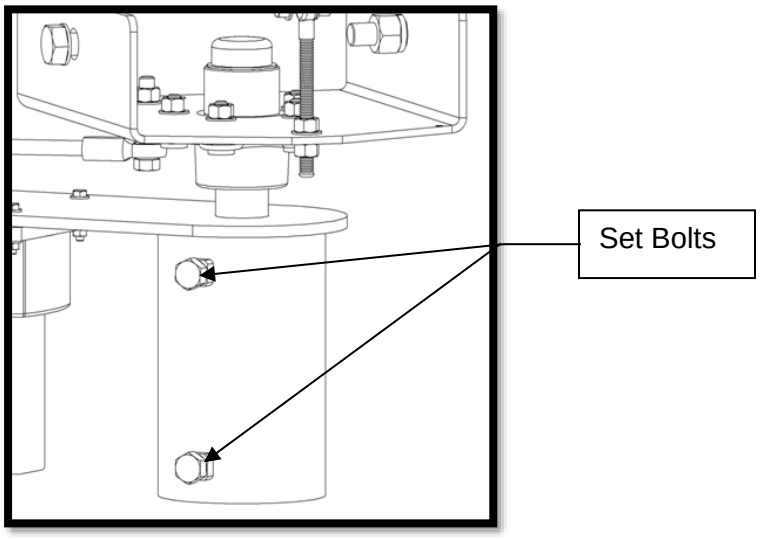


Figure 1: Standard ground pole installation detail for fan poles less than 7 feet tall

RECOMMENDED REINFORCED GROUND POLE INSTALLATION FOR FAN POLES ABOVE 7'.



2. After the ground pole installation has been allowed to cure two weeks Install the fan pole such that the control package and wiring are facing away from the green.
3. Place the fan and oscillating assembly on top of the fan pole with the set bolts facing away from the green. Starting at the top, lightly tighten the (2) set bolts to square the oscillating assembly on the fan. Once each of the set bolts are snug, finish tightening each bolt such that the fan doesn't spin when given a moderate push on side of the inlet bell. Be careful not to over tighten the bolts as they may damage or weaken the fan pole.

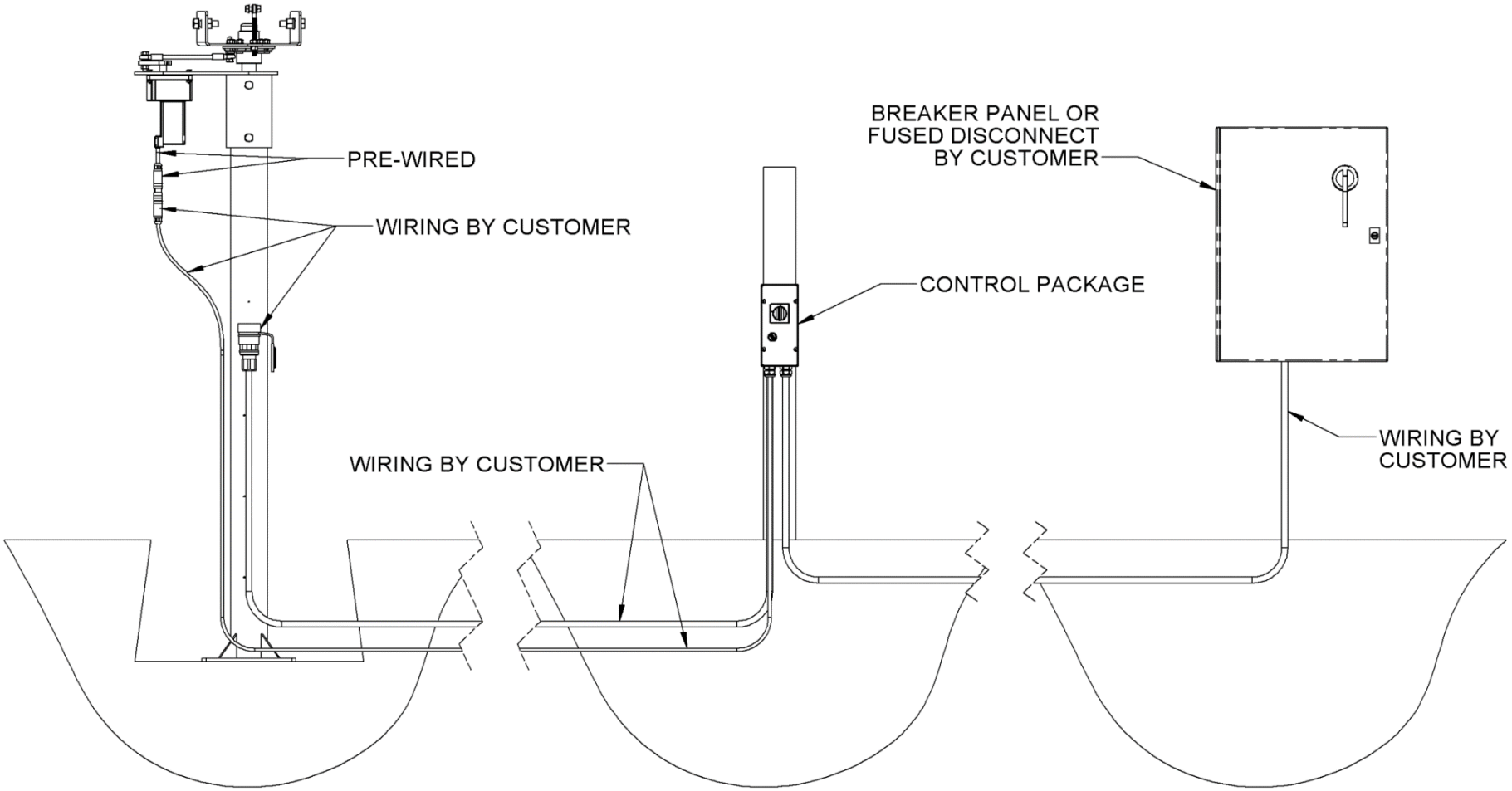


Step 4 below should be completed either prior to connecting to the power supply, or with the power sufficiently locked out at the power source, and should be performed by a qualified electrician.

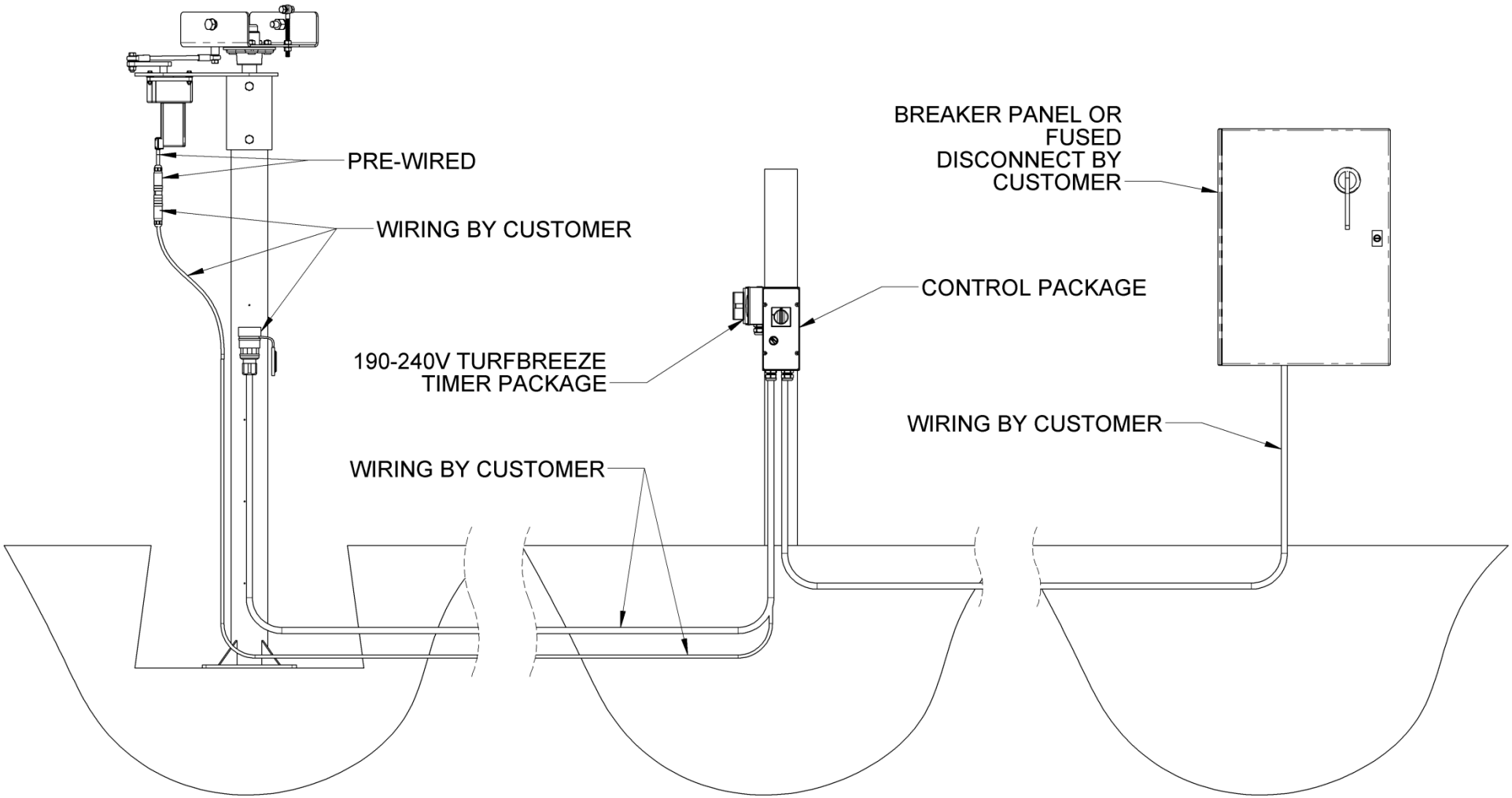
4. Disassemble the provided female power plug, route the power supply cable through the back shell of the plug, and terminate the individual stripped ends of the wires. Be sure to us dielectric grease on all plug sealing surfaces as well as the plug face itself. This will prevent moisture from reaching the energized components inside the plug

Control Package Installation Options

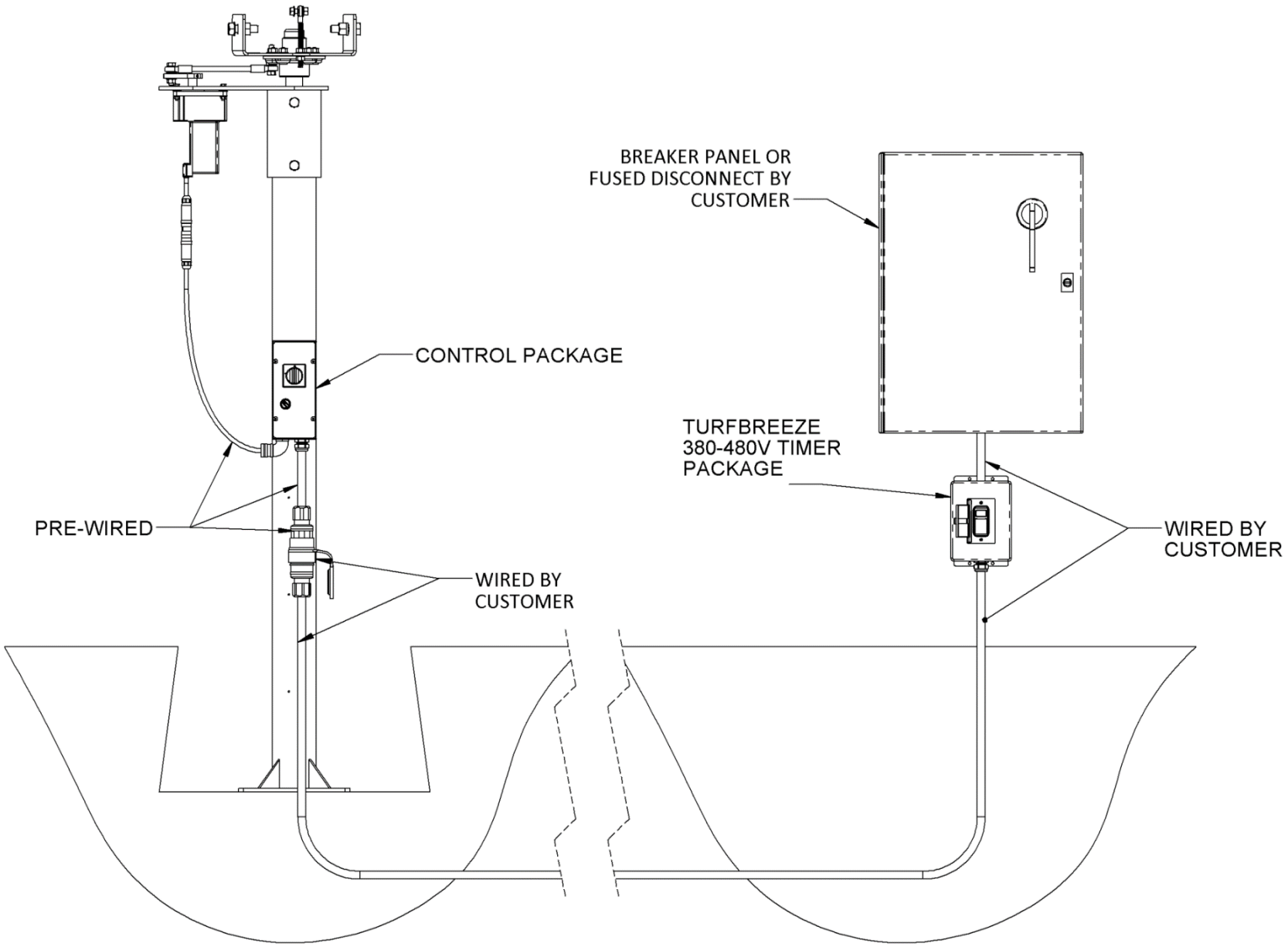
190-480V STANDARD REMOTE MOUNT CONTROLS:



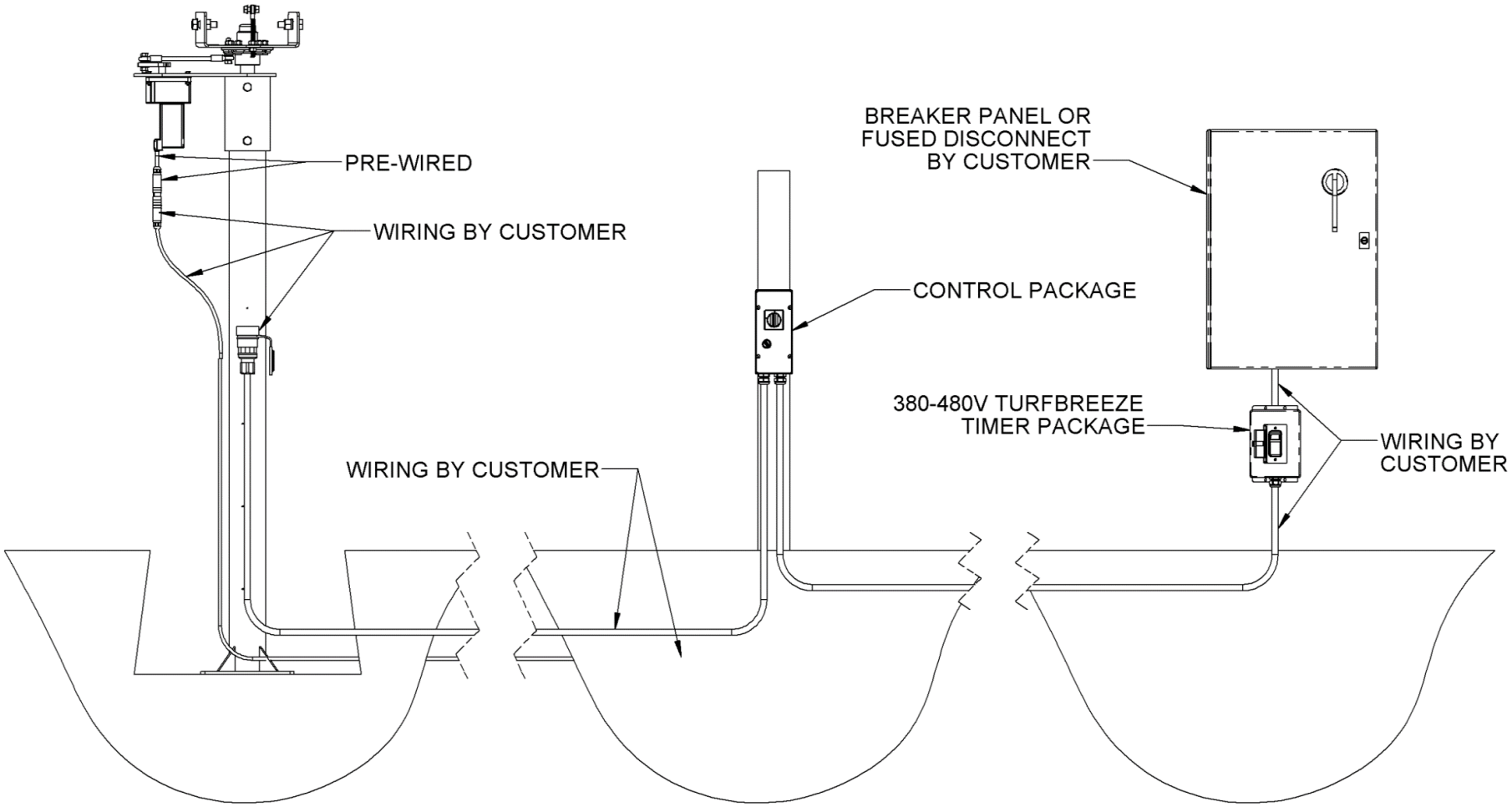
190-240V REMOTE MOUNT CONTROLS WITH TIMER OPTION INSTALLATION EXAMPLE:



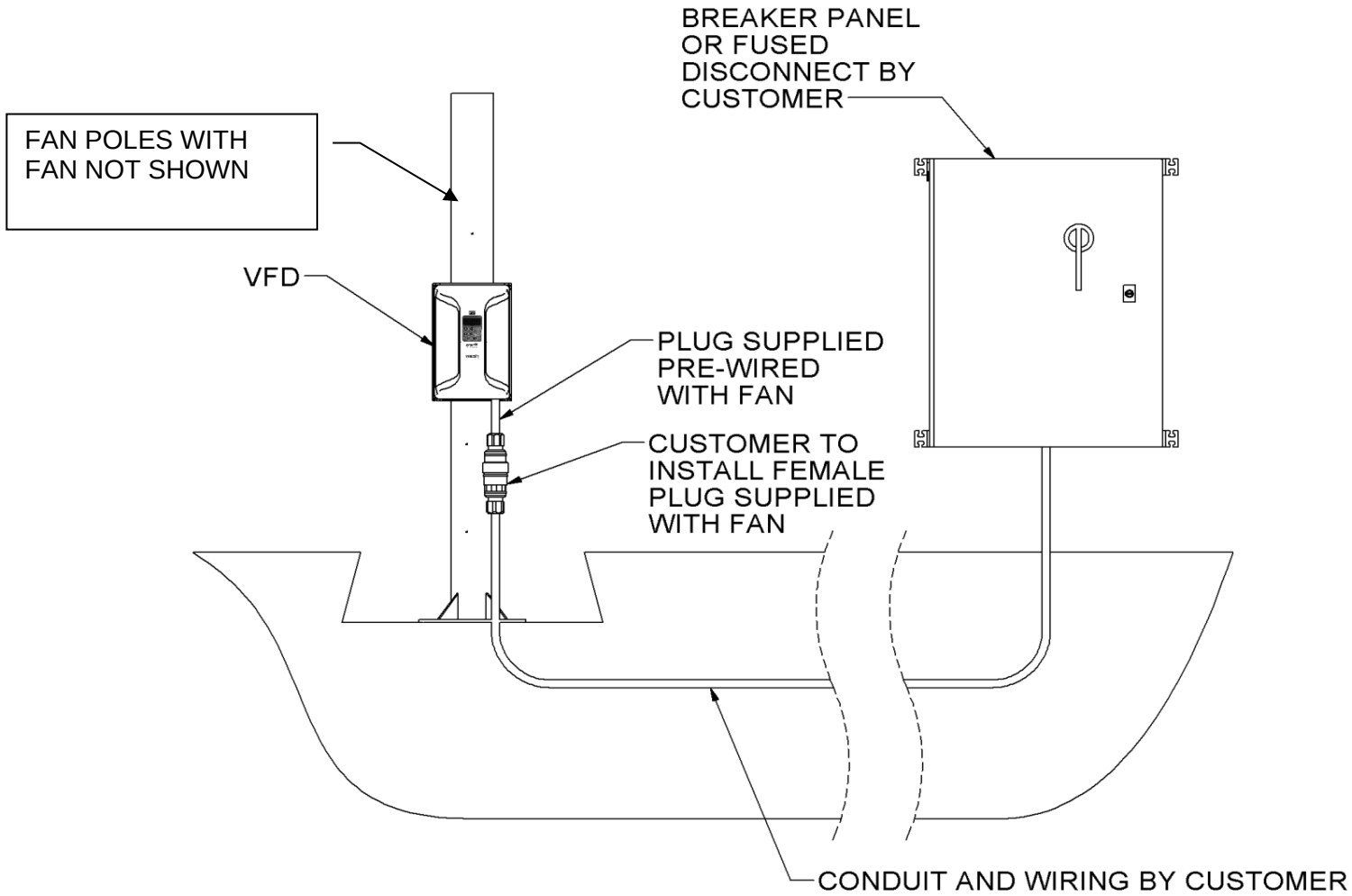
380-480V TIMER PACKAGE INSTALLATION EXAMPLE



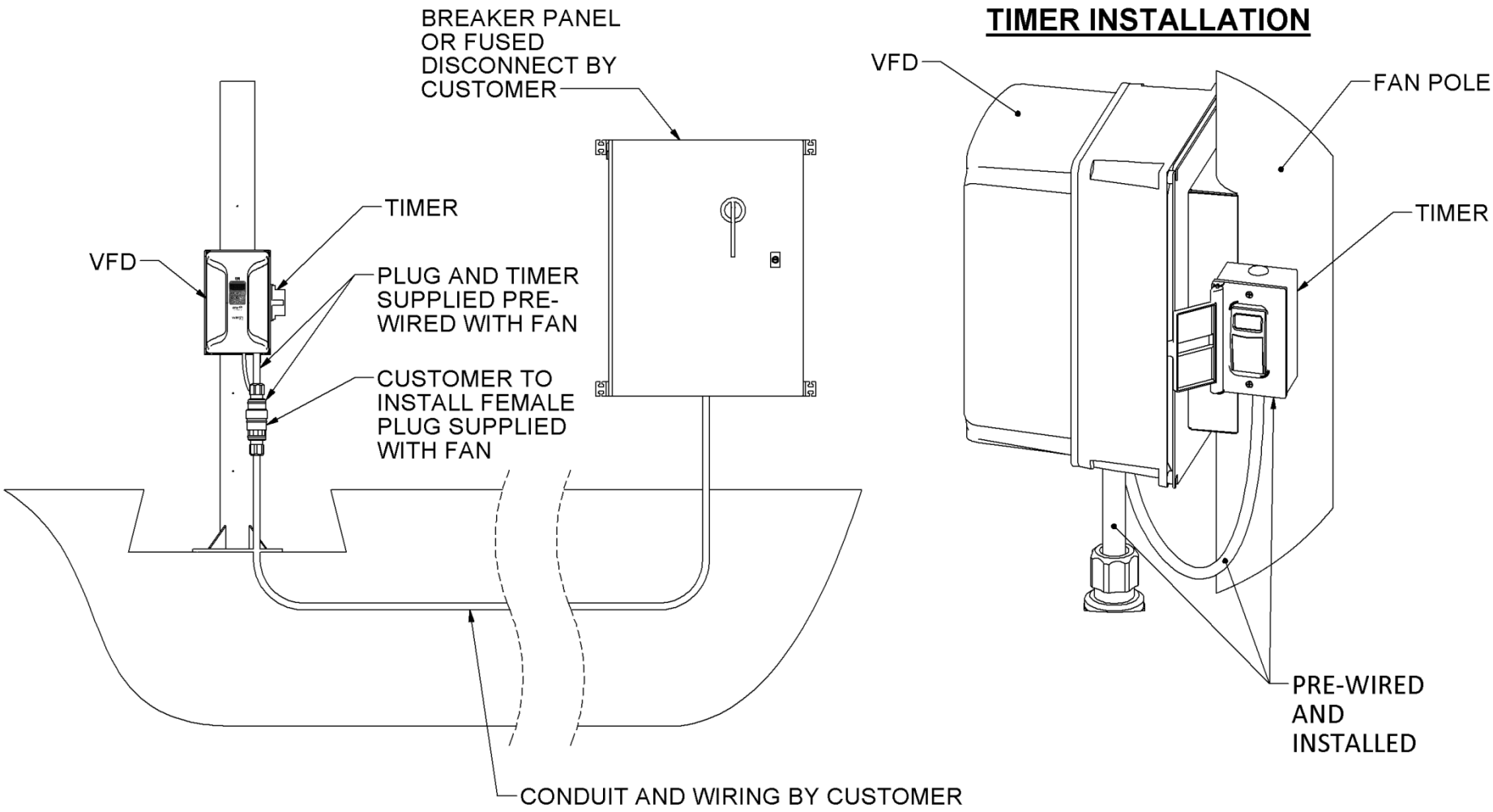
380-480V REMOTE MOUNT CONTROLS WITH TIMER OPTION INSTALLATION EXAMPLE:



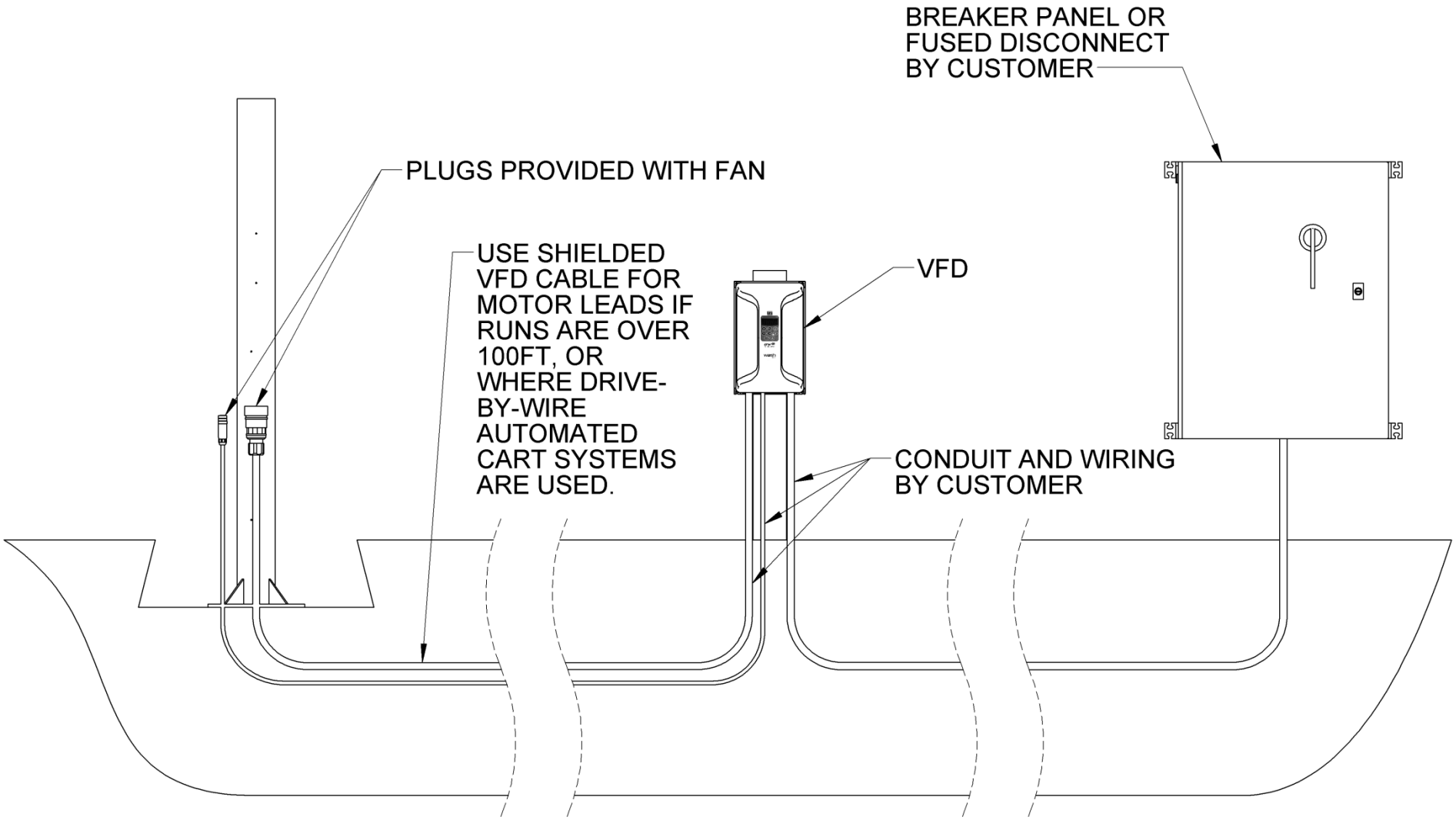
TYPICAL VFD CONTROL INSTALLATION



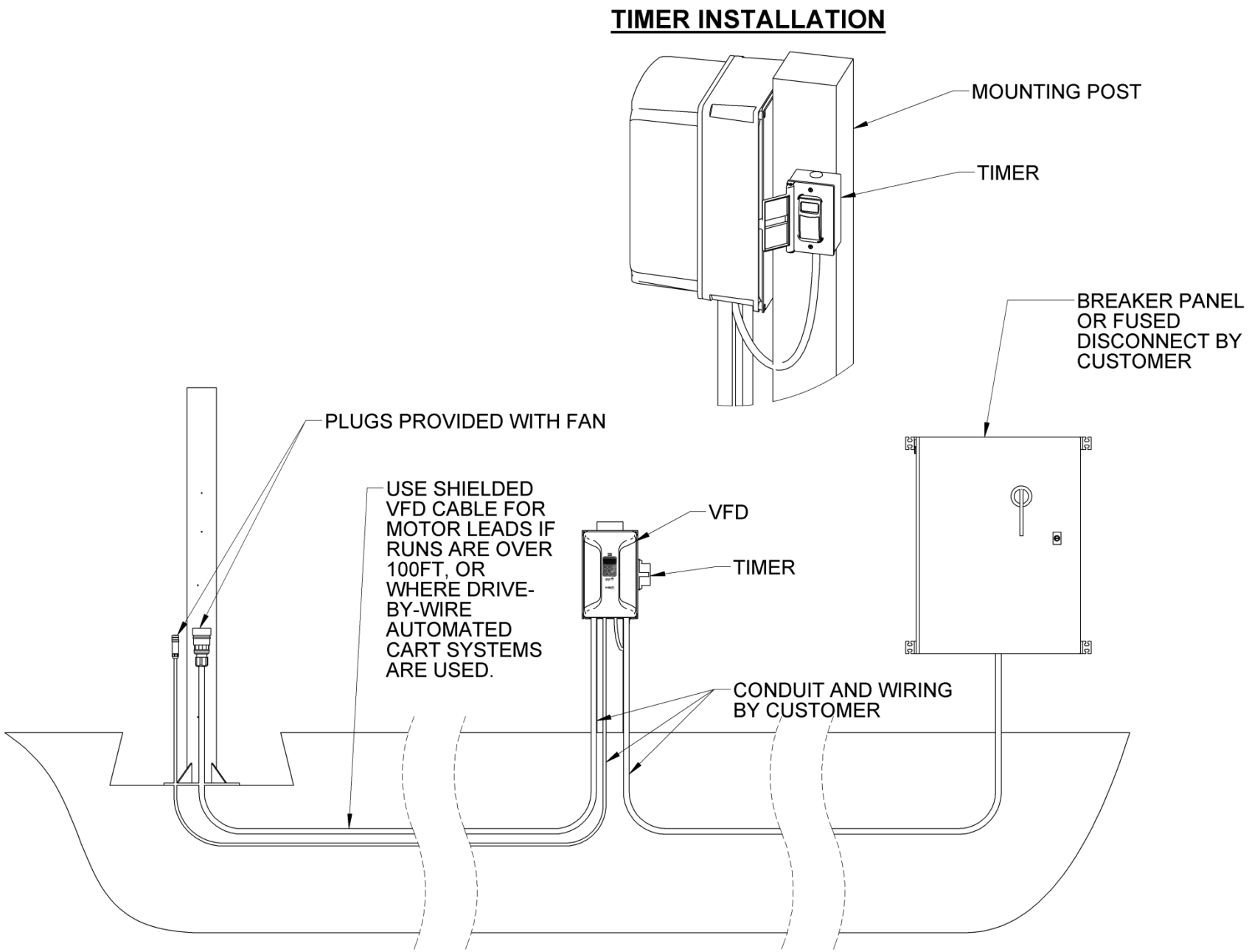
TYPICAL VFD CONTROL WITH TIMER OPTION INSTALLATION



REMOTE VFD CONTROL INSTALLATION



REMOTE VFD CONTROL WITH TIMER OPTION INSTALLATION



Start Up

1. Double check for proper wire sizing and over-current protection rating (see electrical data sections in this manual)
2. Visually inspect the fan blade tip clearance, and internal housing area for any foreign objects.

All electrical work and measurements should be performed by a qualified electrician.

3. Initially bump the fan to check rotation by quickly switching power on and then off.
    a. If the rotation is incorrect remove power and swap the motor leads in terminals T1, and T2 in the control package.

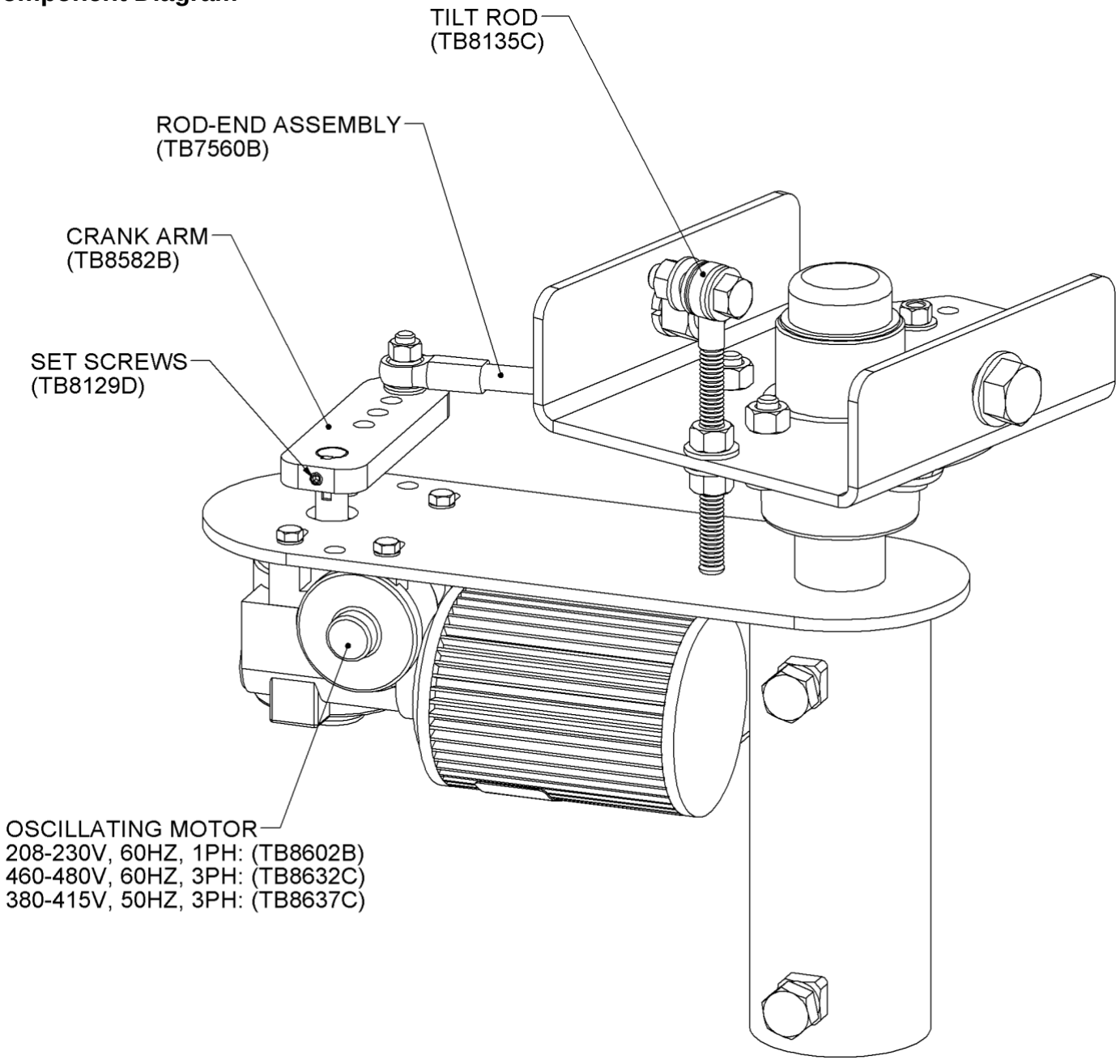
During steady state operation, the supply voltage and current should be within +/- 10% of nameplate rating on motor. If the operating voltage is outside of this 10% range immediately contact TurfBreeze for further instruction before continuing use. Failure to cease operation may result in irreparable damage to the motor or electrical components, and will void the product warranty.

4. Visually inspect the oscillating system through a minimum of (2) two cycles to ensure that it is operating correctly without interference to any of the linkage components.
5. Adjust the rod end assembly position in the crank arm to fine tune green coverage. If more coverage is required, move the connection outward away from the gear motor's shaft. If coverage is still insufficient, move the rod end connection at the U-Bracket to the next hole closer to the center of the fan. Loosen the (2) set bolts and rotate entire assembly for overall coverage adjustment to the left or right. Re-tighten bolts per the instructions given in step 3 of the Installation section.

Oscillating Assembly

TB-38/TB-47 Oscillating Assembly

Component Diagram



TB-38/TB-47 (Small) Oscillator Coverage Angles

Table 1: TB-38/TB-47 Oscillator Coverage

Crank Arm Position	U-Bracket Position	Oscillation Angle
1	1	38.4°
1	2	46.4°
2	1	55.8°
2	2	68.2°
3	1	74.6°
3	2	93.0°
4	1	95.6°
4	2	125.3°

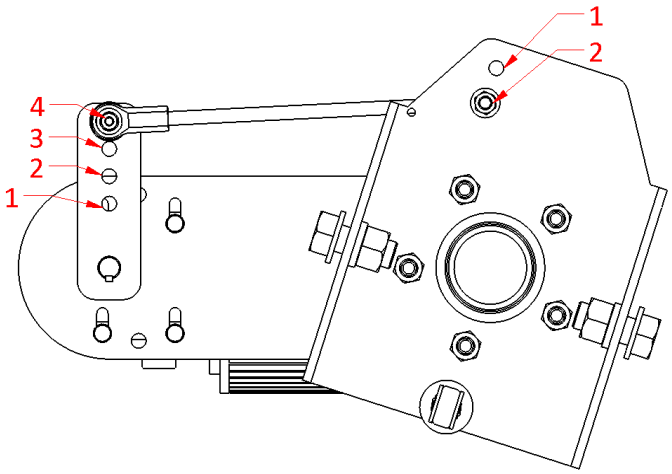


Figure 2: Oscillator connection points diagram

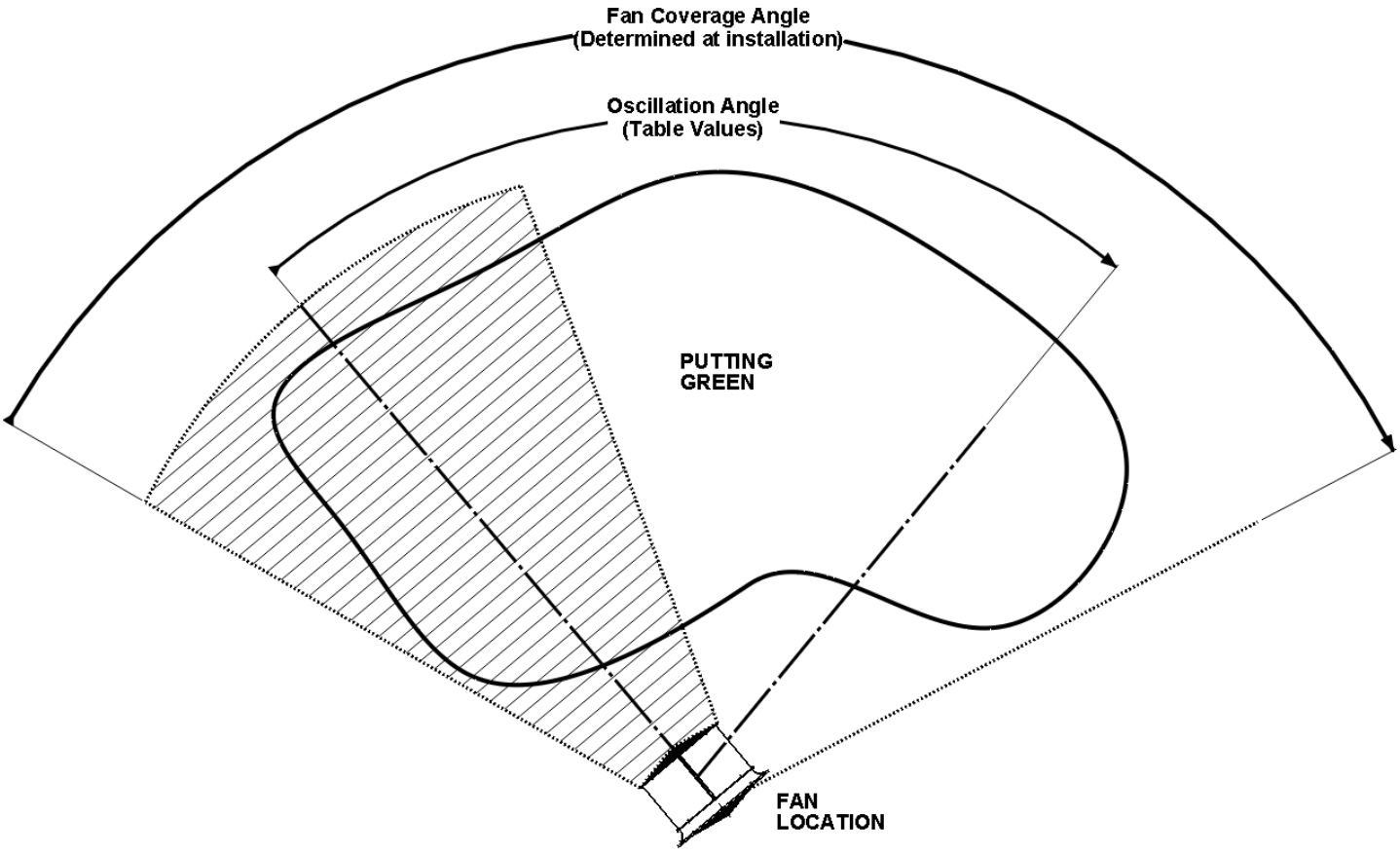
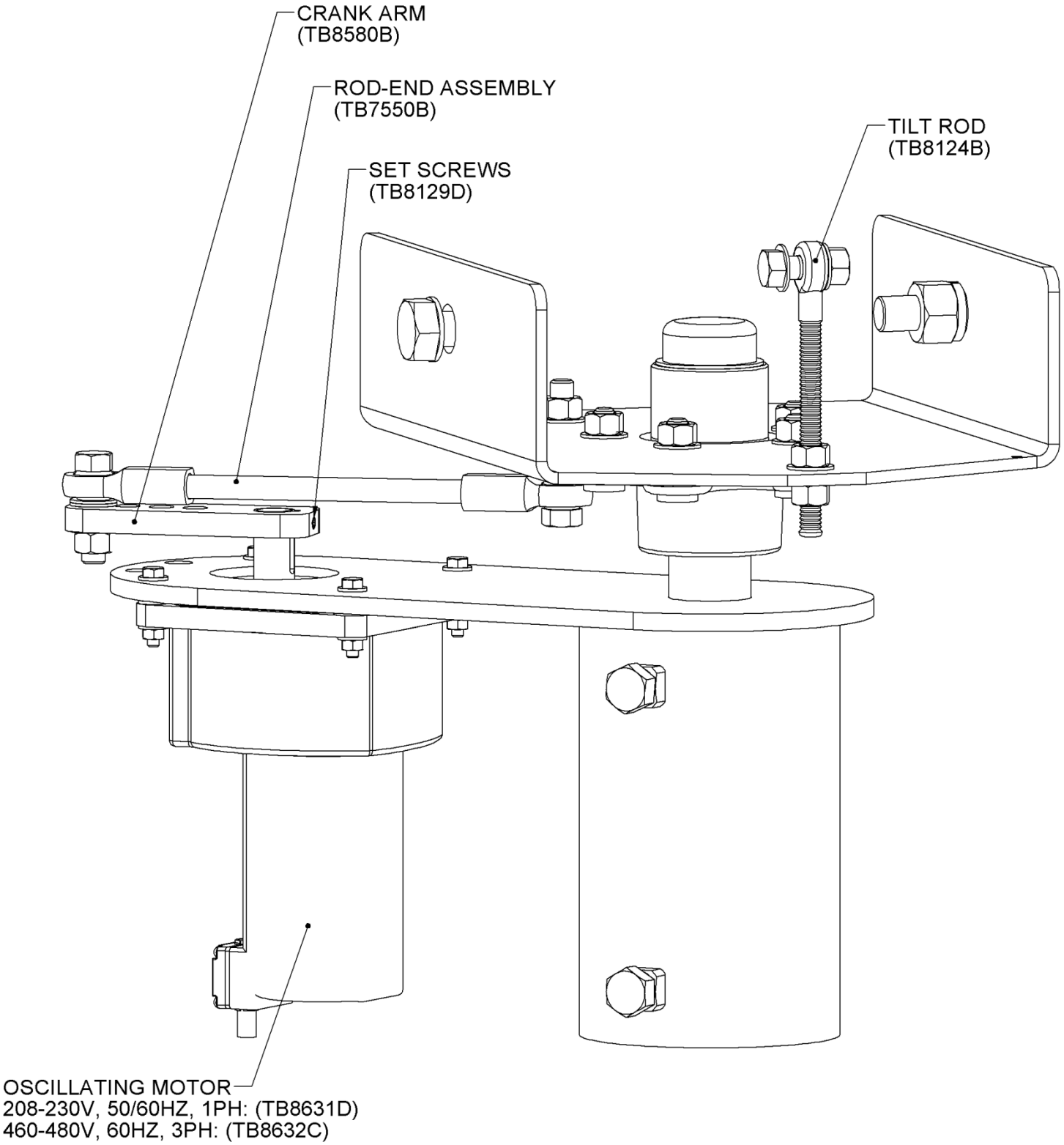


Figure 3: TB-38/TB-47 Oscillation Coverage Diagram

TB-59P, TB-59DD & TB-62G Oscillating Assembly

Component Diagram



TB-59P, TB-59DD & TB-62G (Large) Oscillator Coverage Angles

Table 2: TB-38/TB-47 Oscillator Coverage

Crank Arm Position	U-Bracket Position	Coverage (Degrees)
1	1	38.4°
1	2	46.4°
2	1	55.8°
2	2	68.2°
3	1	74.6°
3	2	93.0°
4	1	95.6°
4	2	125.3°

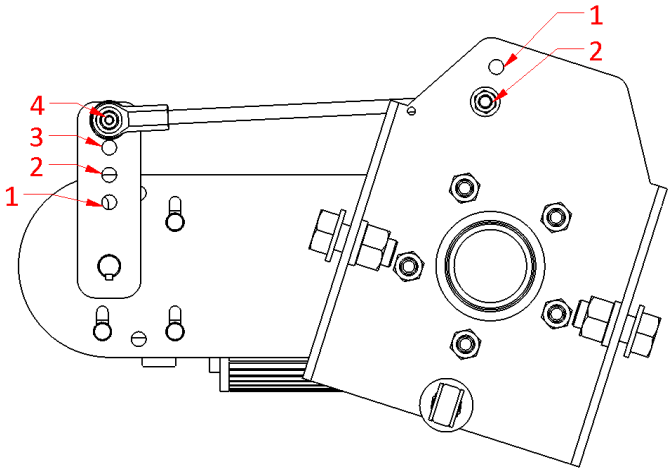


Figure 4: Oscillator connection points diagram

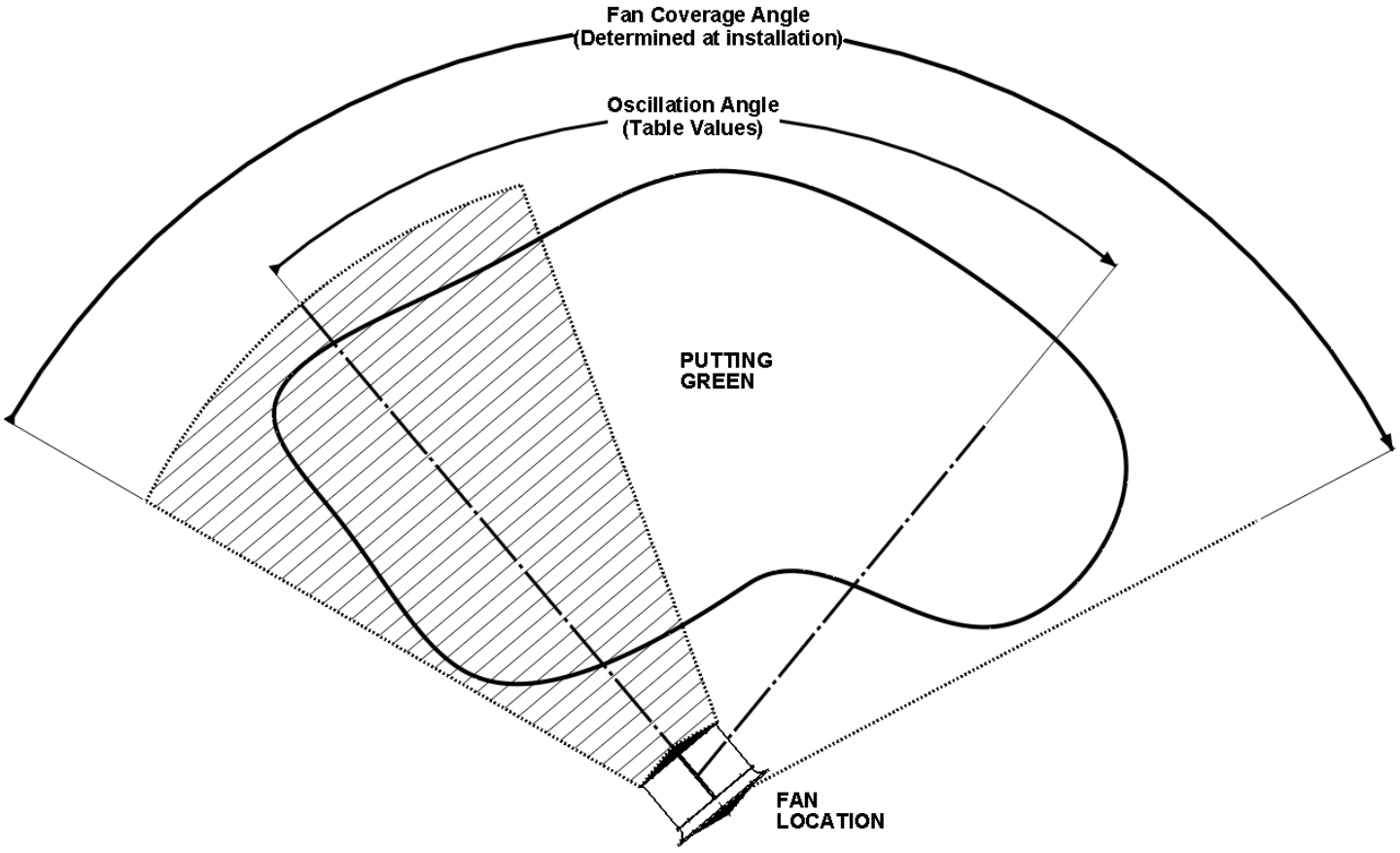
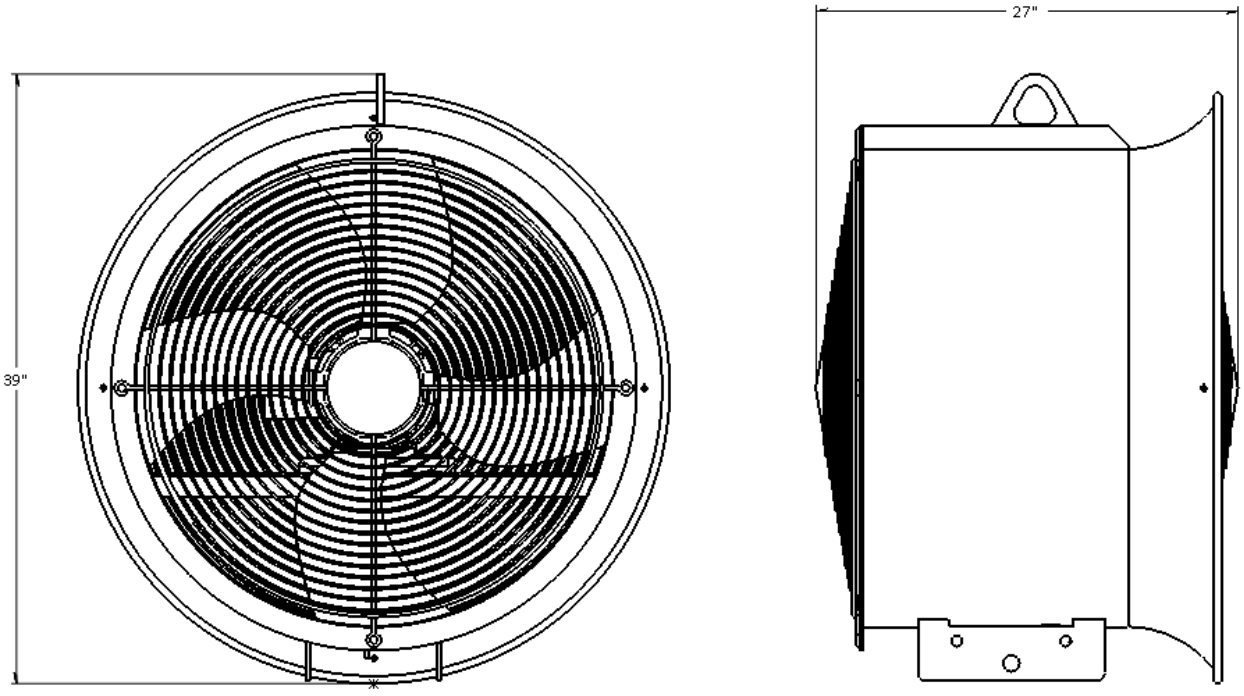


Figure 5: TB-59P, TB-59DD & TB-62G Oscillation Coverage Diagram

TB-38 (Special Order)

Specifications

TB-38 Physical Data



Housing Assembly Appx. Weight: 230 lbs.

TB-38 Fan Performance Data

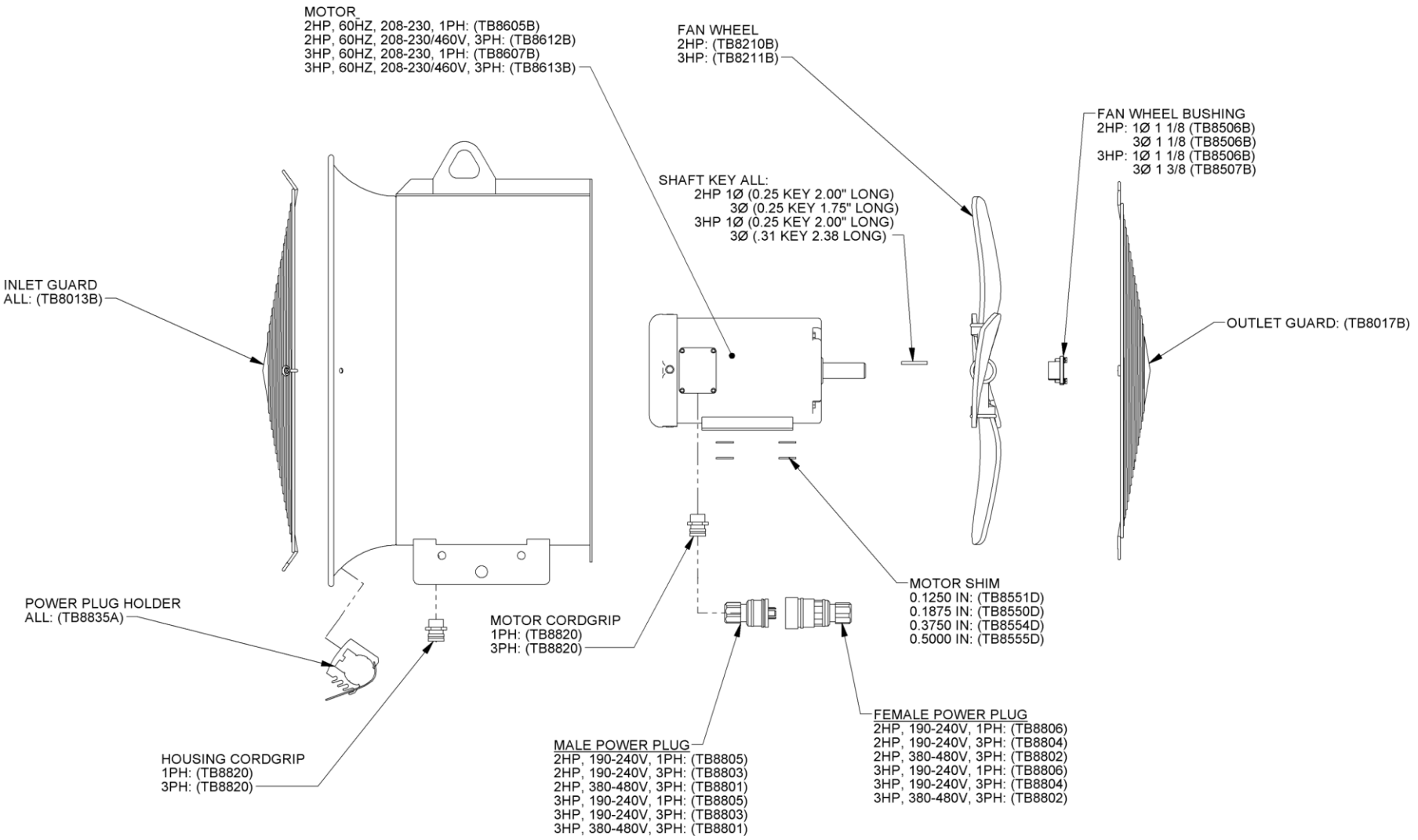
Model	Size/Power	Throw (Ft.) @ 3 MPH	Sound dB @ 50 Ft
TB-38	38"/3HP	115	64
TB-38	38"/2HP	100	59

TB-38 Electrical Data

Model	HP	KW	Phase	Volts	Hz	Motor Rated Full Load Amps	Min. Circuit Ampacity	Max. Time Delay Fuse Rating
TB-38	2	1.5	1	208	60	10	12.5	20
TB-38	2	1.5	1	230	60	9.4	11.8	20
TB-38	2	1.5	3	208	60	7	8.8	15
TB-38	2	1.5	3	230	60	6.4	8.0	15
TB-38	2	1.5	3	460	60	3.2	4.0	5
TB-38*	2	1.5	3	190	50	7.7	9.6	15
TB-38*	2	1.5	3	200	50	7.3	9.1	15
TB-38*	2	1.5	3	380	50	3.8	4.8	10
TB-38*	2	1.5	3	400	50	3.6	4.5	10
TB-38*	2	1.5	3	415	50	3.5	4.4	10
TB-38	3	2.2	1	208	60	15.5	19.4	35
TB-38	3	2.2	1	230	60	14	17.5	30
TB-38	3	2.2	3	208	60	11	13.8	25
TB-38	3	2.2	3	230	60	10	12.5	20
TB-38	3	2.2	3	460	60	5	6.3	10
TB-38*	3	2.2	3	190	50	12.1	15.1	25
TB-38*	3	2.2	3	200	50	11.5	14.4	25
TB-38*	3	2.2	3	380	50	6.1	7.6	15
TB-38*	3	2.2	3	400	50	5.8	7.3	15
TB-38*	3	2.2	3	415	50	5.5	6.9	10

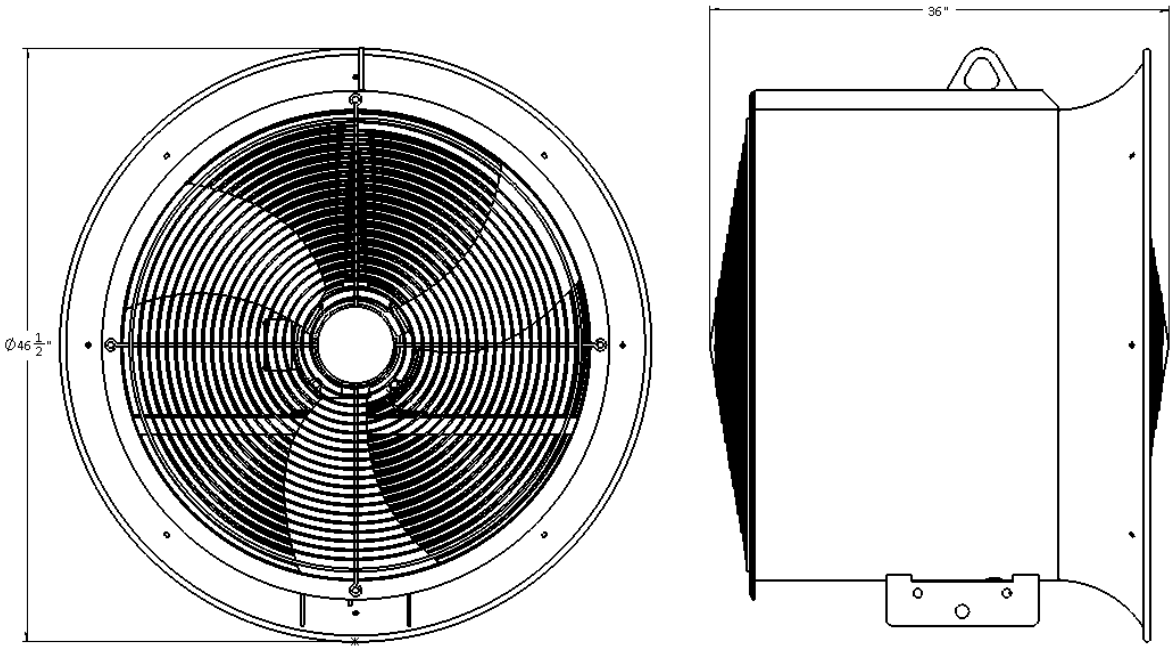
* Variable frequency drive required

TB-38 Component Diagram



TB-47

Specifications TB-47 Physical Data



Housing Assembly Appx. Weight: 280 lbs.

TB-47 Fan Performance Data

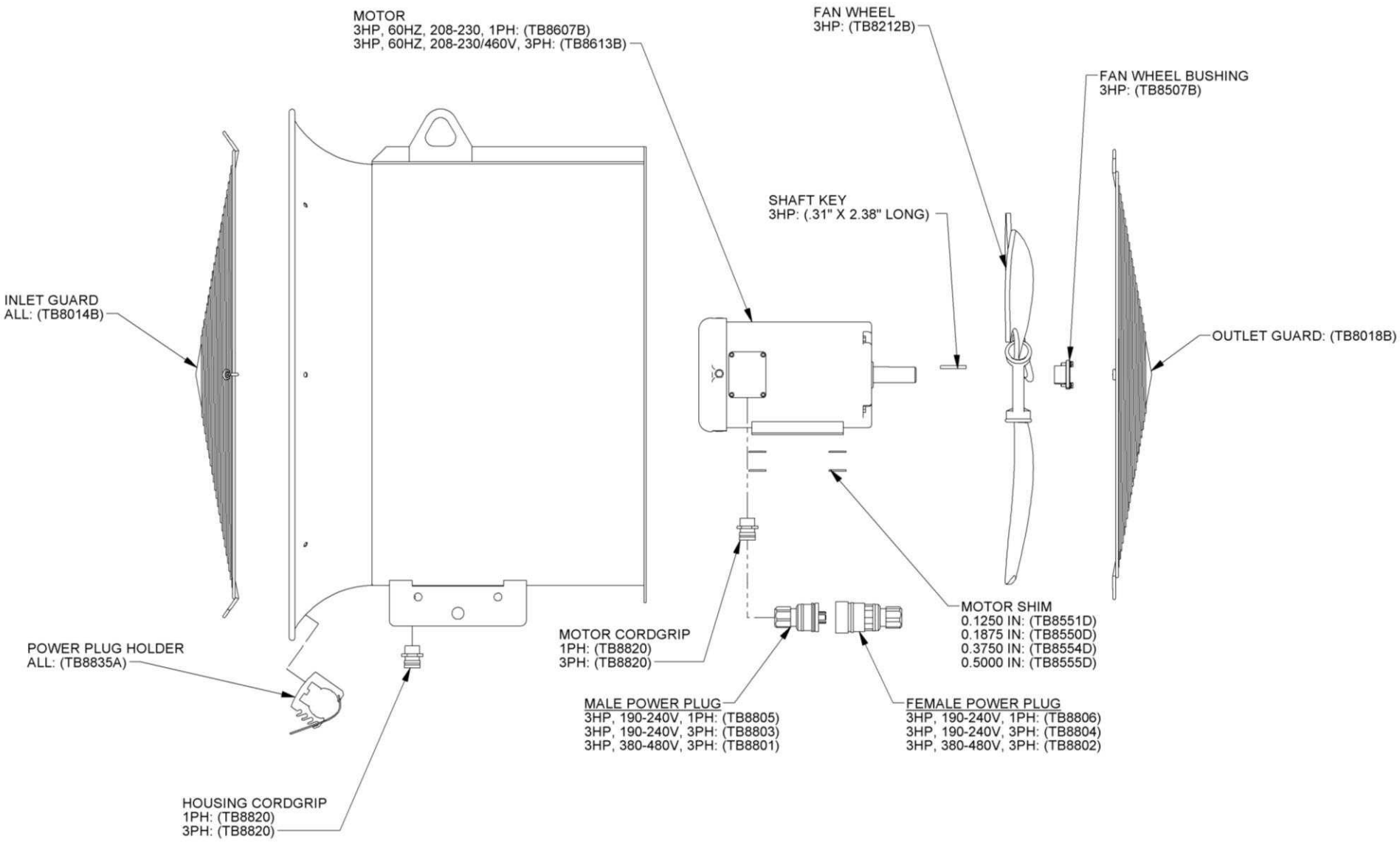
Model	Size/Power	Throw (Ft.) @ 3 MPH	Sound dB @ 50 Ft
TB-47	47"/3HP	125	65

TB-47 Electrical Data

Model	HP	KW	Phase	Volts	Hz	Motor Rated Full Load Amps	Min. Circuit Ampacity	Max. Time Delay Fuse Rating
TB-47	3	2.2	1	208	60	15.5	19.4	35
TB-47	3	2.2	1	230	60	14	17.5	30
TB-47	3	2.2	3	208	60	11	13.8	25
TB-47	3	2.2	3	230	60	10	12.5	20
TB-47	3	2.2	3	460	60	5	6.3	10
TB-47*	3	2.2	3	190	50	12.1	15.1	25
TB-47*	3	2.2	3	200	50	11.5	14.4	25
TB-47*	3	2.2	3	380	50	6.1	7.6	15
TB-47*	3	2.2	3	400	50	5.8	7.3	15
TB-47*	3	2.2	3	415	50	5.5	6.9	10

* Variable frequency drive required

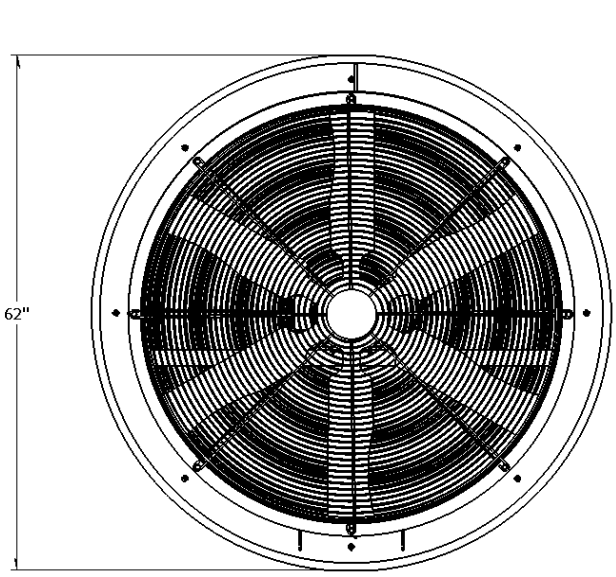
TB-47 Component Diagram

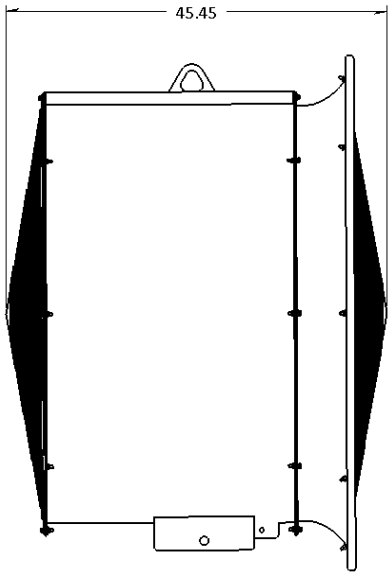


TB-59DD Direct Drive

Specifications

TB-59DD Direct Drive Physical Data





Housing Assembly Appx. Weight: 500 lbs.

TB-59DD Direct Drive Fan Performance Data

Model	Size/Power	Throw (MPH) @ 150 FT	Sound dB @ 50 Ft
TB-59DD	5HP	5.8*	60

*Average MPH measured at turf canopy on flat ground with zero ambient wind over 60 second period

TB-59DD Direct Drive Electrical Data

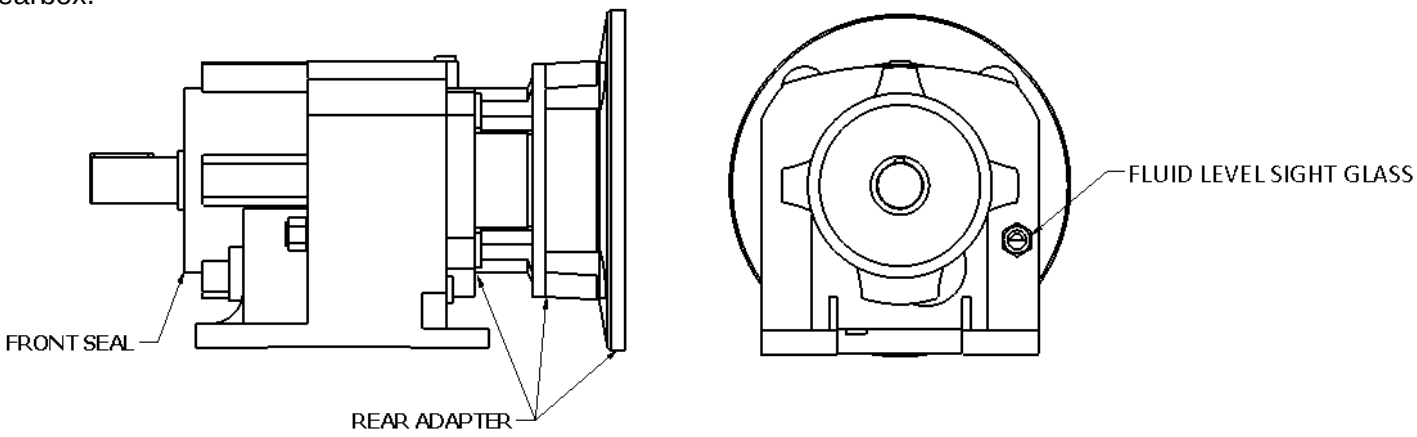
Model	HP	KW	Phase	Volts	Hz	Motor Rated Full Load Amps	Min. Circuit Ampacity	Max. Time Delay Fuse Rating
TB-59DD	5	3.7	1	208	60	25.4	31.8	55
TB-59DD	5	3.7	1	230	60	23	28.8	50
TB-59DD	5	3.7	3	200	60	14.5	18.1	30
TB-59DD	5	3.7	3	208	60	14	17.5	30
TB-59DD	5	3.7	3	230	60	13	16.3	30
TB-59DD	5	3.7	3	460	60	6.5	8.1	15
TB-59DD*	5	3.7	3	190	50	14.8	18.5	30
TB-59DD*	5	3.7	3	200	50	14.1	17.6	30
TB-59DD*	5	3.7	3	380	50	7.4	9.3	15
TB-59DD*	5	3.7	3	400	50	7	8.8	15
TB-59DD*	5	3.7	3	415	50	6.8	8.5	15

* Variable frequency drive required

Operation and Maintenance

All TurfBreeze gear drive fans are powered and operated at full speed prior to shipping, so they will arrive fully lubed and ready for operation. There is no initial or post break-in servicing required for the gear driven fans. Most seasoned mechanics will find this unusual, as post break-in fluid changes are typically required to remove metal shavings and particulates that are deposited as result of the machined parts initially wearing-in together. However, due to the quality of materials and precision machining of the gearboxes used in the TurfBreeze fans, the components generate little or no contamination even during initial use. Therefore, it is recommended that the lubricant **NOT** be changed prior to 20,000 hours of operation. Premature servicing unnecessarily increases the risk of debris ingress and fluid contamination, and provides zero benefit with respect to service life.

Between fluid change intervals periodically inspect the bottom of the front seal and rear adapter areas of the gearbox for signs of oil leakage. Some “wetness” may occur over time, but should never accumulate to the point where it drips from the box. Periodically inspect the fluid level using the sight glass on the front of the gearbox.

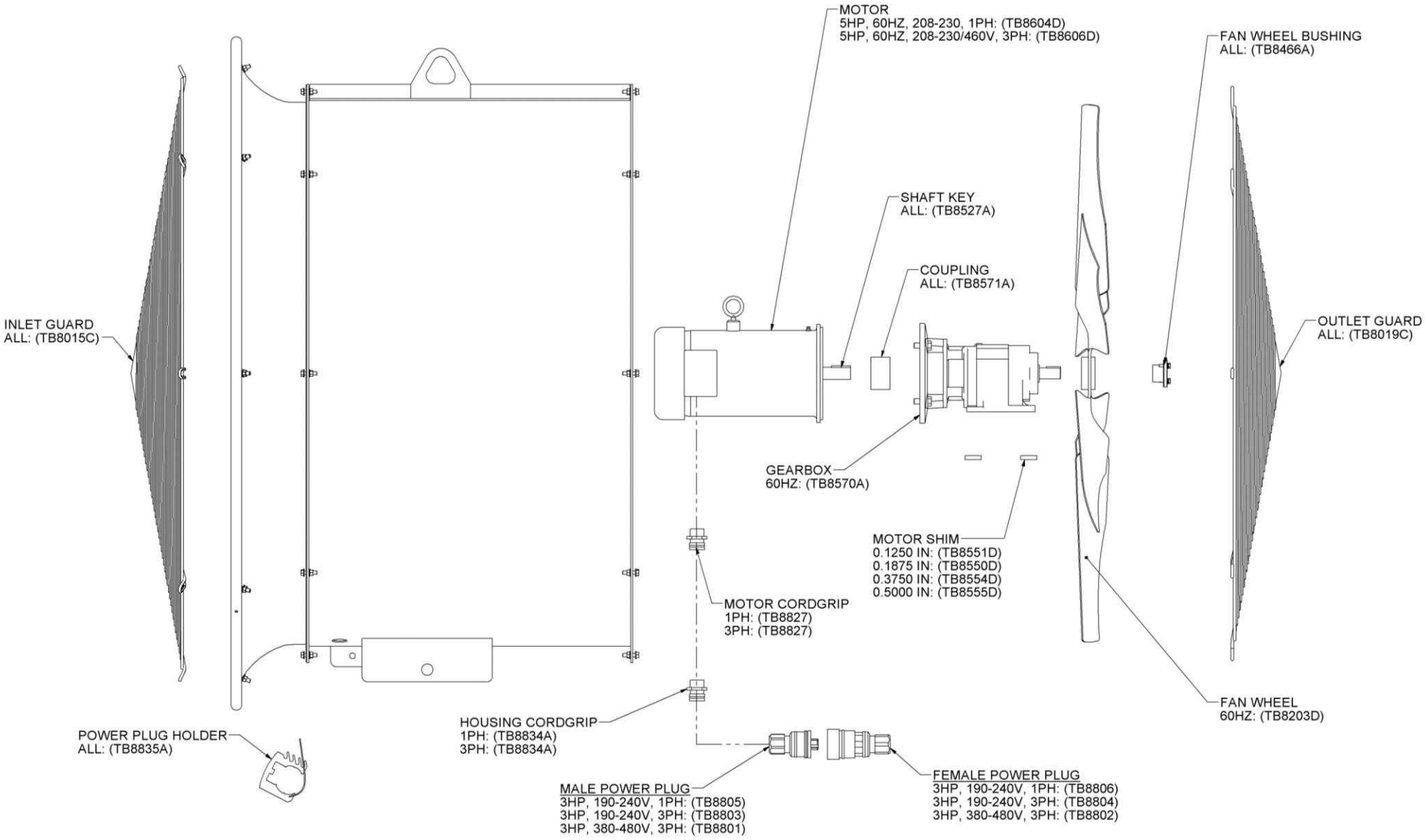


If fluid must be added it is recommended to completely drain the gearbox, and refill using exactly 0.95 quarts (0.90 liters) of Mobil SHC Cibus 220 (or exact equivalent) to avoid overfilling. Both overfilling and under filling can result in gearbox failure. If for any reason the fluid cannot be fully drained and replaced follow the procedure below for adding to existing fluid.

1) Completely level the gearbox using a bubble level (both front to back, and side to side)
2) Remove the sight glass
3) Fill the box until the fluid begins to run out
4) Reinstall the sight glass, and reposition fan

Keep in mind that too much fluid can be just as harmful as to little. Also remember that under normal operating conditions the fluid should NOT be changed prior to 20,000 hours of operation.

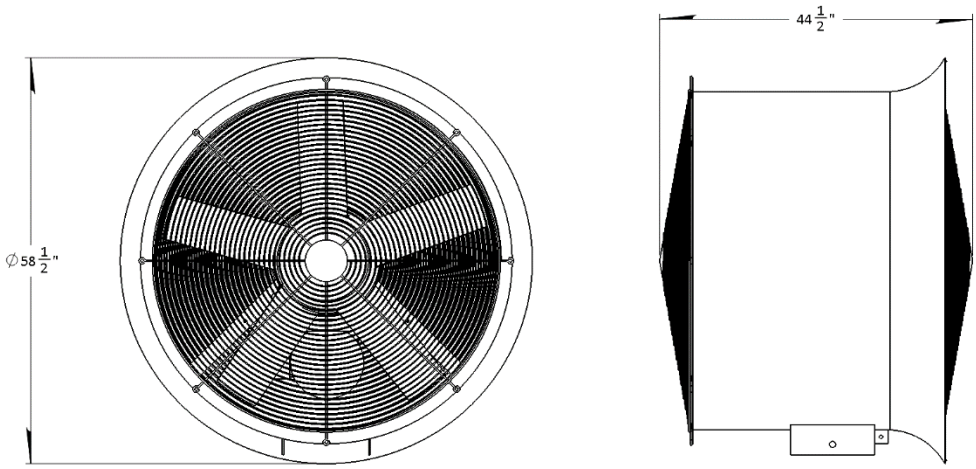
TB-59DD Direct Drive Component Diagram



TB-59P Premium

Specifications

TB-59P Premium Physical Data



Housing Assembly Appx. Weight: 500 lbs.

TB-59P Premium Fan Performance Data

Model	Size/Power	Throw (MPH) @ 150 FT	Sound dB @ 50 Ft
TB-59P Prem.*	5HP	5.4**	60

*Performance and electrical data based on standard pulley configuration. High performance pulley package will increase flow, throw, sound, and average power consumption.
**Average MPH measured at turf canopy on flat ground with zero ambient wind over 60 second period

TB-59P Premium Fan Electrical Data

Model	HP	KW	Phase	Volts	Hz	Motor Rated Full Load Amps	Min. Circuit Ampacity	Max. Time Delay Fuse Rating
TB-59P Premium	5	3.7	1	208	60	22	27.5	50
TB-59P Premium	5	3.7	1	230	60	20.5	25.6	45
TB-59P Premium	5	3.7	3	200	60	14.5	18.1	30
TB-59P Premium	5	3.7	3	208	60	13.9	17.4	30
TB-59P Premium	5	3.7	3	230	60	13.4	16.8	30
TB-59P Premium	5	3.7	3	460	60	6.7	8.4	15
TB-59P Premium	5	3.7	3	190	50	24.8	31.0	55
TB-59P Premium	5	3.7	3	200	50	23.6	29.5	50
TB-59P Premium	5	3.7	3	380	50	12.4	15.5	25
TB-59P Premium	5	3.7	3	400	50	11.8	14.8	25
TB-59P Premium	5	3.7	3	415	50	11.4	14.3	25

Maintenance

Belt Tensioning

The proper tension for operating a V-belt drive is the lowest tension at which the belts will not slip at peak load conditions. The belts are adjusted by raising or lowering the motor pivot plate (see Figure 6 for details). For tensioning, the proper belt deflection half-way between sheave centers is 1/64 of the belt span. For TurfBreeze Premium fans the belt deflection should be between 1/4" and 1/2" using with 5 pounds pressure applied at the mid-point of the free belt span (deflection and mid-point depicted in Figure 7). A v-belt tensioner like the one shown in Figure 8 is required to accurately measure pressure, and deflection.

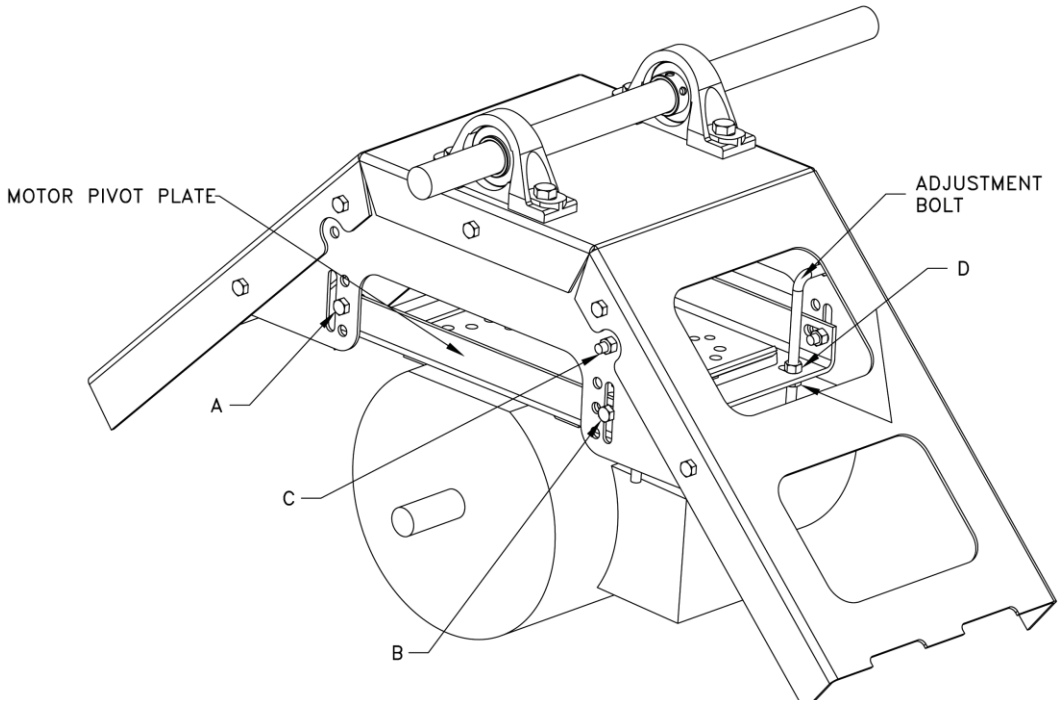


Figure 6: Premium Belt Adjustment Components

Motor pivot plate adjustment (belt tensioning) procedure:

Follow the following steps:

1.Loosen the fasteners A, B, & C on both sides of the drive frame.

2.Loosen and adjust jam nuts (D) on both adjustment bolts equally until proper belt tension has been obtained.

3.Tighten the jam nuts (D).

4.Tighten the fasteners A, B, & C on both sides of drive frame.

TB-59P Premium

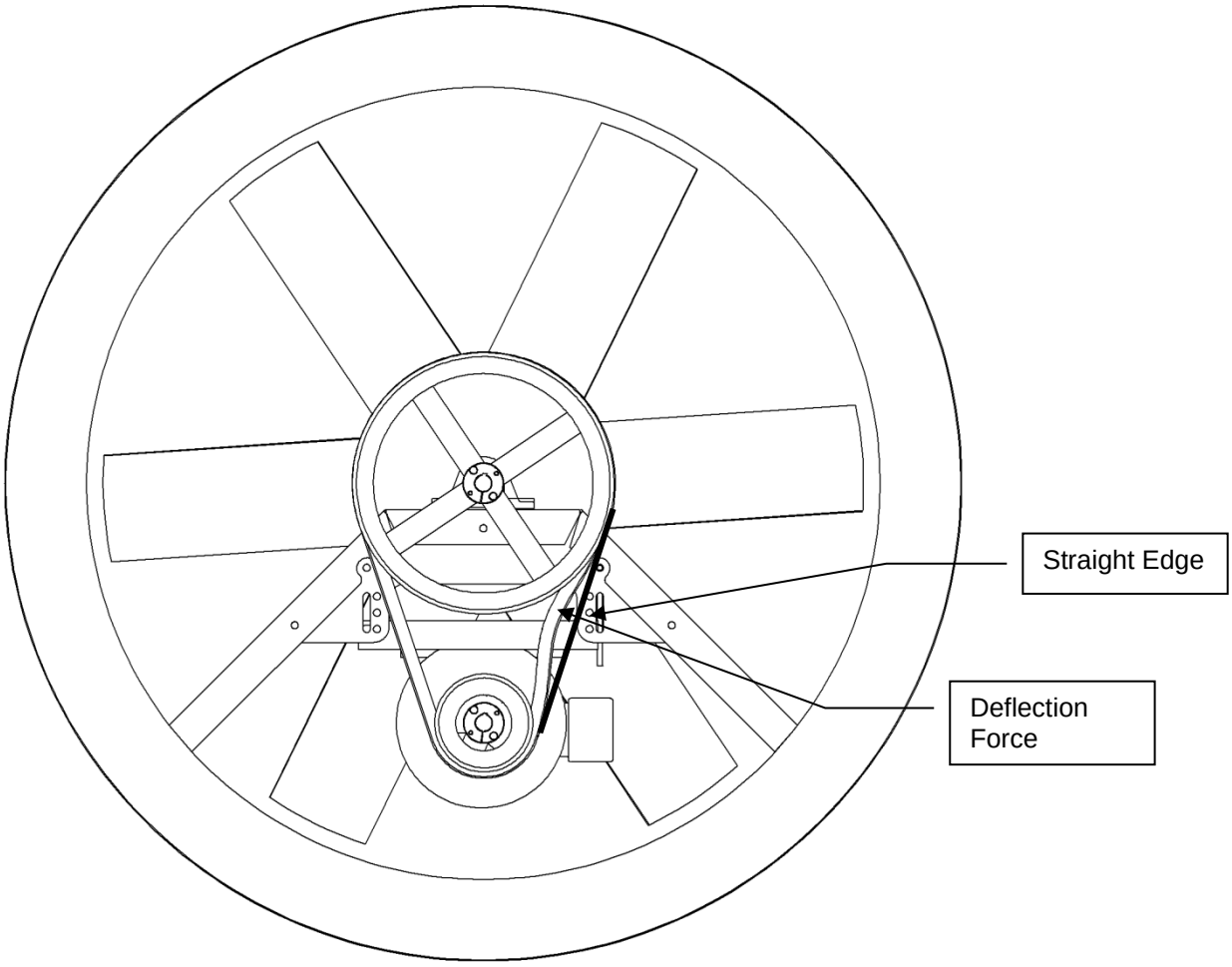
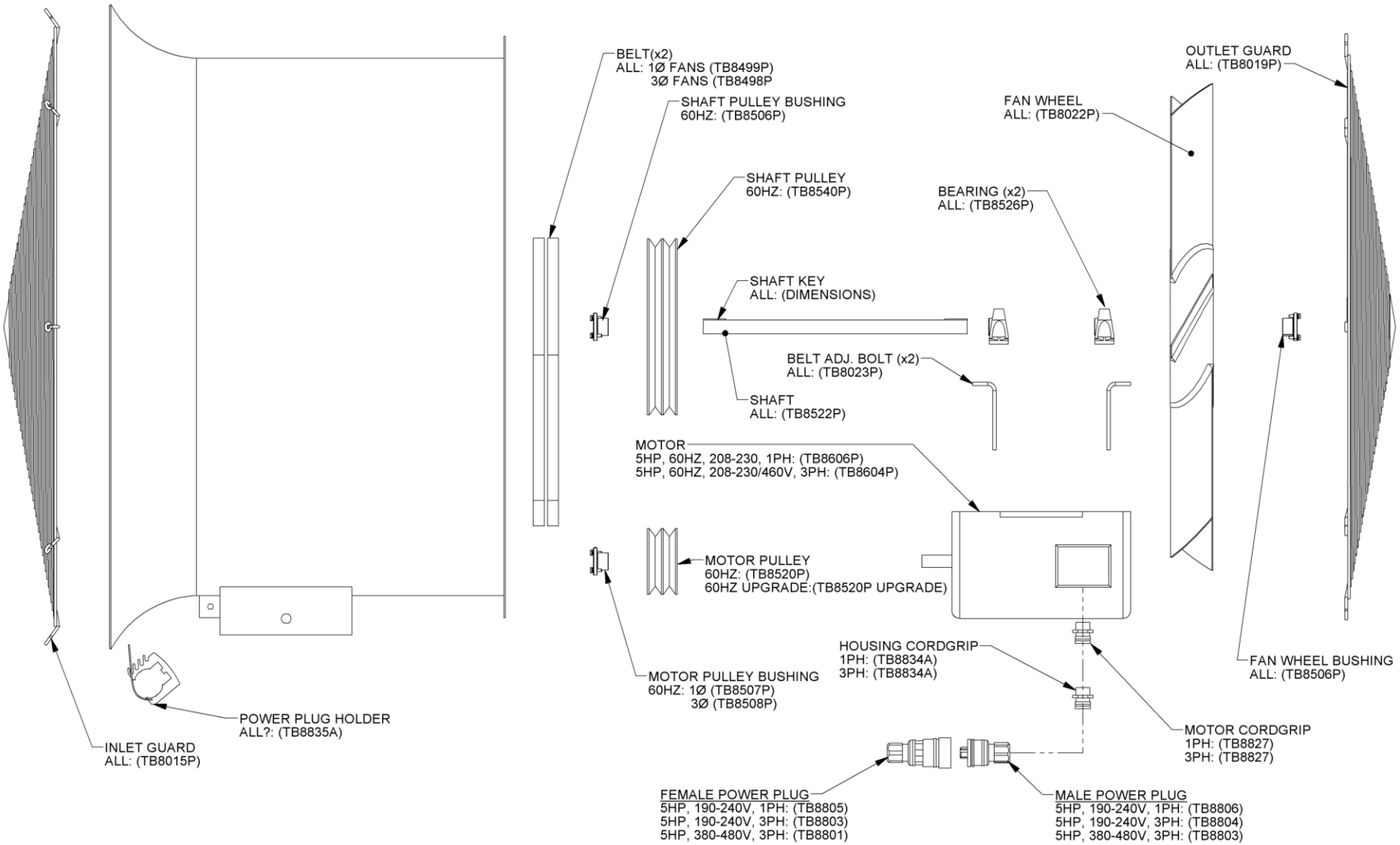


Figure 7: **Premium V-belt deflection diagram**

Figure 8: Belt Tensioner, MSC Part#:35437300, www.mscdirect.com

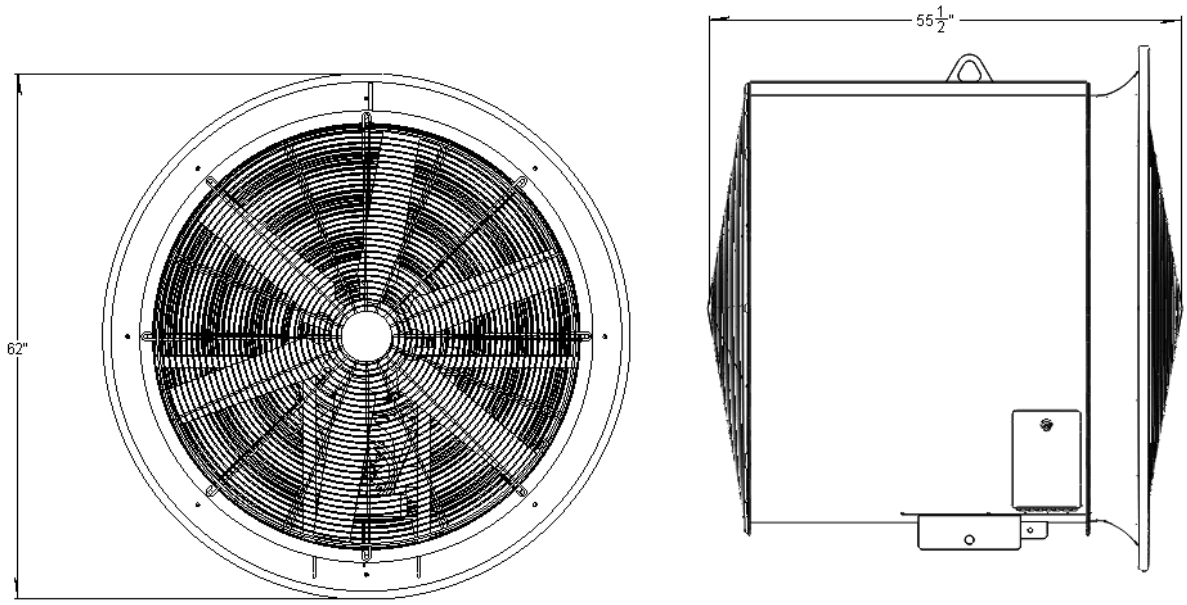
TB-59P Premium Component Diagram



TB-62G Gas

Specifications

TB-62G Physical Data



Housing Assembly Appx. Weight: 620 lbs.

TB-62G Fan Performance Data

Model	Size/Power	Throw (MPH) @ 150 FT	Sound dB @ 50 Ft
TB-62G	62"/16HP	6	77

Maintenance

Gas Fan Belts

TurfBreeze gas fans utilize two high quality “link style” v-belts. These belts in theory operate like traditional v-belts, but provide improved service life, adjustability, and ease of installation. Fans are delivered with the belts properly tensioned and ready for use. However, the tension should be monitored closely for the first 72 hours of operation as the break-in. If at any point during the life of the fan the belts appear to have significantly more movement or if the fan vibration increases notably, then the belts need to be tightened or replaced using the corresponding procedure below. **Always replace the belts as a pair.**

Re-Tensioning Procedure:

1) Removal
    a. Roll the outer belt off the larger pulley towards the fan blades.
    b. Roll the inner belt off the larger pulley towards the engine.
    c. Remove the belts from the fan housing.
2) Disassembly & Link removal
    a. Hold belt upside down. Bend back as far as possible; hold with one hand. Twist one tab 90 degrees parallel with slot.
    b. Pull the end of link over tab.
    c. Rotate the belt end with tab 90 degrees.
    d. Pull the belt end through two links.
    e. Remove (1) link from the belt.
3) Assembly
    a. Hold the belt with tabs pointing outward.
    b. Place the end tab through two links at once.
    c. Flex the belt further and insert second tab through end link by twisting tab with thumb.
    d. Ensure the tab returns to position across belt. Reverse belt so tabs run inside.
4) Installation
    a. Turn the belt with tabs to the inside before installing.
    b. Determine the direction of drive rotation.
    c. Make sure that both belts have the exact same number of links.
    d. Align the belt directional arrows with drive rotation.
    e. Loop the one belt over larger pulley such that it is hanging on the shaft between the pulley and pillow block bearing.
    f. Fit the second belt in the groove of smaller pulley closest to the engine.
    g. Roll the belt onto larger pulley from the motor side, turning the drive slowly. Belt may seem very tight; this is ok; DO NOT JOG MOTOR.
    h. Check to see that all the tabs are still in their correct position and are not twisted out of alignment.
    i. Go back and to the first belt and fit it in the second groove on the smaller pulley.
    j. Roll the second belt onto larger pulley from the fan blade side, turning the drive slowly. Belt may seem very tight; this is ok; DO NOT JOG MOTOR.
    k. Double check the belt directional arrows, tab alignment, and number of links in both belts.

BE SURE TO KEEP THE MOTOR PULLEY AND FAN SHAFT PULLEYS VERTICALLY IN LINE WITH ONE ANOTHER if at any time the motor is loosened or removed. Refer to the Turf Breeze Manual for pulley alignment notes and illustrations in the V-belt tensioning section.

Inspect belts yearly for cracks, dry-rotting, or any other signs of excessive wear and replace as needed. ***Always replace the belts as a pair***.

New Belt Procedure:

1) Measuring
    a. Pull the belt tight around pulleys to check hand tight length, overlapping the last two tabs with two holes in matching links as shown. Count the number of links and remove one link for every 24 of 3L, O/Z, A/4L, and B/5L sections, and one link for every 20 of C and D sections. This gives the correct installed belt length and will ensure optimum belt tension when running. Note: Every tenth link is designated with an arrow (➞). For multiple belt drives, ensure that each belt has the same number of links.
2) Disassembly
    a. Hold the belt upside down. Bend the belt back as far as possible; hold with one hand. Twist one tab 90 degrees parallel with slot.
    b. Pull the end of link over tab.
    c. Rotate the belt end with tab 90 degrees.
    d. Pull the belt end through two links.
3) Assembly
    a. Hold the belt with tabs pointing outward.
    b. Place the end tab through two links at once.
    c. Flex the belt further and insert second tab through end link by twisting tab with thumb.
    d. Ensure the tab returns to position across belt. Reverse belt so tabs run inside.
4) Installation
    a. Turn the belt with tabs to the inside before installing.
    b. Determine the direction of drive rotation.
    c. Make sure that both belts have the exact same number of links.
    d. Align the belt directional arrows with drive rotation.
    e. Loop one belt over the larger pulley such that it is hanging on the shaft between the pulley and pillow block bearing.
    f. Fit the second belt in the groove of smaller pulley closest to the engine.
    g. Roll the belt onto larger pulley from the motor side, turning the drive slowly. The belt may seem very tight; this is ok; DO NOT JOG MOTOR.
    h. Check to see that all the tabs are still in their correct position and are not twisted out of alignment.
    i. Go back and to the first belt and fit it in the second groove on the smaller pulley.
    j. Roll the second belt onto larger pulley from the fan blade side, turning the drive slowly. Belt may seem very tight; this is ok; DO NOT JOG MOTOR.
    k. Double check the belt directional arrows, tab alignment, and number of links in both belts.

BE SURE TO KEEP THE MOTOR PULLEY AND FAN SHAFT PULLEYS VERTICALLY IN LINE WITH ONE ANOTHER if at any time the motor is loosened or removed. Refer to the Turf Breeze Manual for pulley alignment notes and illustrations in the V-belt tensioning section.

Inspect belts yearly for cracks, dry-rotting, or any other signs of excessive wear and replace as needed. ***Always replace the belts as a pair***.

Engine Maintenance Schedule (Briggs & Stratton excerpt)

MAINTENANCE & ADJUSTMENT SCHEDULE

The following maintenance schedule is a general guide. See the Engine Operating & Maintenance Instructions for details on specific engine models.

Maintenance Schedule	8 Hours or Daily	25 Hours or Every Season	50 Hours or Every Season	100 Hours or Every Season	500 Hours
Check oil level *	■				
Change oil			■ Note #1		
Change oil filter				■	
Clean/Replace air filter pre-cleaner		■ Note #2			
Clean/Replace air filter cartridge				■ Note #2	
Clean cooling system				■ Note #2	
Inspect/Clean spark arrester (if used)			■		
Replace or clean spark plugs				■	
Replace in-line fuel filter				■	
Remove combustion chamber deposits					■

⚠ Change oil after the first 5 to 8 hours of operation (break-in period), then every **50 hours** of every season

NOTE: #1 – Change oil every 25 hours when operating under heavy loads or high temperatures.

NOTE: #2 – Clean more often under dusty conditions or when airborne debris is present. Replace air cleaner parts when dirty.

Oil Recommendations (Briggs & Stratton excerpt)

Oil has four purposes. It cools, cleans, seals and lubricates. During normal operation, small particles of metal from the cylinder walls, pistons, bearings and combustion deposits contaminate the oil. Dust particles from the air also contaminate the oil, forming an abrasive mixture that can wear internal engine parts if the oil is not changed regularly. Fresh oil assists in cooling. Old oil gradually thickens and loses its cooling ability and its lubricating qualities.

Briggs & Stratton OHV V-Twin engines are lubricated with a gear-driven oil pump. Use a high-quality detergent oil classified “For Service **SJ or HIGHER**” such as Briggs & Stratton 30 weight oil part **#100005** or #**100028**. Detergent oils keep the engine cleaner and retard the formation of gum and varnish deposits. Do not use any additional additives with recommended oils.

Air cooled engines run hotter than automotive engines. Use of multi-viscosity oils (10W-30, etc.) in ambient temperatures above 40° F (4° C) will result in high oil consumption. If multi-viscosity oil is used, check oil level more frequently to prevent any possible engine damage due to lack of lubrication.

Use of SAE 30 oil in ambient temperatures below 40° F (4° C) will result in hard starting and possible engine damage due to inadequate lubrication.

Synthetic oil meeting ILSAV GF-2, API certification mark and API service symbol with “SJ/CF ENERGY CONSERVING” rating or higher is an acceptable oil at all temperatures.

NOTE: Use of synthetic oil does not alter recommended oil change intervals. Oil change intervals take into consideration the fuel, metal, and other deposit contamination rates in addition to the viscous properties of the oil.

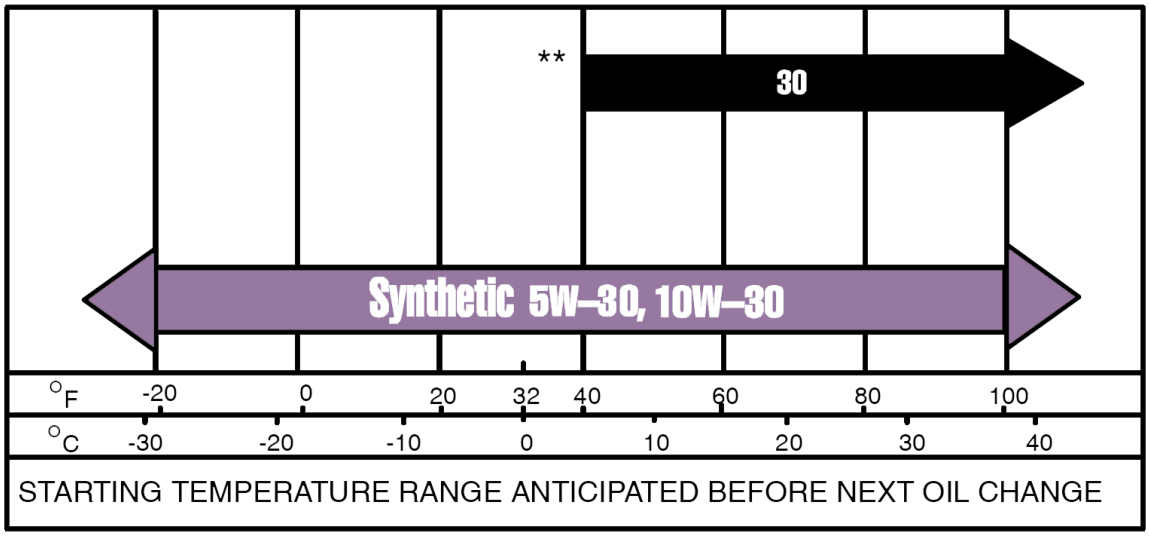


Figure 9: Oil Selection Chart

Fuel Recommendations (Briggs & Stratton excerpt)

• Use clean, fresh regular unleaded gasoline with a minimum of 85 octane. Fresh fuel prevents gum from forming in the fuel system or on essential carburetor parts. Purchase fuel in a quantity that can be used within 30 days.

• Do not use gasoline containing Methanol.

• Do not mix oil with gasoline.

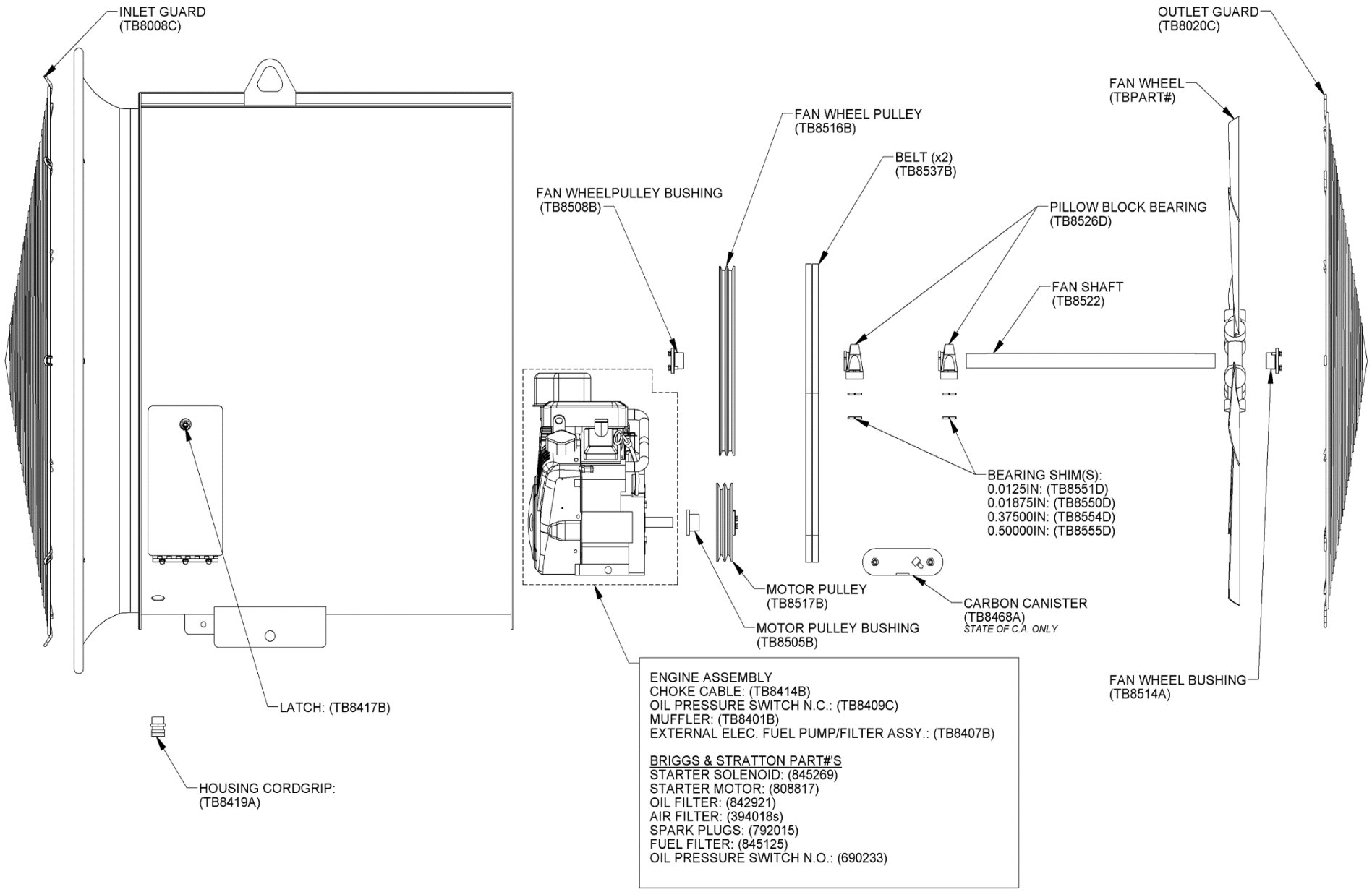
• For engine protection use Briggs & Stratton Fuel Stabilizer #5041 or single use pouch #5058 available from your Authorized Briggs & Stratton Dealer.

CAUTION: Some fuel, called “oxygenated” or “reformulated” gasoline, is gasoline blended with alcohol or ether. Excessive amounts of these blends can damage the fuel system or cause performance problems. If any undesirable operating symptoms occur, use gasoline with a lower percentage of alcohol or ether.

Inline Fuel Filter (Briggs & Stratton excerpt)

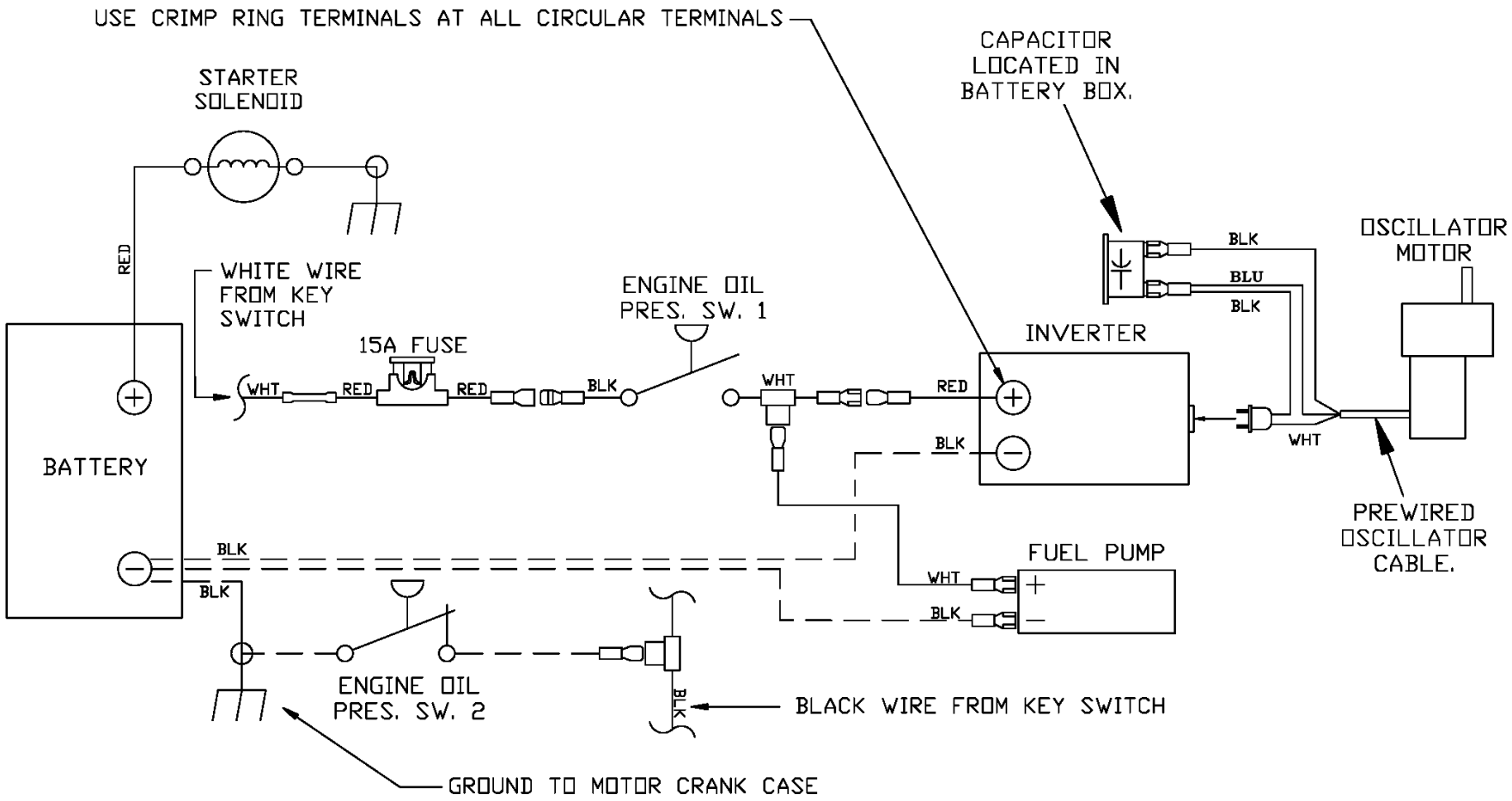
Service Replace inline fuel filter yearly or every 100 hours, whichever occurs first. Replace filter if dirt or water are present.

TB-62G Gas Component Diagram



TB-62G Gas Electrical Schematic

NOTE: Except for the ring terminals, which connect directly to the battery posts, all the other connectors have been selected and oriented such that they can only be connected to the correct termination point. If a wire terminal on an individual wire doesn't match a connection point, then the wire doesn't go there. Care must be taken here to avoid reversing the polarity if any connectors are changed after initial delivery.



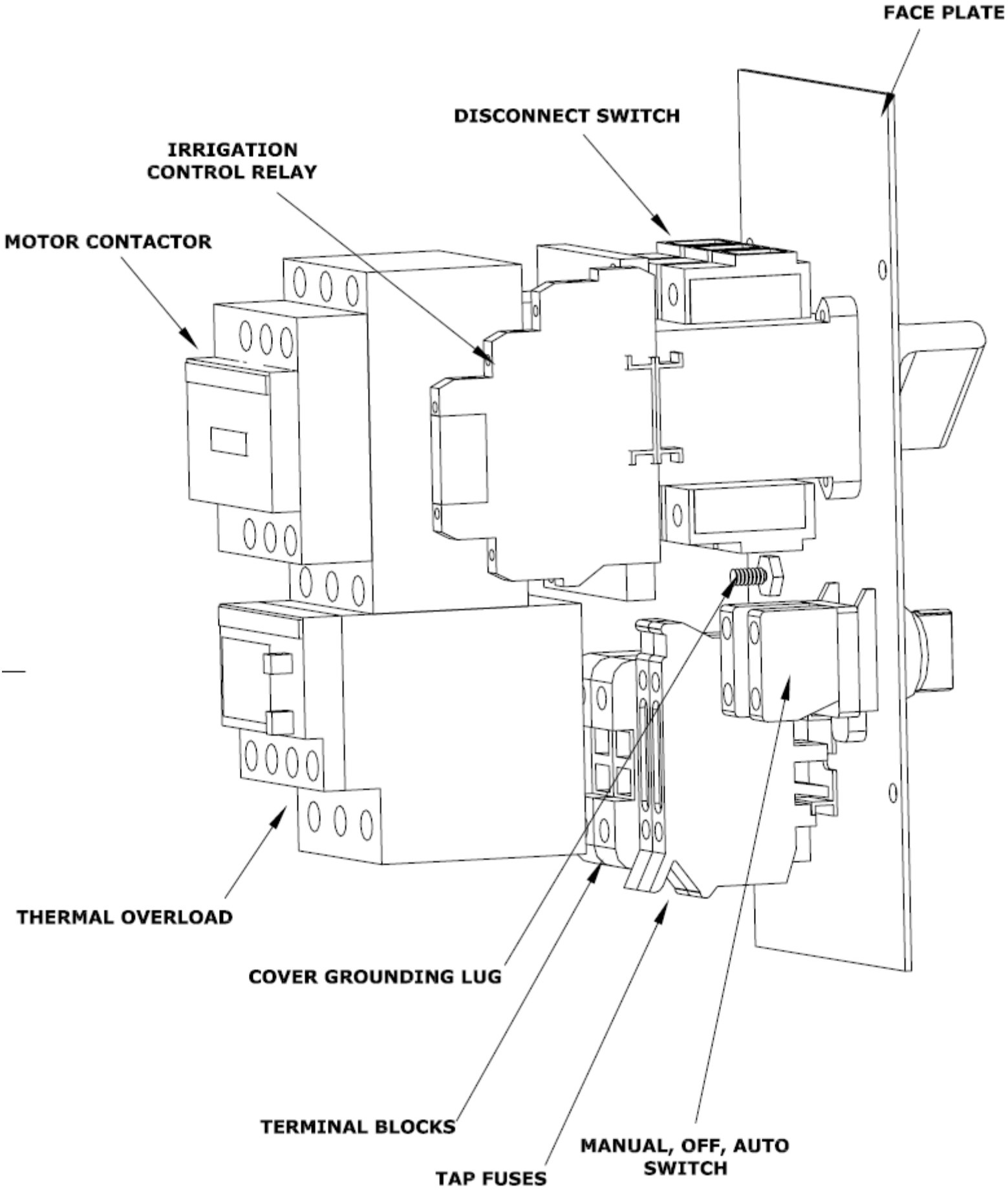
Standard Control Package

Application Notes and Instructions

The standard base TurfBreeze control packages include a lockable motor rated disconnect switch, irrigation control interface relay, on/off/auto mode selector switch, control fuses, magnetic motor contactor, and bimetallic phase sensitive thermal overload for maximum protection. The circuit design, components, and wiring are all specified to meet or exceed National Electric Code (NEC) safety standards, and pass UL inspection.

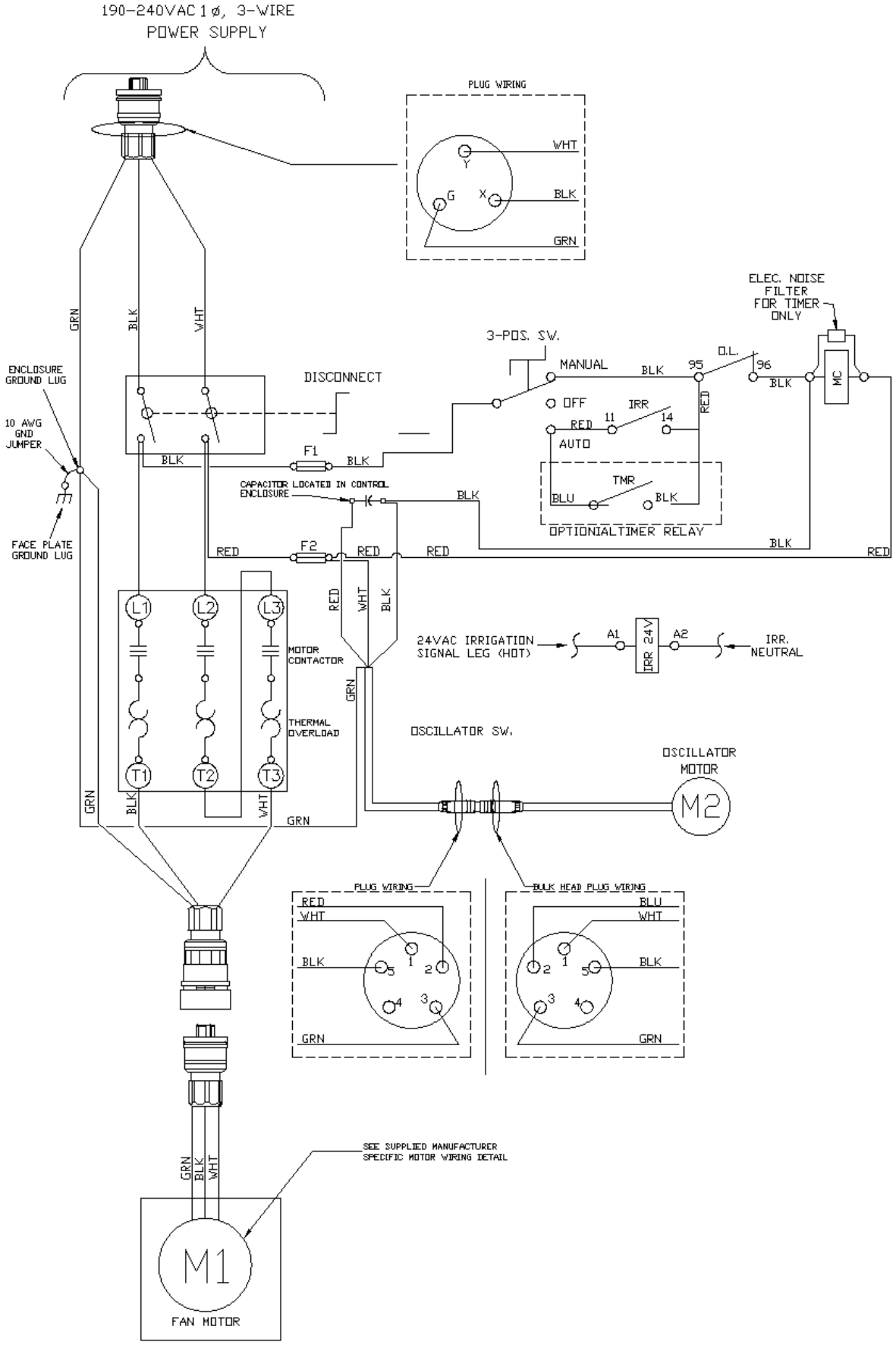
The irrigation relay provided has a 24v AC coil that will interface with most common 24v irrigation solenoid circuits. This feature allows the fan to be operated remotely just like a sprinkler head using the irrigation control system already in place.

Single Phase Control Package Component Diagram

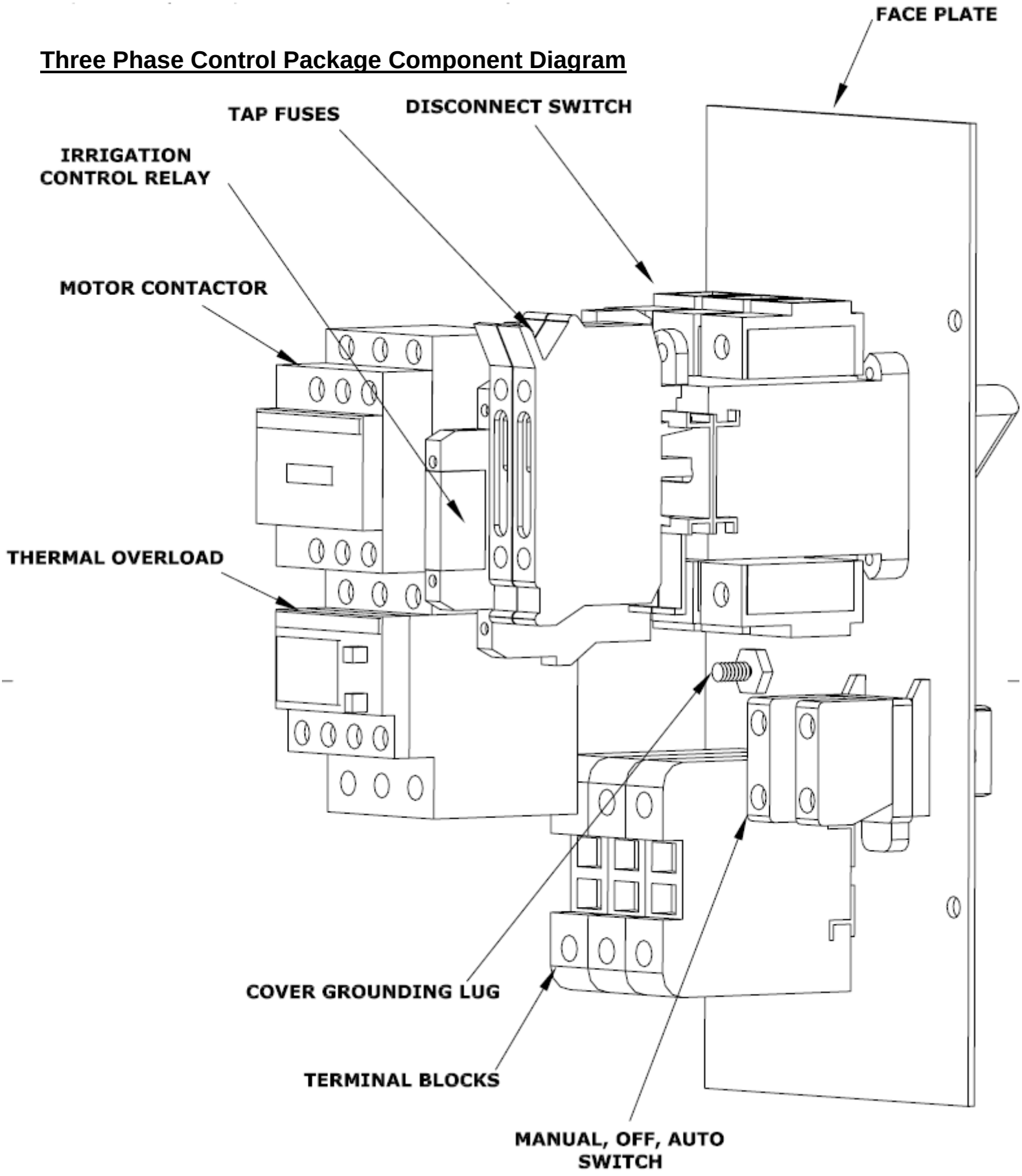


Single Phase Control Package Electrical Schematics

190-240v, Single Phase, Standard

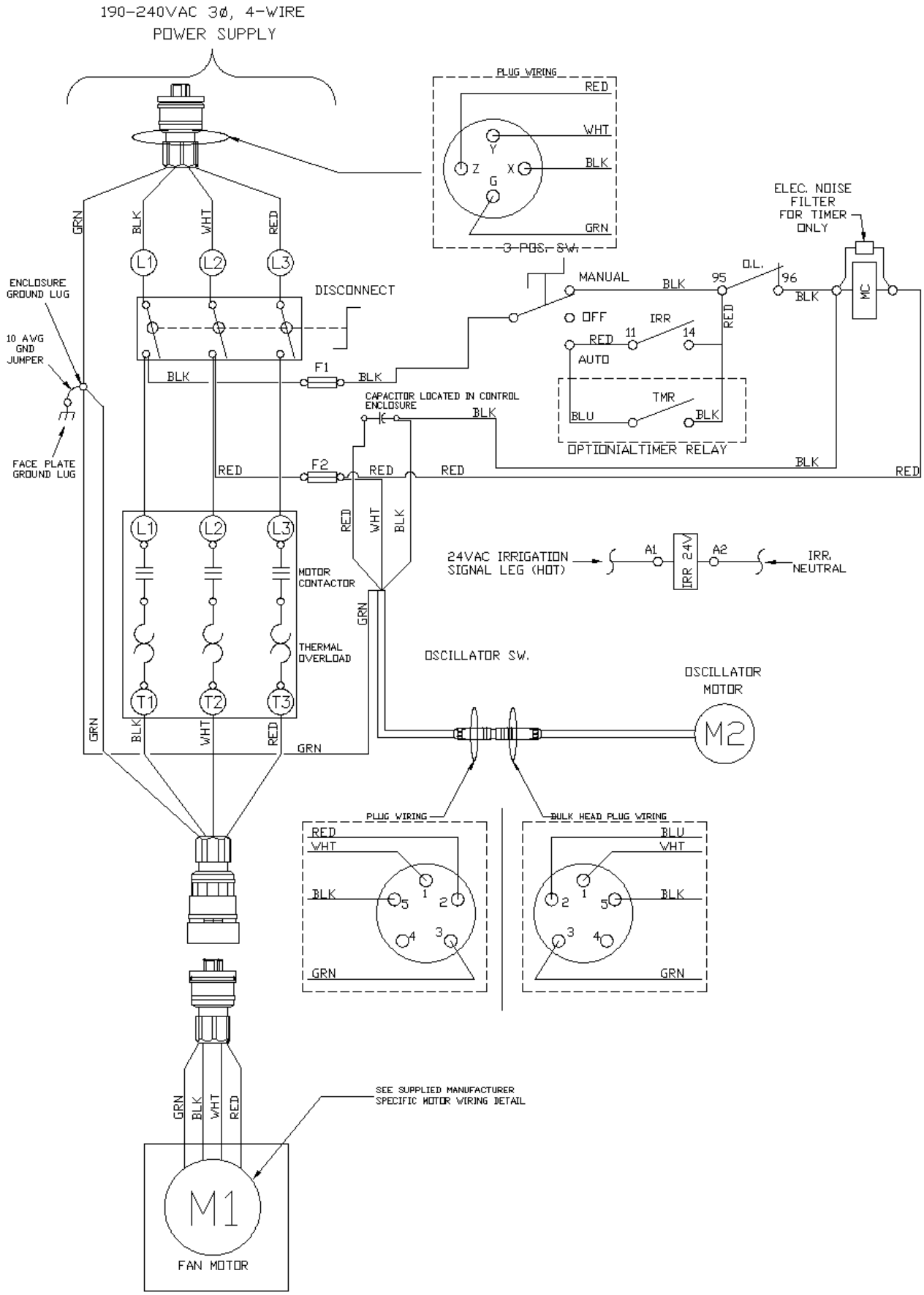


Three Phase Control Package Component Diagram

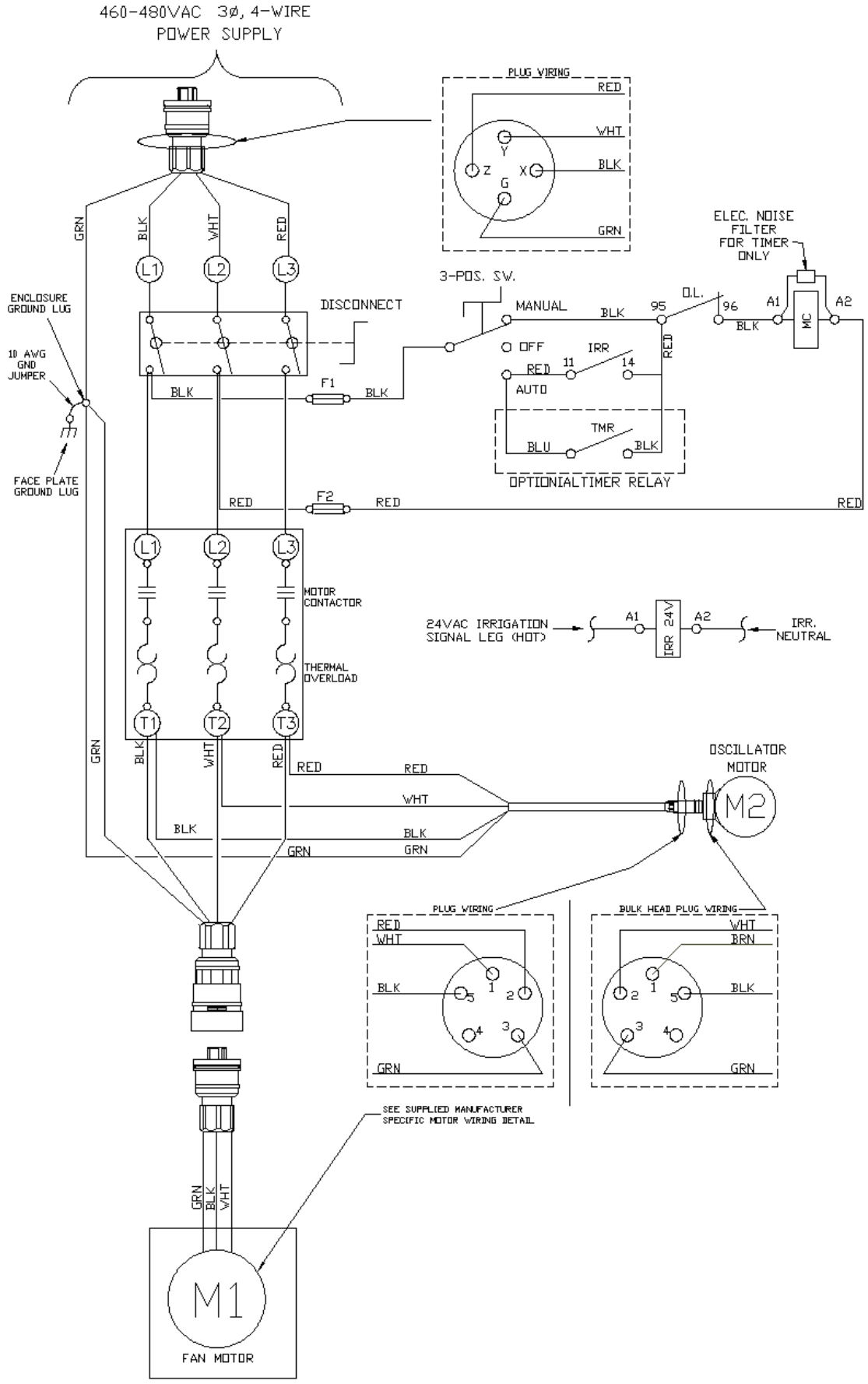


Three Phase Control Package Electrical Schematics

190-240v, Three Phase



460-480v, Three Phase



Variable Frequency Drive Control Package Option

Application Notes and Instructions

Figure 10: VFD Touchpad Detail

The variable frequency drive (VFD) is a microprocessor based motor controller that provides comprehensive electrical protection, and levels of control and flexibility that isn't possible with older motor contactor and thermal overload combination technology. This flexibility and control is derived from the way the drives function. Unlike motor contactors the VFD does not simply connect the supply power directly to the motor like a light switch. Instead it internally converts the incoming AC power to DC power, and then uses the precision microprocessor controls to convert the DC back into AC. When it does this it can generate whatever wave form and frequency that is desired to be sent to the motor. This allows the motor to be ramped up to speed gradually eliminating high inrush currents at start up, provides full control over steady state operating speed, and gives the drive the ability to adapt to a spectrum of different voltages and frequencies as needed. The microprocessor also provides a level of "intelligence" that allows the VFD to monitor the state of the drive itself, the motor connected to it, as well as the wiring. With this feedback, the drive can limit its output to prevent overloading, detect a broken or damaged wire, sense a ground fault, and much more.

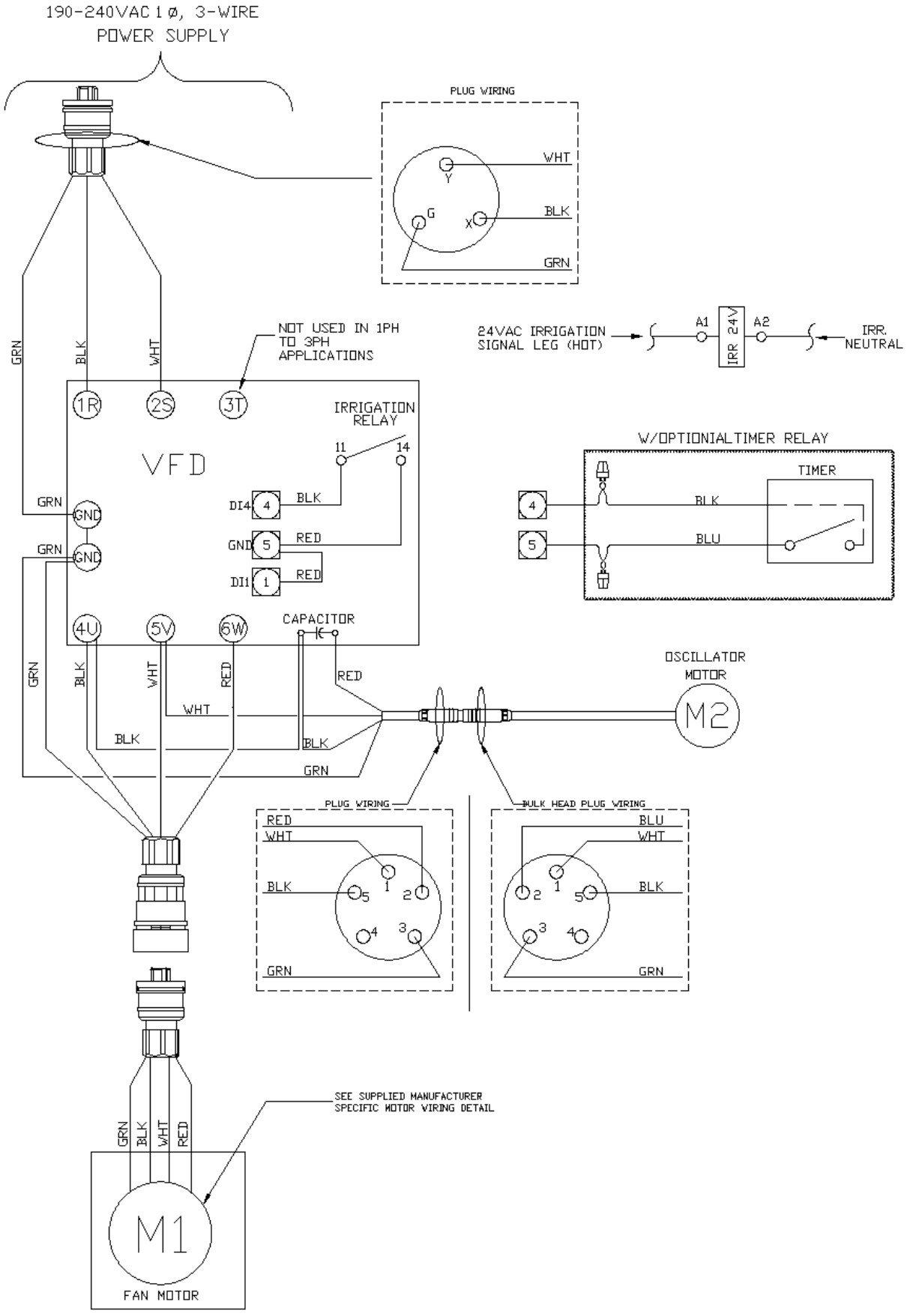
All VFD control packages come pre-programmed, so no configuration adjustments are need at installation. Once power is connected simply press the start button, and use the up and down arrows to adjust to the desired speed.

VFD Control Package Component Diagram

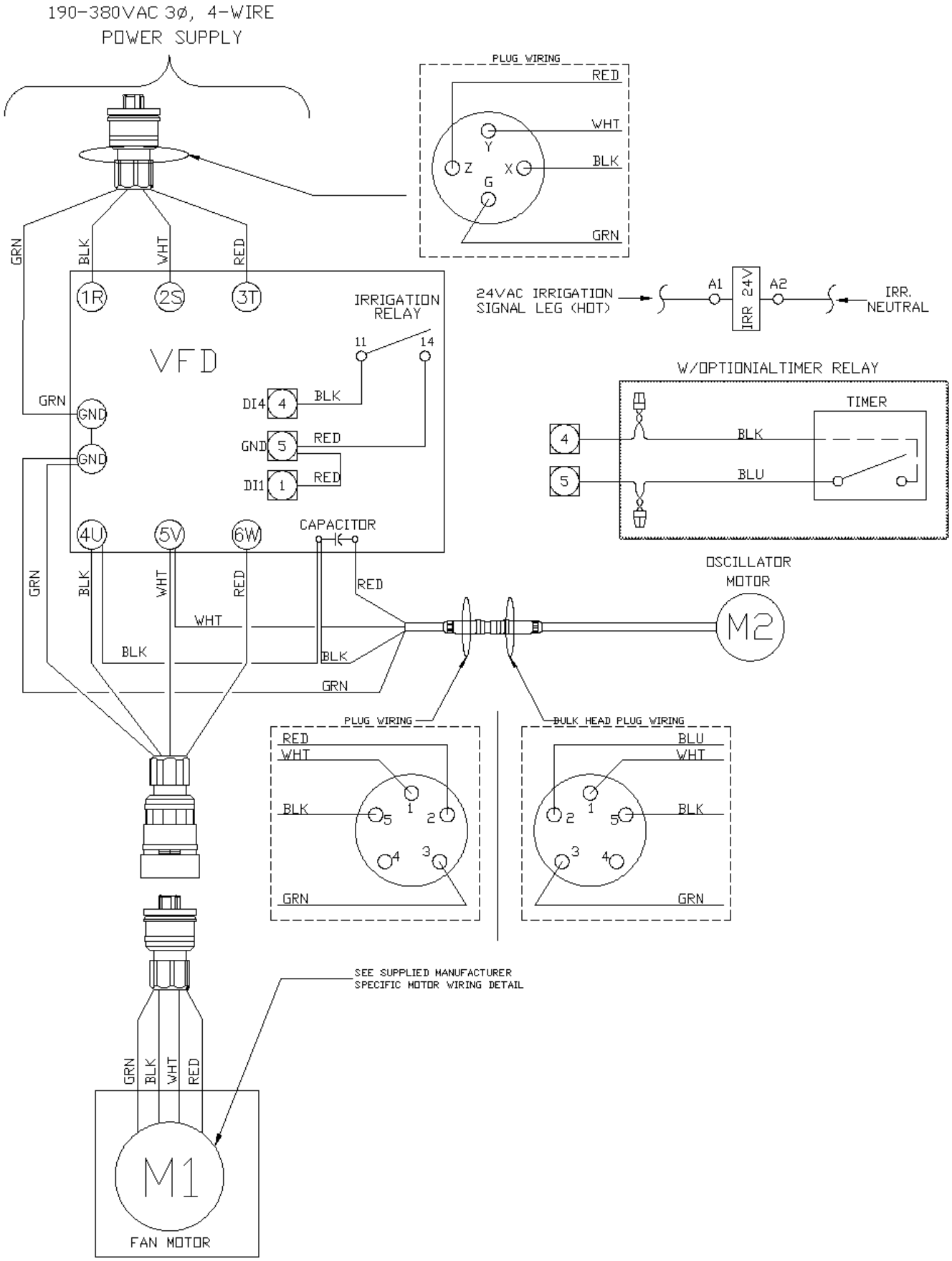
NOTE: Capacitor for oscillating motor is only used in single phase to three phase conversion applications.

VFD Control Package Electrical Schematics

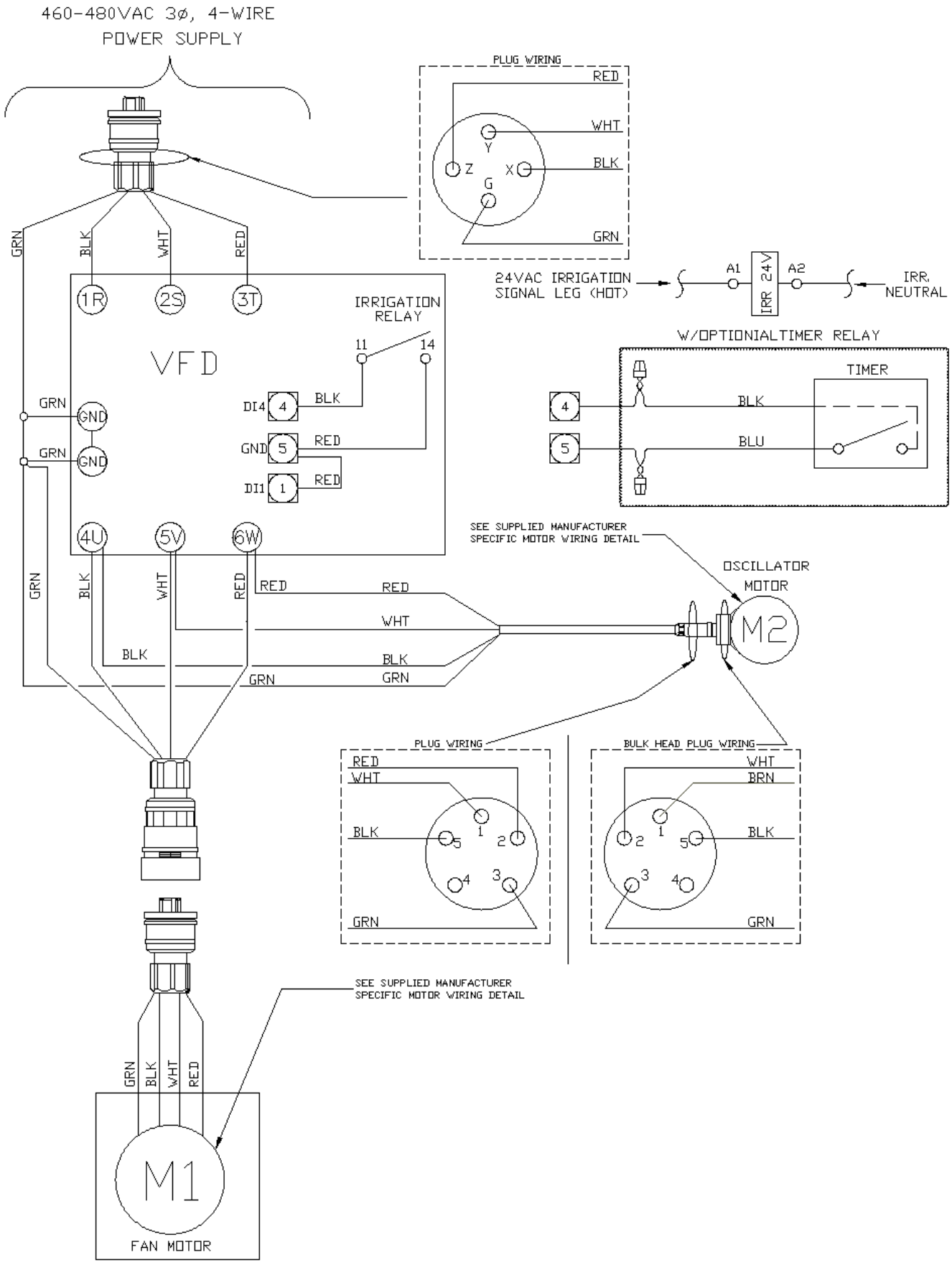
190-240V, Single Phase, VFD



190-380V, Three Phase, VFD



460-480V, Three Phase, VFD



Fan Trailers

Towing Notes and Instructions

⚠ **Warning**

- ***Vehicle towing capacity should be at least 1416 lb. (644 kg) gross trailer weight, with trailer tongue-weight capacity of 156 lb. (71 kg).***
- ***Do not allow riders on unit being towed.***
- ***Normal tow vehicle operating speed should be reduced when towing.***
- ***Extreme caution should be used when towing. Keep bystanders at a safe distance.***
- ***To prevent vehicle overturning, while towing.***
- ***To avoid the possibility of losing control of or overturning always reduce speed for adverse driving conditions such as wet grass or rough terrain, drive straight up/down slopes, and avoid slopes exceeding 20° from horizontal.***

Fan Anchoring

When transporting fans using the fan trailer always be sure to disconnect the oscillating rod-end assembly from the crank arm, and bolt it to one of the anchor points on the oscillator plate as shown below. Failure to anchor the fan to the plate in this manor during transport can permanently damage the oscillating motor. Note that the crank arm should be positioned so that there is sufficient clearance prior to disconnecting power. Otherwise the crank arm will have to be removed in-order to connect the rod-end assembly to the anchor point.

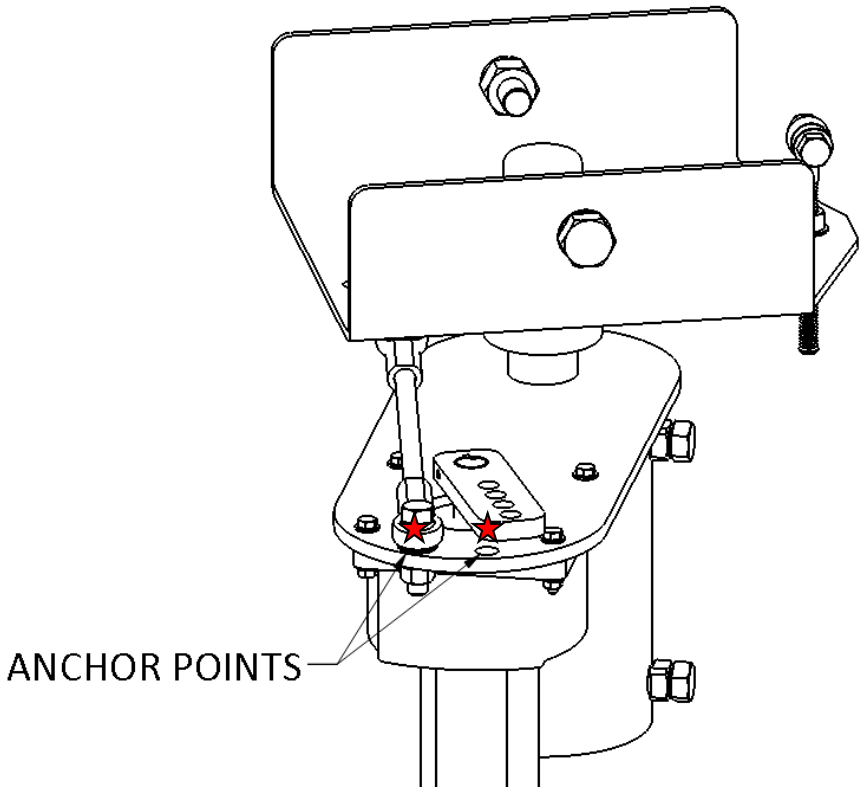
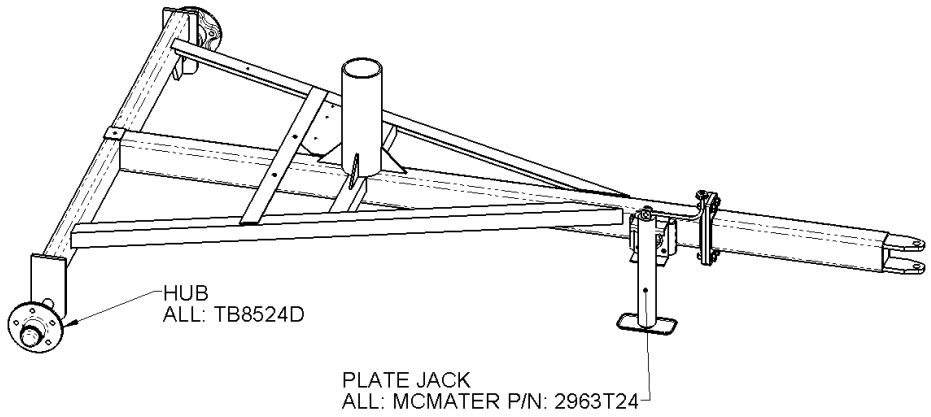


Figure 11: Towing anchor points

Trailer Component Diagram



Trailer Maintenance and Servicing

Wheel Bearings

Trailer wheel bearings should be inspected for proper tension, and the bearings repacked annually.

NOTE: The spindle nut should only be finger tightened to the point where the bearing play just becomes undetectable.

Appendix A, Electric Motor Wiring Diagrams

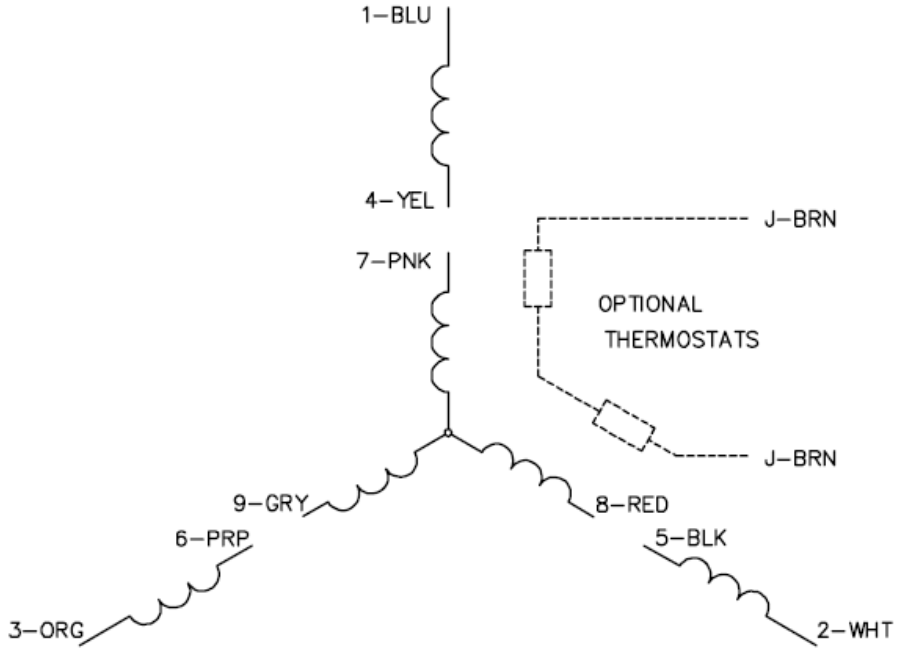
Figure 15: Belt Drive Fan Motor

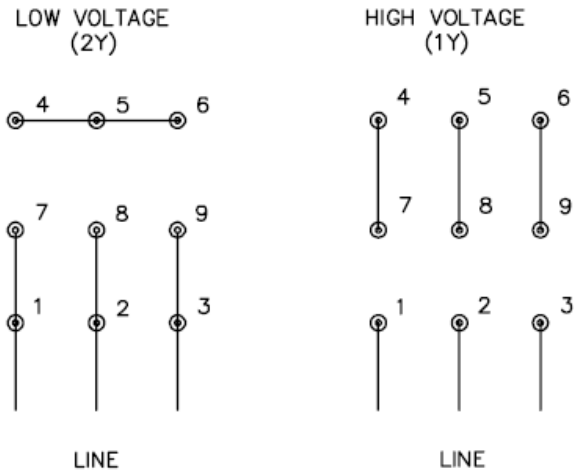
Figure 14: C-faced Motor for Gear Drive Fans

Figure 13: Baldor Gearmotor

Figure 12: Brother Gearmotor

CD0005





NOTES:

1. INTERCHANGE ANY TWO LINE LEADS TO REVERSE ROTATION.
2. OPTIONAL THERMOSTATS ARE PROVIDED WHEN SPECIFIED.
3. ACTUAL NUMBER OF INTERNAL PARALLEL CIRCUITS MAY BE A MULTIPLE OF THOSE SHOWN ABOVE.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

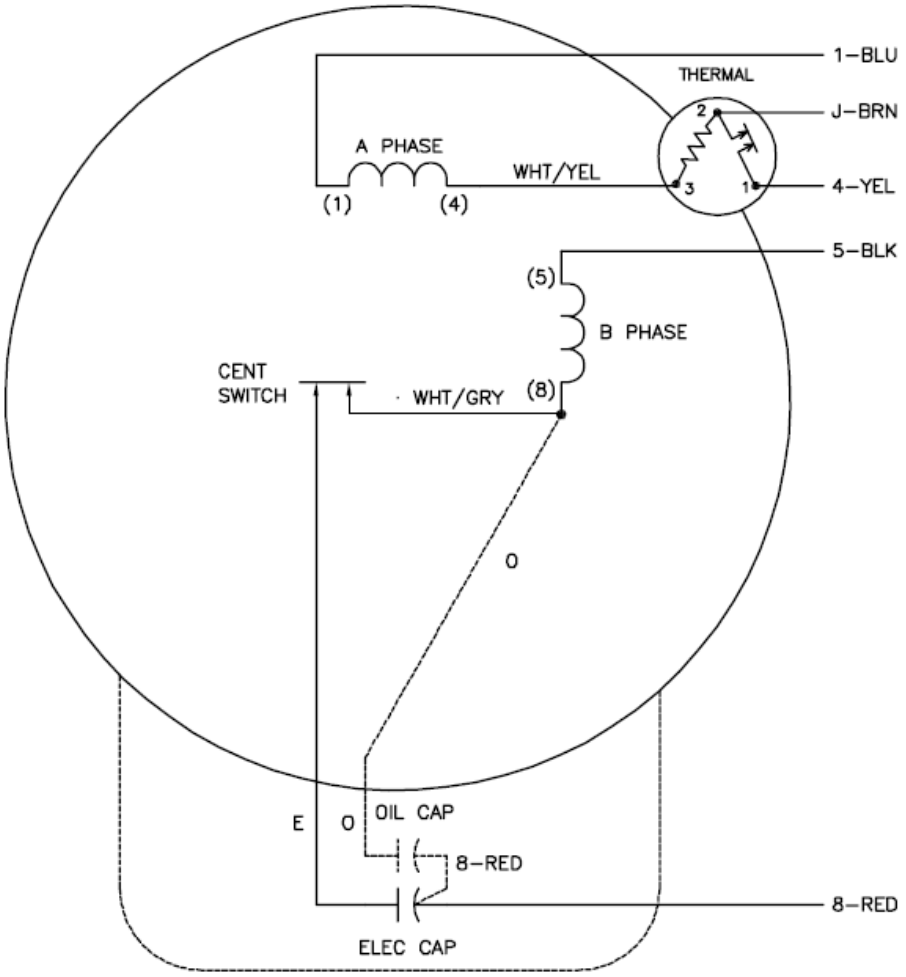
REV. DESC: REVISE TO SHOW OPTIONAL COLORS			
REV. LTR: E	BY: JLP	REVISED: 01/19/99 10:15	TDR: 0171435
CD0005		FILE: AAA00005140	MDL: –
		MTL: –	

BALDOR ELECTRIC Co.

3PH, DV, 9 LEADS

CD0005

CD0152



	LINE A	LINE B	JOIN
STD	1,8	4	J,5
OPP	1,5	4	J,8

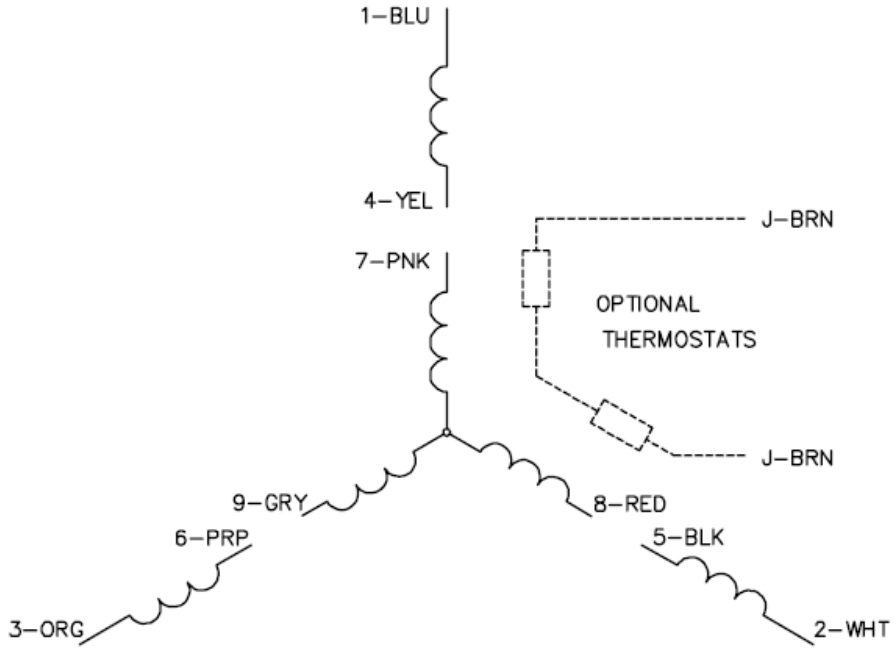
NOTES:

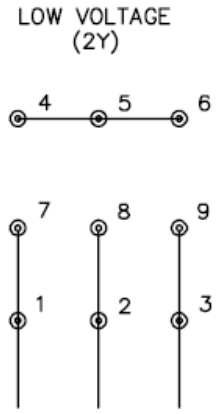
1. STANDARD ROTATION IS CCW FACING END OPPOSITE SHAFT EXTENSION.
2. MULTIPLE CAPACITORS ARE CONNECTED IN PARALLEL UNLESS OTHERWISE SPECIFIED.
3. OPTIONAL OIL CAPACITOR IS PROVIDED WHEN SPECIFIED.
4. CAPACITORS MAY BE SEPERATELY MOUNTED.
5. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

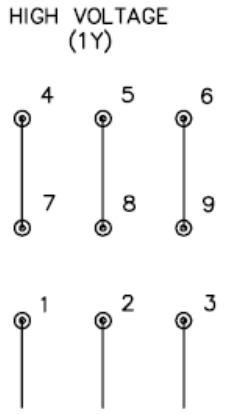
REV. DESC: REMOVE OPTIONAL THERMAL CONNECTION			BALDOR ELECTRIC Co.
REV. LTR: D	VERSION: 01	TDR: 000000373039	
CD0152	FILE: \AAA\00026\903	REVISED: 11:23:45 08/11/2005	TYPE L OR LC, SV, REV, 5 LDS, THERM, CAPS MAY BE SEP MTD
	MTL: –	BY: ENJOEPO	

CD0152

CD0005







NOTES:

1. INTERCHANGE ANY TWO LINE LEADS TO REVERSE ROTATION.
2. OPTIONAL THERMOSTATS ARE PROVIDED WHEN SPECIFIED.
3. ACTUAL NUMBER OF INTERNAL PARALLEL CIRCUITS MAY BE A MULTIPLE OF THOSE SHOWN ABOVE.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

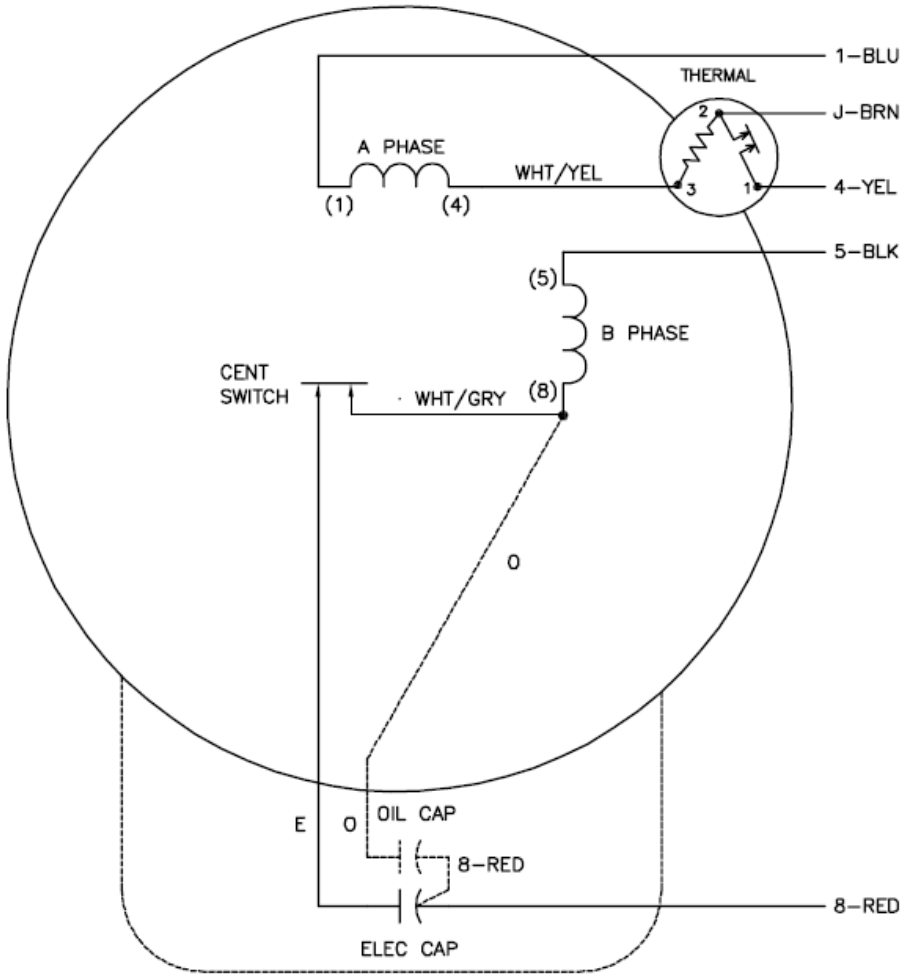
CD0005

REV. DESC: REVISE TO SHOW OPTIONAL COLORS			
REV. LTR: E	BY: JLP	REVISED: 01/19/99 10:15	TDR: 0171435
CD0005		FILE: AAA00005140	MDL: –
		MTL: –	

BALDOR ELECTRIC Co.

3PH, DV, 9 LEADS

CD0152



	LINE A	LINE B	JOIN
STD	1,8	4	J,5
OPP	1,5	4	J,8

NOTES:

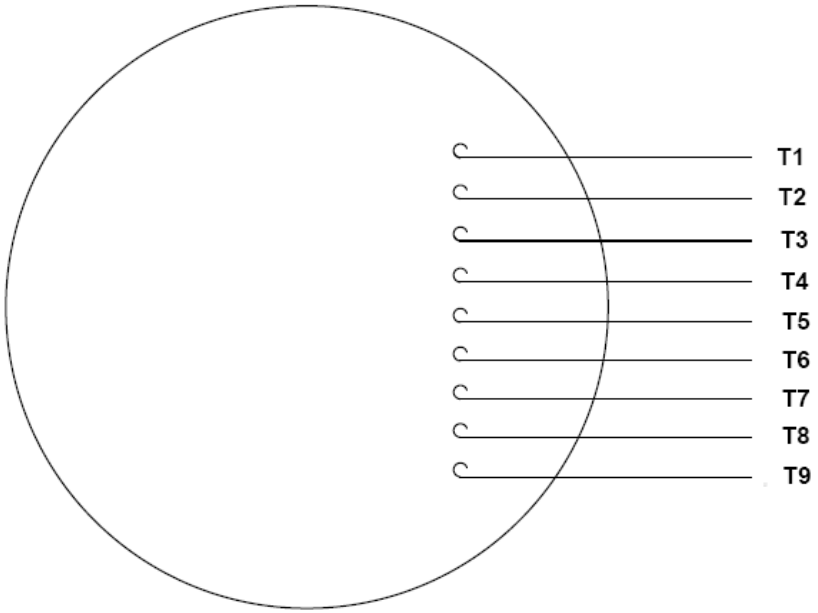
1. STANDARD ROTATION IS CCW FACING END OPPOSITE SHAFT EXTENSION.
2. MULTIPLE CAPACITORS ARE CONNECTED IN PARALLEL UNLESS OTHERWISE SPECIFIED.
3. OPTIONAL OIL CAPACITOR IS PROVIDED WHEN SPECIFIED.
4. CAPACITORS MAY BE SEPERATELY MOUNTED.
5. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

REV. DESC: REMOVE OPTIONAL THERMAL CONNECTION			BALDOR ELECTRIC Co.
REV. LTR: D	VERSION: 01	TDR: 000000373039	
CD0152	FILE: \AAA\00026\903	REVISED: 11:23:45 08/11/2005	TYPE L OR LC, SV, REV, 5 LDS, THERM, CAPS MAY BE SEP MTD
	MTL: –	BY: ENJOEPO	

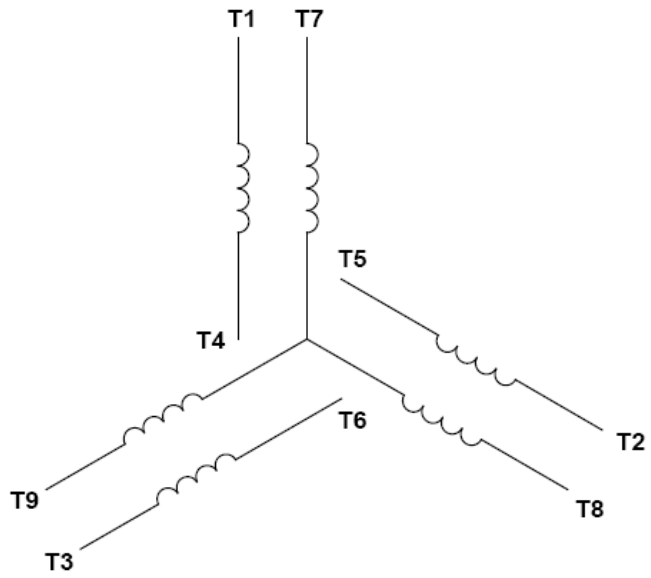
CD0152

Leeson 5HP 208-230/460v, 3Ø

VIEW FROM OUTSIDE OF MOTOR AT SWITCH END.



LINE LEADS



VOLTAGE	L1	L2	L3	JOIN & INSULATE
HIGH	T1	T2	T3	(T4,T7) (T5,T8) (T6,T9)
LOW	T1,T7	T2,T8	T3,T9	T4,T5,T6

NO	REVISION	BY & DATE	CHK
--	REDRAWN IN SOLIDWORKS	VJB 02/08/11	
11	ADD REV TO MATCH ORACLE	KJH 06/08/09	MDN

TOLERANCES UNLESS SPECIFIED

DEC	INCHES
X	±.1
.XX	±.01
.XXX	±.005
.XXXX	±.0005
ANG	±1/2°

LEESON ELECTRIC MOTORS GEARMOTORS AND DRIVES

TITLE EXTERNAL WIRING DIAGRAM
3 PHASE W/O PROTECTOR

MAT'L DECAL - 004014

FINISH

DRAWN RDW 04/12/02
CHK
APPR
SCALE 1:1
REF FIG. 2-51
FMF
PAGE OF

THIRD ANGLE PROJECTION

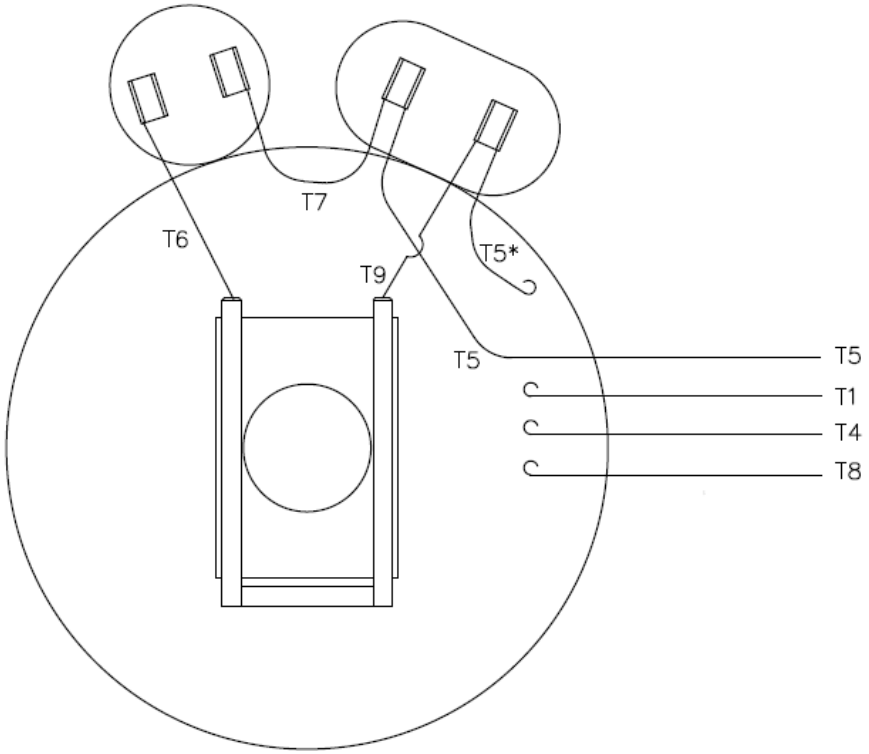
RFP 04/12/02
PREV
NETWORK FILE NAME 00501001

SIZE A
DRAWING NO 005010-01
REV --

2/11/2011 10:07:32 AM

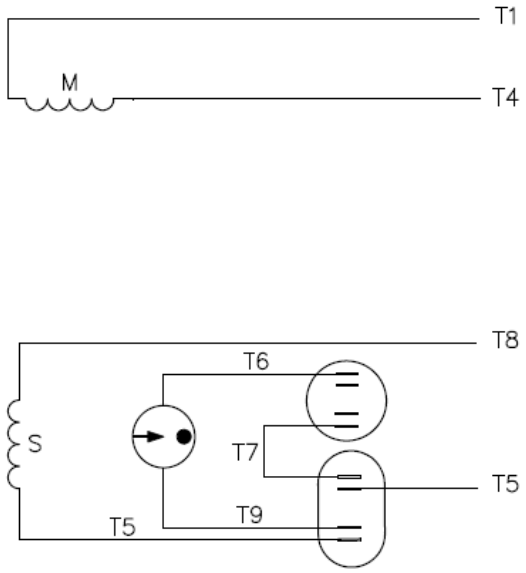
005018–01

VIEW FROM OUTSIDE OF MOTOR AT SWITCH END.



* THIS LEAD MAY BE WHITE

LINE LEADS



ROTATION FACING LEAD END	L1	L2
C.C.W.	T1,T8	T4,T5
C.W.	T1,T5	T4,T8

NO.	REVISION	BY & DATE	CHK
20	ALTERNATE T5 LEAD MARKING WAS RED	RLW 7/22/02	KH
19	ADDED ALTERNATE T5 LEAD MARKING	RLW 5/31/02	KH
18	REDRAWN ON CAD	DBT 06/24/97	

TOLERANCES UNLESS SPECIFIED: DEC. .X ±.1, .XX ±.01, .XXX ±.005, .XXXX ±.0005, ANG ±1/2°

LEESON ELECTRIC MOTORS GEARMOTORS AND DRIVES

TITLE: EXTERNAL WIRING DIAGRAM TYPE "K" W/O PROTECTOR

MAT'L. DECAL – 004018

FINISH

DRAWN ADH 02/19/74 | CHK WRK 02/20/74 | APPD JCW 02/20/74 | SCALE 1=1 | REF | FMF | PREV

RFP | CAD FILE 00501801 | DIST BRF–NLV

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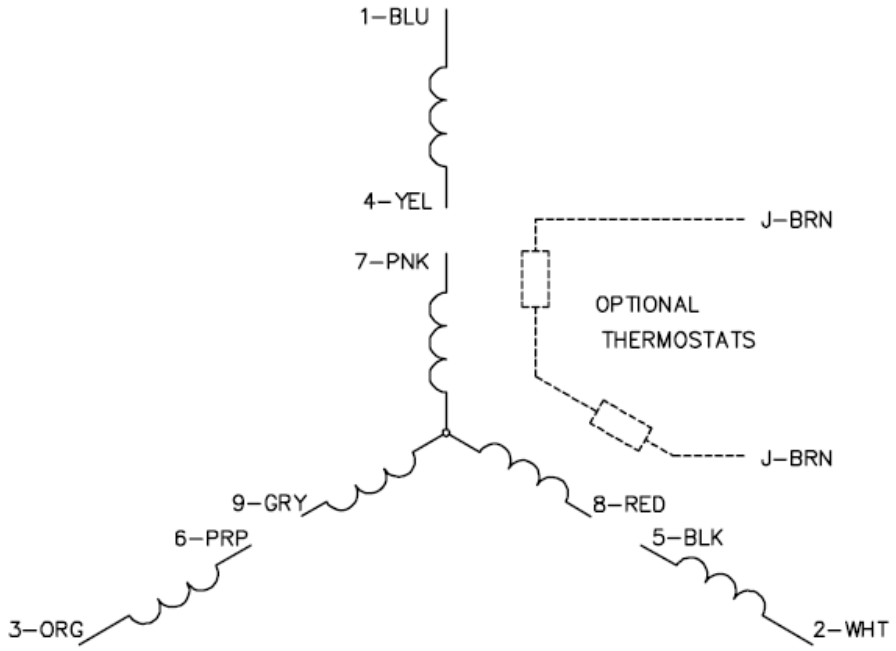
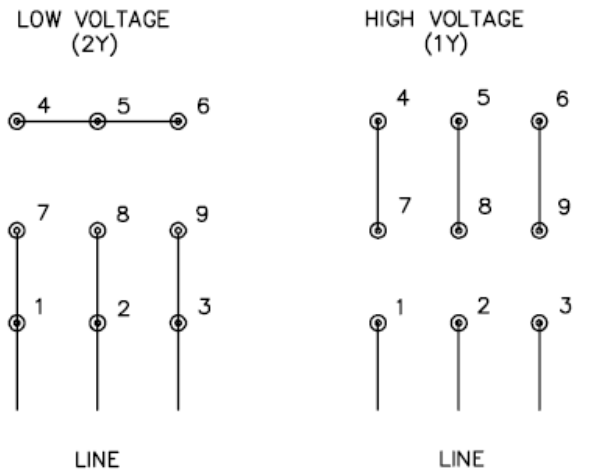
6/28/2007 4:39:03 PM -

CD0005





NOTES:

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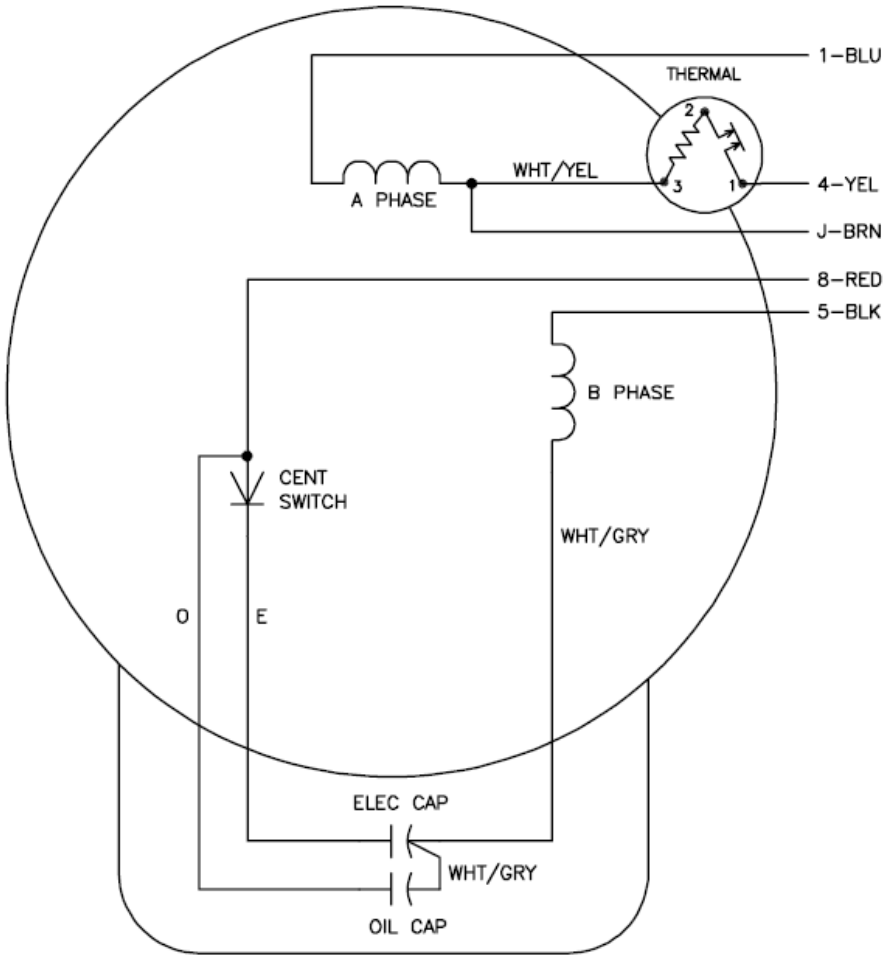
2. OPTIONAL THERMOSTATS ARE PROVIDED WHEN SPECIFIED.
3. ACTUAL NUMBER OF INTERNAL PARALLEL CIRCUITS MAY BE A MULTIPLE OF THOSE SHOWN ABOVE.
4. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

REV. DESC: REVISE TO SHOW OPTIONAL COLORS			BALDOR ELECTRIC Co.
REV. LTR: E	BY: JLP	REVISED: 01/19/99 10:15	TDR: 0171435
CD0005		FILE: AAA00005140	MDL: –
		MTL: –	3PH, DV, 9 LEADS

CD0005

CD0774



	LINE A	LINE B	JOIN
STD	1,8	4	J,5
OPP	1,5	4	J,8

NOTES:

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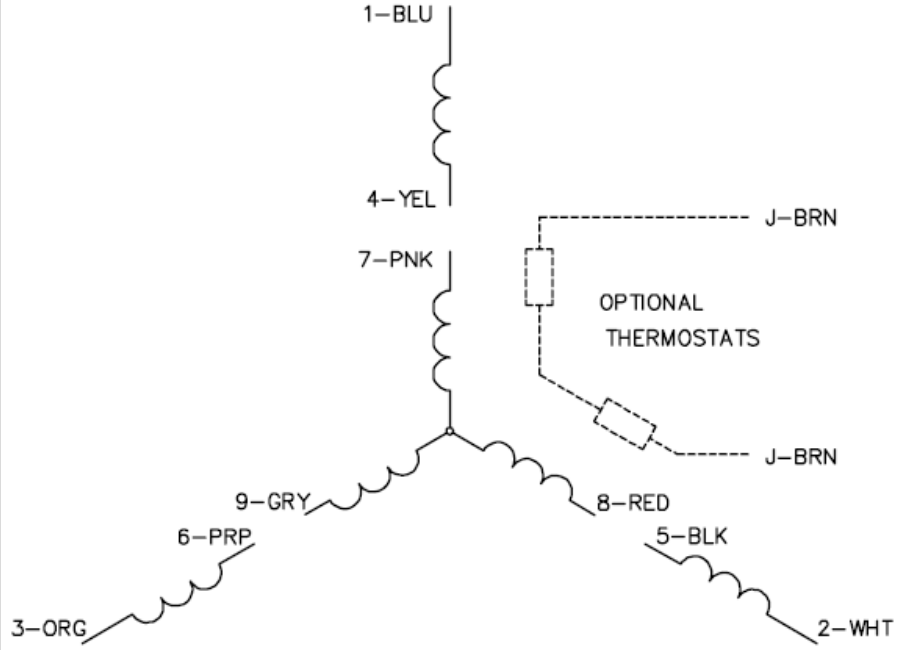
REV. DESC: REVISE TO SHOW OPTIONAL COLORS			
REV. LTR: B	BY: EAH	REVISED: 05/05/99 9:22	TDR: 0179909
CD0774		FILE: AAA00007538	MDL: –
		MTL: –	

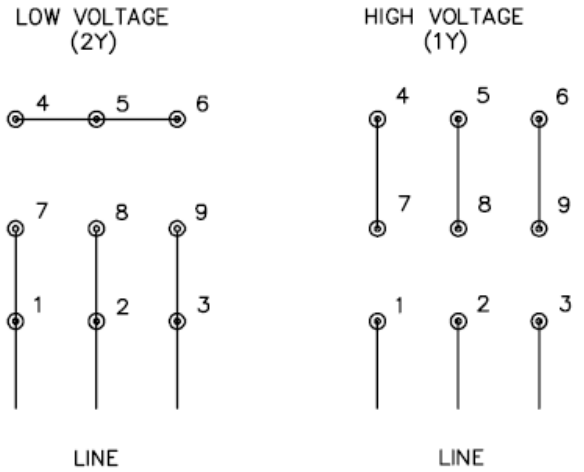
BALDOR ELECTRIC Co.

TYPE LC, SV, REV, THERMAL, LINE AMPS THRU HEATER, 5 LEADS

CD0774

CD0005





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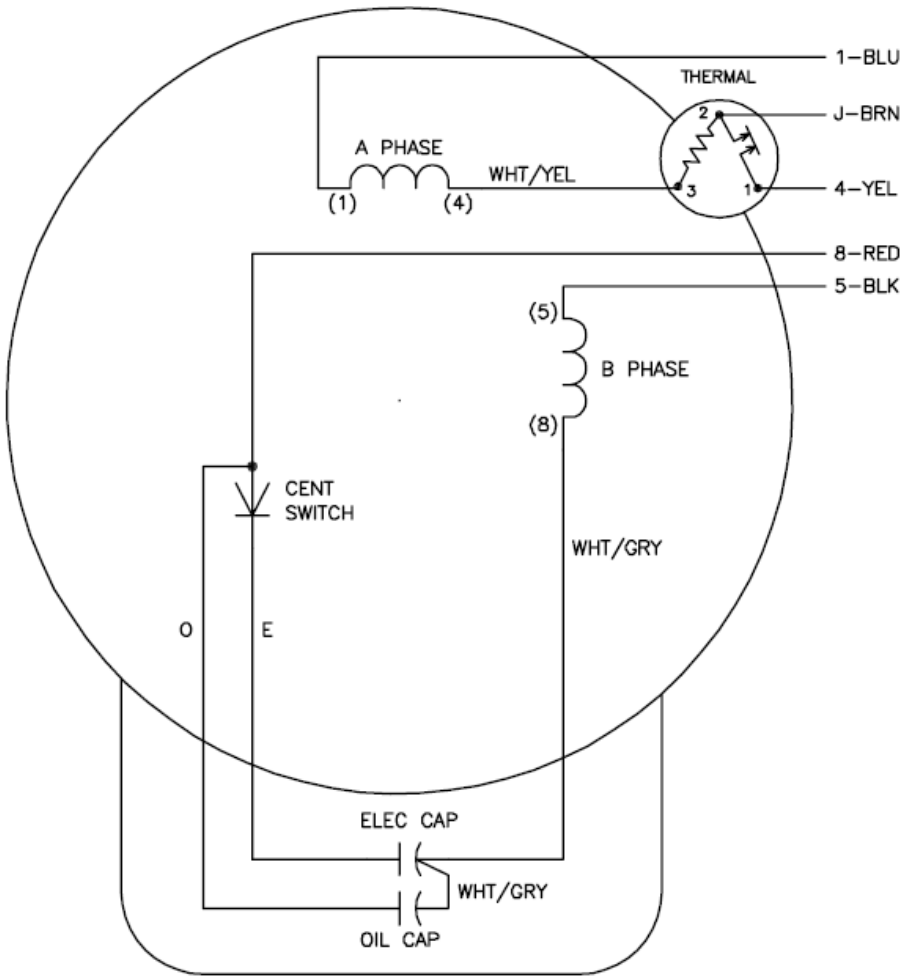
CD0005

REV. DESC: REVISE TO SHOW OPTIONAL COLORS			BALDOR ELECTRIC Co.
REV. LTR: E	BY: JLP	REVISED: 01/19/99 10:15	TDR: 0171435
CD0005		FILE: AAA00005140	MDL: –
		MTL: –	3PH, DV, 9 LEADS

CD0002A02



	LINE A	LINE B	JOIN
STD	1,8	4	J,5
OPP	1,5	4	J,8

NOTES:

1. STANDARD ROTATION IS CCW FACING END OPPOSITE SHAFT EXTENSION.
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3. LEAD COLORS ARE OPTIONAL. LEADS MUST ALWAYS BE NUMBERED AS SHOWN.

REV. DESC: REMOVE 2–TERMINAL THERMAL DETAIL, SEE CD0002A04		
REV. LTR: D	VERSION: 01	TDR: 000000360649
CD0002A02	FILE: \AAA\00007\520	REVISED: 17:11:40 04/15/2005
	MTL: –	BY: ENJOEP0

BALDOR ELECTRIC Co.

TYPE LC, SV, REV, THERMAL, 5 LEADS

CD0002A02

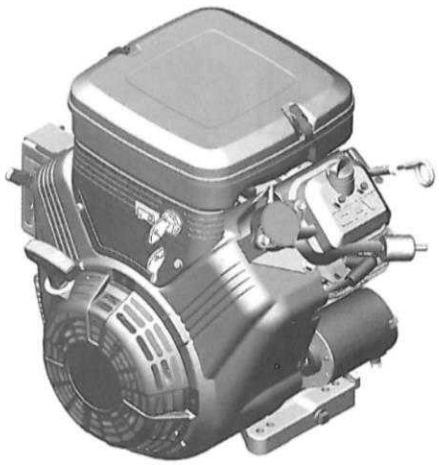
Appendix C, TB62G Engine Manual

BRIGGS&STRATTON

COMMERCIAL POWER

- (en) *Operator's Manual*
- (da) *Betjeningsvejledning*
- (de) *Bedienungsanleitung*
- (el) *Εγχειρίδιο Χρήσης*
- (es) *Manual del Operario*
- (fi) *Käyttäjän käsikirja*
- (fr) *Manuel de l'opérateur*
- (it) *Manuale dell'Operatore*
- (nl) *Gebruiksaanwijzing*
- (no) *Brukerhåndbok*
- (pt) *Manual do Operador*
- (sv) *Instruktionsbok*

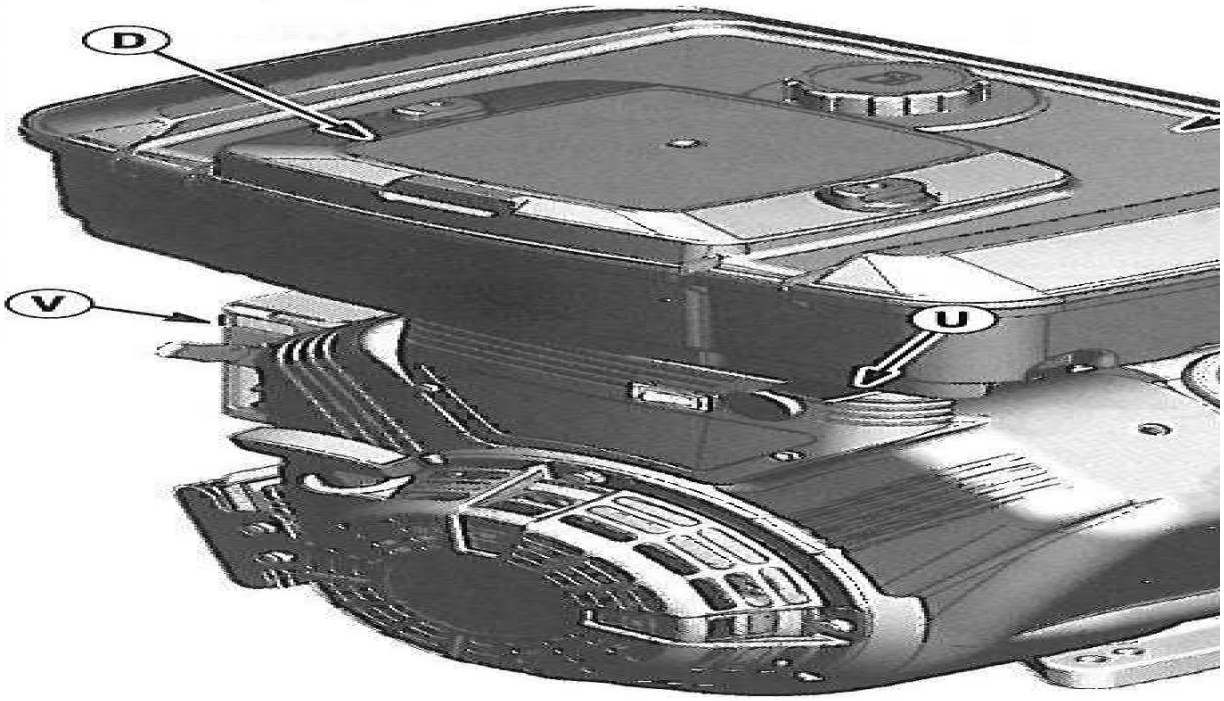
Model 290000	Vanguard™ Gasoline	Model 350000	Vanguard™ Gasoline
Model 300000	Vanguard™ Gasoline	Model 380000	Vanguard™ Gasoline



Form No. 279771WST
Revision: A

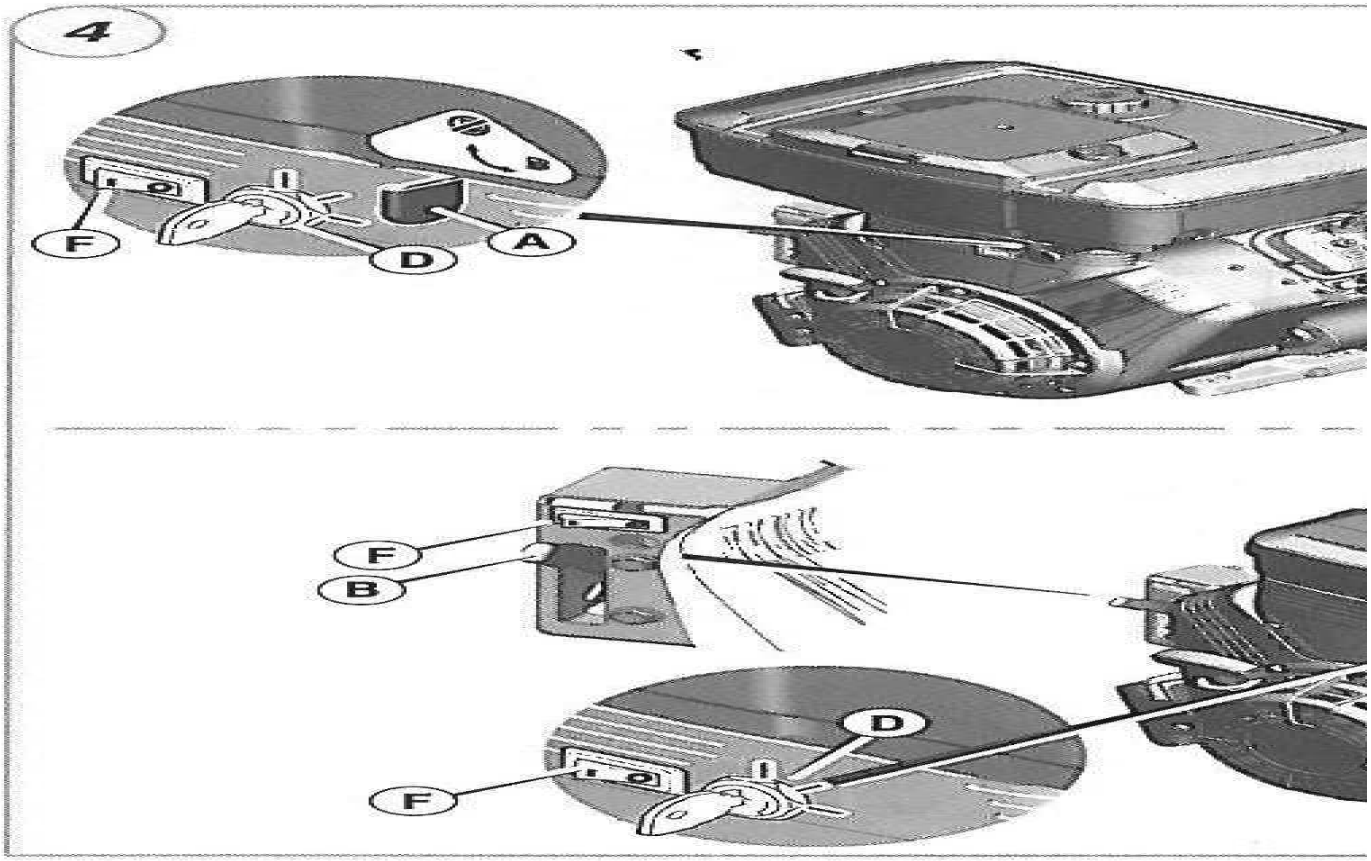
English	Dansk	Deutsch	Ελληνικά	Español	Suomi	Français	Italiano	Nederlands	Norsk	Português	Svenska
en	da	de	el	es	fi	fr	it	nl	no	pt	sv

1



2


2


4
F
D
A
F
B
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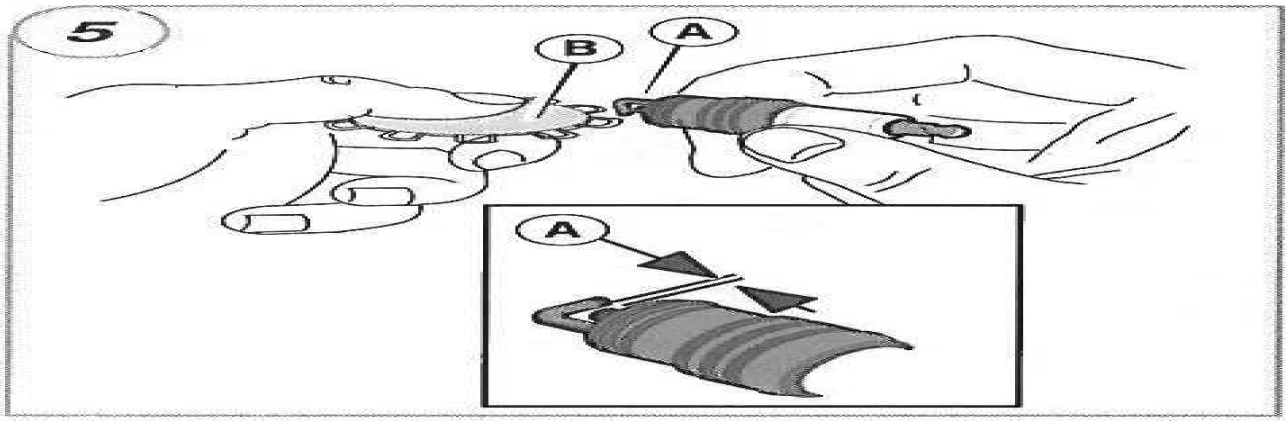
5
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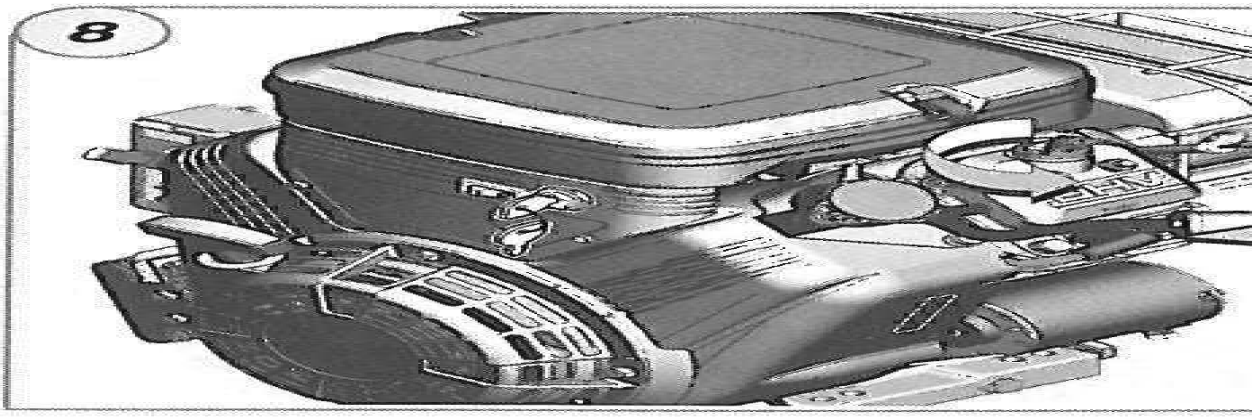
A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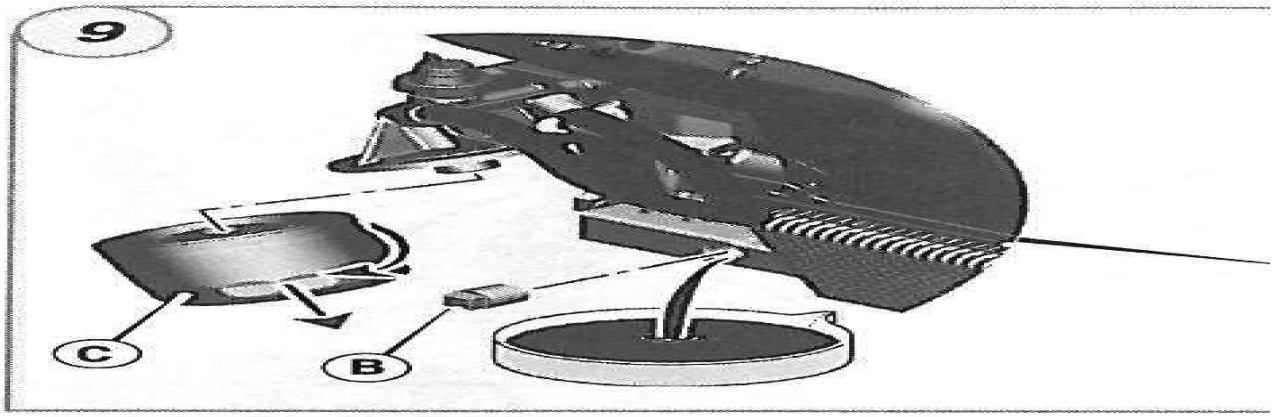
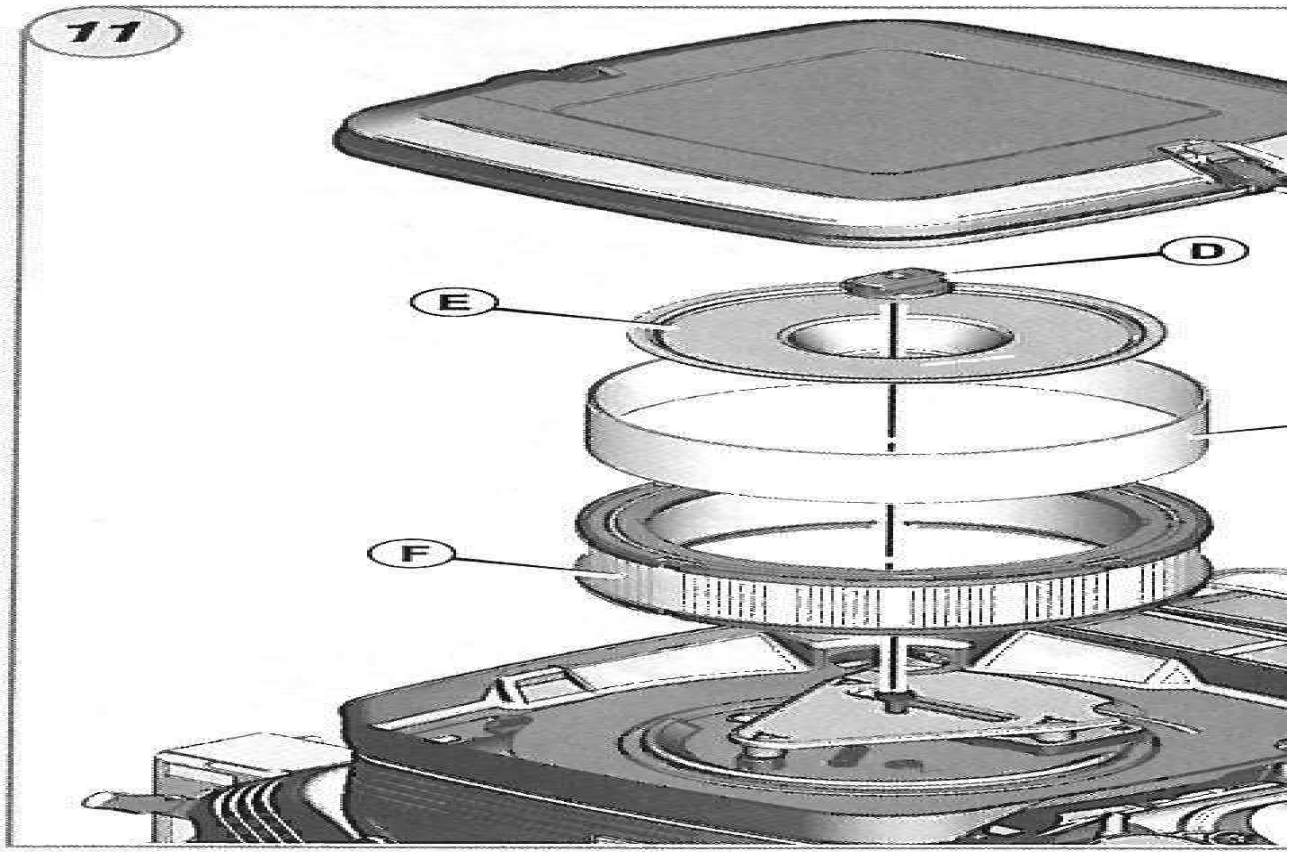

9
C
B


11
D
E
F

General Information

This manual contains safety information to make you aware c
associated with engines and how to avoid them. It also conta
proper use and care of the engine. Because Briggs & Stratto
necessarily know what equipment this engine will power, it is
understand these instructions and the instructions for the equ
original instructions for future reference.

For replacement parts or technical assistance, record below t
code numbers along with the date of purchase. These numbe
engine (see the ***Features and Controls*** page).

Date of purchase: _____
MM/DD/Y

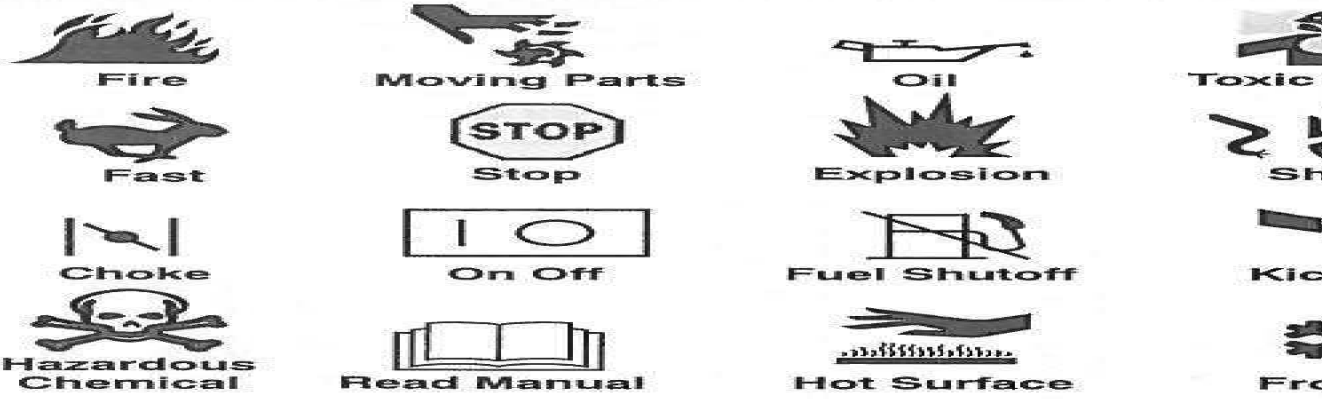
Engine model: _____
Model: Type:

Power Rating

The gross power rating for individual gas engine models is lab
SAE (Society of Automotive Engineers) code J1940 (Small E
Rating Procedure), and rating performance has been obtaine
accordance with SAE J1995 (Revision 2002–05). Torque valu
RPM; horsepower values are derived at 3600 RPM. Net powe
exhaust and air cleaner installed whereas gross power values
these attachments. Actual gross engine power will be higher
is affected by, among other things, ambient operating conditio
variability. Given the wide array of products on which engines
may not develop the rated gross power when used in a given
This difference is due to a variety of factors including, but not
engine components (air cleaner, exhaust, charging, cooling, c
application limitations, ambient operating conditions (temperat
engine–to–engine variability.
Due to manufacturing and capacity limitations, Briggs & Stratt
engine of higher rated power for this Series engine.

Operator Safety

SAFETY AND CONTROL SYM



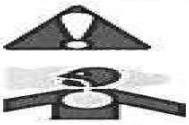
The safety alert symbol is used to identify safety informat
result in personal injury. A signal word (DANGER, WARNING, or
alert symbol to indicate the likelihood and the potential severity of
symbol may be used to represent the type of hazard.

DANGER indicates a hazard which, if not avoided,
serious injury.

WARNING indicates a hazard which, if not avoided
serious injury.

CAUTION indicates a hazard which, if not avoided,
moderate injury.

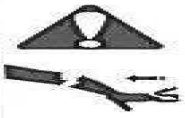
NOTICE indicates a situation that **could result in d**



WARNING

Engines give off carbon monoxide, an odo
Breathing carbon monoxide can cause na

- Start and run engine outdoors.
- Do not start or run engine in enclosed area, even



WARNING

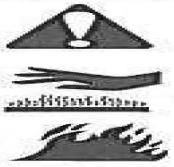
Rapid retraction of starter cord (kickback)
toward engine faster than you can let go.
Broken bones, fractures, bruises or sprain

- When starting engine, pull the starter cord slowly
pull rapidly to avoid kickback.
- Remove all external equipment/engine loads befo
- Direct-coupled equipment components such as, b
impellers, pulleys, sprockets, etc., must be secure

WARNING

Rotating parts can contact or entangle har
accessories.
Traumatic amputation or severe laceration

- Operate equipment with guards in place.
- Keep hands and feet away from rotating parts.
- Tie up long hair and remove jewelry.
- Do not wear loose-fitting clothing, dangling drawst
become caught.



WARNING

Running engines produce heat. Engine pa
become extremely hot.
Severe thermal burns can occur on contac
Combustible debris, such as leaves, grass

- Allow muffler, engine cylinder and fins to cool befo
- Remove accumulated debris from muffler area an
- It is a violation of California Public Resource Code
operate the engine on any forest-covered, brush-c
unless the exhaust system is equipped with a spa
Section 4442, maintained in effective working orde
jurisdictions may have similar laws. Contact the or
manufacturer, retailer, or dealer to obtain a spark a
exhaust system installed on this engine.

Features and Controls

Compare the illustration (1) with your engine to familiariz various features and controls.

A. Engine Identification
Model Type Code
B. Spark Plug
C. Air Cleaner (without Fuel Tank)
D. Air Cleaner, (with Fuel Tank)
E. Dipstick
F. Oil Fill
G. Oil Filter (optional)
H. Oil Drain Plug
I. Oil Pressure Sensor
J. Finger Guard
K. Electric Starter
L. Rewind Starter (optional)
M. Carburetor
N. Muffler (optional)
O. Fuel Pump
P. Starter Switch *
Q. Throttle Control *
R. Choke Control *
S. Fuel Filter (optional)
T. Fuel Tank (optional)
U. Fuel Shut Off (optional) *
V. Stop Switch (optional) *
W. Oil Cooler (optional)

* Some engines and equipment have remote controls. See location and operation of remote controls.

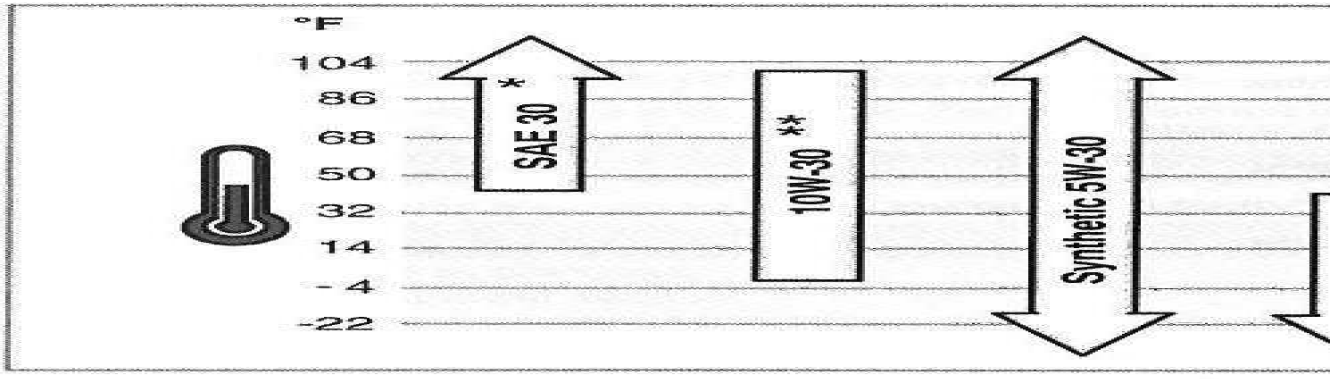
Operation

Oil capacity (see the ***Specifications*** section)

Oil Recommendations

We recommend the use of Briggs & Stratton Warranty Cert performance. Other high-quality detergent oils are acceptal SG, SH, SJ or higher. Do not use special additives.

Outdoor temperatures determine the proper oil viscosity fo select the best viscosity for the outdoor temperature range



* Below 40°F (4°C) the use of SAE 30 will result in hard s

** Above 80°F (27°C) the use of 10W-30 may cause incre oil level more frequently.

How To Check/Add Oil - *Figure* (2)

Before adding or checking the oil

- Place engine level.
- Clean the oil fill area of any debris.

1. Remove the dipstick (A) and wipe with a clean cloth (Fi
2. Fully insert the dipstick.

WARNING
Fuel and its vapors are extremely flamm
Fire or explosion can cause severe bur

When Starting Engine
- Ensure that spark plug, muffler, fuel cap and air place and secured.
- Do not crank engine with spark plug removed.
- If engine floods, set choke (if equipped) to OPE (if equipped) to FAST position and crank until e

WARNING
Engines give off carbon monoxide, an o
Breathing carbon monoxide can cause

- Start and run engine outdoors.
- Do not start or run engine in enclosed area, eve

NOTICE: This engine was shipped from Briggs & Stra the engine, make sure you add oil according to the in start the engine without oil, it will be damaged beyond under warranty.

Note: Some engines and equipment have remote con for location and operation of remote controls.

1. Check the oil level. See the ***How To Check/Add***
2. Make sure equipment drive controls, if equipped,
3. Turn the fuel shut-off valve (**A**), if equipped, to the
4. Push the stop switch (**F**), if equipped, to the on po
5. Move the throttle control (**B**) to the fast posi position.
6. Move the choke control (**C**) to the choke posi
   Note: Choke is usually unnecessary when restarti
7. **Rewind Start:** Turn the key switch (**D**), if equippe
8. **Rewind Start:** Firmly hold the starter cord handle slowly until resistance is felt, then pull rapidly.
   Note: If the engine does not start after repeated a **VanguardEngines.com** or call **1-800-999-9333** (i

WARNING: Rapid retraction of the starte hand and arm toward the engine faster than you can bruises or sprains could result. When starting engine resistance is felt and then pull rapidly to avoid kickba

9. **Electric Start:** Turn the electric start switch (**D**) to
   Note: If the engine does not start after repeated at **VanguardEngines.com** or call **1-800-999-9333** (i
   NOTICE: To extend the life of the starter, use shor maximum). Wait one minute between starting cycl
10. As the engine warms up, move the choke control

How To Stop The Engine - *Figure* 4

WARNING
Fuel and its vapors are extremely flamm
Fire or explosion can cause severe burn

- Do not choke the carburetor to stop engine.

1. With the throttle control (**B**) in the slow posit off position (Figure 4). Remove the key and keep i children.
2. Push the stop switch (**F**) to the off position.
3. After the engine stops, turn the fuel shut-off valve position.

Note: In some areas, local law requires using a resistor spark signals. If this engine was originally equipped with a resistor type for replacement.

Inspect Muffler And Spark Arrester - *Figure*

WARNING

Running engines produce heat. Engine parts, become extremely hot.
Severe thermal burns can occur on contact.
Combustible debris, such as leaves, grass, bru

- Allow muffler, engine cylinder and fins to cool before to
- Remove accumulated debris from muffler area and cyli
- It is a violation of California Public Resource Code, Sec operate the engine on any forest-covered, brush-covere unless the exhaust system is equipped with a spark arr Section 4442, maintained in effective working order. Ot jurisdictions may have similar laws. Contact the origina manufacturer, retailer, or dealer to obtain a spark arrest exhaust system installed on this engine.

Remove accumulated debris from muffler area and cylinder a Figure 6) for cracks, corrosion, or other damage. Remove the equipped, and inspect for damage or carbon blockage. If dar replacement parts before operating.

WARNING: Replacement parts must be of the s in the same position as the original parts. Other parts may damage the unit, and may result in injury.

How To Change The Oil - *Figure* (8) (9)

Used oil is a hazardous waste product and must be disposed with household waste. Check with your local authorities, servi disposal/recycling facilities.

Remove Oil

1. With engine off but still warm, disconnect the spark plug from the spark plug (Figure 8).
2. Remove the oil drain plug (**B**, Figure 9). Drain the oil into
3. After the oil has drained, install and tighten the oil drain p

Change The Oil Filter (if equipped)

Some models are equipped with oil filter. For replacement int ***Maintenance*** chart.

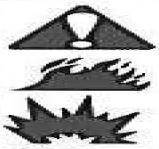
1. Drain the oil from the engine. See ***Remove Oil*** section.
2. Remove the oil filter (**C**) and dispose of properly. See Fig
3. Before you install the new oil filter, lightly lubricate the oil clean oil.
4. Install the oil filter by hand until the gasket contacts the o the oil filter 1/2 to 3/4 turns.
5. Add oil. See ***Add Oil*** section.
6. Start and run the engine. As the engine warms up, check
7. Stop the engine and check the oil level. It should be at th on the dipstick (Figure 8).

Add Oil

- Place engine level.
- Clean the oil fill area of any debris.
- See the ***Specifications*** section for oil capacity.

1. Remove the dipstick (**D**) and wipe with a clean cloth (Fig
2. Pour the oil slowly into the engine oil fill (**E**). **Do not over** one minute and then check the oil level.
3. Install and tighten the dipstick.
4. Remove the dipstick and check the oil level. It should be (**F**) on the dipstick.
5. Install and tighten the dipstick.

Storage



WARNING
Fuel and its vapors are extremely flammab
Fire or explosion can cause severe burns

When Storing Fuel Or Equipment With Fuel In Tank
- Store away from furnaces, stoves, water heaters o pilot lights or other ignition sources because they c

Fuel System
Fuel can become stale when stored over 30 days. Stale

Engine Specifications	
Model	2900
Displacement	29.2
Bore	2.67
Stroke	2.59
Oil Capacity	46 –

Engine Specifications	
Model	3000
Displacement	29.2
Bore	2.677
Stroke	2.598
Oil Capacity	46 –

Tune-up Specifications *	
Model	2900
Spark Plug Gap	0.030
Spark Plug Torque	180 lb
Armature Air Gap	0.008
Intake Valve Clearance	0.004
Exhaust Valve Clearance	0.004

* Engine power will decrease 3.5% for each 1,000 feet (3 angle up to 15°. Refer to the equipment operator's manua

Service Part	Part N
Air Filter – with fuel tank	39395
Air Filter – except model 380000	39401
Air Filter – model 380000	69251
Air Filter Pre-cleaner – with fuel tank	27179
Air Filter Pre-cleaner – except model 380000	27249
Air Filter Pre-cleaner – model 380000	69252
Oil – SAE 30	10002
Oil Filter – 6 cm long	49293
Oil Filter – 9 cm long	49105

We recommend that you see any Briggs & Stratton Au

BRIGGS &

Briggs & Stratton Corporation will repair or replace, fre
product submitted for repair or replacement under this
stated below. For warranty service, find the nearest
1-800-233-3723, or as listed in the 'Yellow Pages'.

**There is no other expressed warranty. Implied war
purchase, or to the extent permitted by law. All oth
extent exclusion is permitted by law.** Some states d
the exclusion or limitation of incidental or consequenti
and you may also have other rights which vary from st

Brand/Product Type	
Vanguard™ ■	
Extended Life Series™; I/C®; Intek™ I/C®; Intek™ Pr Professional Series™ with Dura-Bore™ Cast Iron Sle 850 Series™ with Dura-Bore™ Cast Iron Sleeve; Snow Series MAX™ with Dura-Bore™ Cast Iron Slee All Other Briggs & Stratton Engines Featuring Dura-E	
All Other Briggs & Stratton Engines	

* These are our standard warranty terms, but occa
warranty terms for your engine, go to BRIGGSa

▲ Home Standby Generator applications: 2 years
power in place of a utility. **Engines used in com**

■ Vanguard installed on standby generators: 2 yea
commercial use. Vanguard 3-cylinder liquid cool

The warranty period begins on the date of purchase by the
use" means personal residential household use by a retail c
Once an engine has experienced commercial use, it shall th

**No warranty registration is necessary to obtain warranty
purchase date at the time warranty service is requested**

About Your Warranty

Briggs & Stratton welcomes warranty repair and apologizes
inconvenienced. Any Authorized Service Dealer may perfor
warranty repairs are handled routinely, but sometimes reque
not be appropriate.

If a customer differs with the decision of the Service Dealer,
to determine whether the warranty applies. Ask the Service
supporting facts to his Distributor or the Factory for review.
Factory decides that the claim is justified, the customer will
items that are defective. To avoid misunderstanding which m
customer and the Dealer, listed below are some of the cause
warranty does not cover.

Normal wear: Engines, like all mechanical devices, need pe
replacement to perform well. Warranty will not cover repair v
exhausted the life of a part or an engine. Warranty would no
occurred because of misuse, lack of routine maintenance, sl
warehousing or improper installation. Similarly, warranty is vo
engine has been removed or the engine has been altered or

Improper maintenance: The life of an engine depends upon
it operates, and the care it receives. Some applications, such
mowers, are very often used in dusty or dirty conditions, whi
to be premature wear. Such wear, when caused by dirt, dust
other abrasive material that has entered the engine because
not covered by warranty.

**This warranty covers engine related defective material a
and not replacement or refund of the equipment to whic
mounted. Nor does the warranty extend to repairs requi**

1 **Problems caused by parts that are not original Brigg**

2 Equipment controls or installations that prevent starting,
performance, or shorten engine life. (Contact equipment

en

California, U.S. EPA,

The California Air Resources Board, U.S. EPA, and Br
to explain the emissions control system warranty on yo
engine/equipment. In California, new small off-road en
engines less than or equal to 1.0 liter must be designe
State's stringent anti-smog standards. B&S must warra
on your engine/equipment for the periods of time listed
no abuse, neglect, or improper maintenance of your en
Your emissions control system may include parts such
system, fuel tank, ignition system, and catalytic conver
belts, connectors, sensors, and other emissions-relate
Where a warrantable condition exists, B&S will repair y
to you including diagnosis, parts, and labor.

Manufacturer's Warranty Coverage:

Small off-road engines and large spark ignited engines
warranted for three years. If any emissions-related par
defective, the part will be repaired or replaced by B&S.

Brig

The following are specific provisions relative to your En
Operator's Manual.

1. Warranted Emissions Parts
   Coverage under this warranty extends only to the
   control systems parts) to the extent these parts we
   purchased.
   a. Fuel Metering System
      - Cold start enrichment system (soft choke
      - Carburetor and internal parts
      - Fuel pump
      - Fuel line, fuel line fittings, clamps
      - Fuel tank, cap and tether
      - Carbon canister
   b. Air Induction System
      - Air cleaner
      - Intake manifold
      - Purge and vent line
   c. Ignition System
      - Spark plug(s)
      - Magneto ignition system
   d. Catalyst System
      - Catalytic converter
      - Exhaust manifold
      - Air injection system or pulse valve
   e. Miscellaneous Items Used in Above Systems
      - Vacuum, temperature, position, time sens
      - Connectors and assemblies
2. Length of Coverage
   For a period of three years from date of original purc
   original purchaser and each subsequent purchaser t
   and equipped so as to conform with all applicable re
   Resources Board; that it is free from defects in mate
   cause the failure of a warranted part; and that it is id
   the engine described in the manufacturer's applicatio
   period begins on the date the engine is originally pur

Look For Rel

Engines that are certified to meet the California Air Reso
off-road Emissions Standard must display information re
Period and the Air Index. Briggs & Stratton makes this in
consumer on our emissions labels. The engine emissions
information.

The **Emissions Durability Period** describes the number
for which the engine is certified to be emissions complian
maintenance in accordance with the Operating & Mainter
following categories are used:

Moderate:
Engine is certified to be emissions compliant for 125 hour

Intermediate:
Engine is certified to be emissions compliant for 250 hour

Extended:
Engine is certified to be emissions compliant for 500 hour
For example, a typical walk-behind lawn mower is used 2
Therefore, the **Emissions Durability Period** of an engine
would equate to 10 to 12 years.

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