



Technical Precautions for Design, Installation and Maintenance

Read and follow all safety instructions! These instructions contain important sections on design, installation, safety, use, maintenance, parts replacement, and other technical information. Always include these instructions with pulley.

Read the manual before installing or operating the pulley. Failure to understand how to install or operate the pulley could cause personal injury or even death. Any modification made to or unintended use of the pulley could create a hazardous condition that could cause death or serious injury.

Contents

	Page
Actual Belt Speed vs, Nominal Belt Speed.....	85
Aftermarket Service.....	85
Ambient Temperature.....	85
Belt Alignment.....	85
Belt Pull.....	85
Belt Tension.....	85
Capacitors for Single Phase Motors.....	86
Clearance.....	86
Electric Installation.....	86
Electromagnetic Brake.....	86
Guarding & Lock Out/Tag Out.....	86
High Duty Cycle.....	86
Lagging Description.....	87
Mechanical Backstops.....	87
Motor Current Overload & Overcurrent Protection.....	87
Motor Thermal Protection.....	87
Motorized Pulley Mounting Orientation.....	87
Mounting Brackets.....	88
Non-Belt, Partial Belt, Modular Belt.....	88
Oil & Oil Seal Maintenance.....	88
Pulley Diameter.....	88
Regreasable Labyrinth Seals.....	89
Reversing Conveyors.....	89
Surface Coating.....	89
Storage of Motorized Pulleys.....	89
Start-up.....	89
Terminal Box.....	89
Transport & Handling.....	90
Variable Frequency Drive.....	90

IMPORTANT INFORMATION

- After unpacking the pulley, inspect carefully for any damage that may have occurred during transit. Check to be sure all supplied accessories are enclosed with the unit. If you have questions regarding safety or damaged or missing parts, please contact RULMECA.
- Also, for testing the pulley, shafts must be fixed to a frame properly before motor is connected to the power supply and switched on. The shell must be protected against accidental contact because of rotating.
- It is the responsibility of the contractor, installer, owner and user to install, maintain and operate the conveyor, components and conveyor assemblies in such a manner as to comply with: The Occupational Safety and Health Act and with any and all state and local laws and ordinances as to the national and international standards:
 - ANSI – B20.1 Safety Code and Conveyor Equipment Manufacturers Association (CEMA) voluntary consensus standards which may prevail,
 - ANSI – Z535 Warning label Series
 - ISO 3864-2 Product Safety labels
- When existing equipment is being retrofitted, upgraded or even changed, it is in the customer's best interest to bring the equipment up to today's standards. If there are any questions, please contact RULMECA.

Do not install standard drum motors in areas with potentially explosive concentrations of vapors, gases, mists and dust.

Technical Precautions for Design, Installation and Maintenance



1) Actual Belt Speed vs. Nominal Belt Speed:

- Two key specifications for each Motorized Pulley are power (HP) and nominal belt speed, as shown on individual specification pages in this catalog.
- Nominal belt speed is a design target, providing consistent choices among all models and powers. For example, a nominal belt speed of 300 fpm is available in most pulley models.
- Actual full load belt speed is almost never exactly equal to nominal belt speed.
- Actual belt speed is a function of the motor pole number, gear ratio, and load. Therefore, this catalog displays actual full load belt speed at 60 Hz, as well as nominal belt speed, to assist designers who need more precise belt speeds.
- Note that all belt speeds shown in this catalog refer to unlagged pulleys, as described in the speed chart footnote for each model.
- Note that each Rulmeca Motorized Pulley for a three-phase power supply uses an asynchronous squirrel-cage induction motor with approximately 5% slip. In a no load condition, motor RPM is nearly equal to “synchronous speed” RPM. The slip rate is dependent on power and design of the motor. Low-powered motors have a lower slip rate than high-powered motors. At full load, the motor RPM is approximately 5% less than synchronous.
- The “actual belt speed” displayed in this catalog is based on an unlagged pulley running at full load, nominal voltage (e.g. 460 volts), and 60 Hz.
- The maximum no load belt speed of this pulley is approximately 5% higher than the full load belt speed.

2) Aftermarket Service:

- Always contact your local authorized Rulmeca service center or distributor for aftermarket service.
- You may also contact Rulmeca at www.rulmecacorp.com.

3) Ambient Temperature:

- Motorized Pulleys are normally cooled by dissipating heat through contact between the surface of the pulley and the conveyor belt. It is essential that each pulley have an adequate thermal gradient between the pulley's motor stator and its “ambient operating temperature”.
- All Motorized Pulleys in the catalog are designed and tested under full load for use in a maximum ambient temperature of +104°F with standard Class F motor. Motorized Pulleys with Class H motors and synthetic oil are suitable for use in a maximum ambient temperature of 120°F.
- For example, a conveyor belt in a facility with an air ambient temperature of +75°F, carrying processed material at a temperature of +130°F, will have a Motorized Pulley “ambient operating temperature” that is significantly higher than +75°F. In this example, the actual temperature of the bottom of the belt in the vicinity of the Motorized Pulley may be equal to the material temperature, depending upon parameters such as conveyor length, belt thickness and belt speed.
- In retrofit applications it is advisable to measure the temperature of the underside of the belt near the the drive pulley to determine the actual “ambient operating temperature”.
- For ambient operation conditions lower or higher than allowable ambient temperature (-22°F to 120°F), contact Rulmeca.

- All Motorized Pulleys shown in this catalog must be fitted with a conveyor belt to prevent overheating. Motorized Pulleys fitted without a belt must be referred to Rulmeca.
- It is possible to use specially designed Motorized Pulleys to perform tasks other than driving standard rubber conveyor belt (e.g. modular plastic belts and v-belts. Please contact Rulmeca for such applications.
- Operating Rulmeca Motorized Pulleys to drive standard conveyor belts outside of the allowable ambient temperature range *voids product warranty*.

4) Belt Alignment:

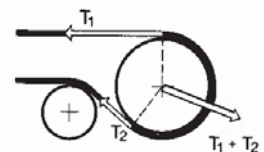
- Motorized Pulleys must be installed with pulley shaft perpendicular to belt centerline and parallel to all idler rollers.
- Belt centerline must be straight and parallel to side walls of slider bed (if any) and perpendicular to idler rollers and all pulleys.
- Belt and/or roller misalignment may cause high friction and overload the conveyor belt drive motor.
- Belt misalignment may cause premature wear of pulley lagging.

5) Belt Pull:

- This catalog specifies “Actual Belt Pull” for each model, power, and speed of pulley. Note that the specified actual belt pull allows for a motor and gearbox efficiency loss of 3 to 5%.
- Always select the Motorized Pulley power by comparing calculated “Required Belt Pull (Te)” with “Actual Belt Pull” as listed in this catalog and not simply on the basis of calculated power (HP).

6) Belt Tension:

- The conveyor should never be over-tensioned. It should only be installed with sufficient belt tension to prevent belt slippage.
- Anti-slip lagging should be used to keep the radial load as low as possible to drive the belt without slipping.
- The maximum allowable radial load of each Motorized Pulley is specified in this catalog. Subjecting the Motorized Pulley to a higher than specified maximum radial load may damage internal components and shorten product lifetime and, therefore, *voids product warranty*.
- To check the pulley radial load, do a vector summation of the loads on the pulley.
- For example, as shown in the diagram,
 1. Radial load equals $T_1 + T_2$.
 2. T_1 , tight side tension, equals Belt Pull (Te) plus T_2 .
 3. T_2 , slack side tension, is determined using CEMA standard calculations or DIN 22101 to provide enough friction between the pulley and the belt to drive the belt and limit the belt sag between idlers.
- Belt type, belt thickness and minimum allowable pulley diameter must be selected according to Belt Supplier Requirements.





Technical Precautions for Design, Installation and Maintenance

7) Capacitors (for Single Phase Motors):

- Each single phase Motorized Pulley requires an appropriate "Run" capacitor, ordered separately. Detailed information is available upon request.
- Using other than the specified Run capacitor and a current-dependent switching relay may damage the motor and *voids product warranty*.
- The Run capacitor must be permanently connected to the motor, as shown in the connection diagram.
- Rulmecca single phase motors are "permanent split phase motors". Each motor is supplied with two windings. They are designed so that an appropriately sized capacitor connected to one of the windings will start the motor rotating.
- Starting torque is limited to 70% of full running torque when only a "Run" capacitor is used.
- It is possible to increase starting torque to 100% by adding a second appropriately sized capacitor ("Start" capacitor) to the circuit. Note that this circuit must be designed to drop the starting capacitor out of the circuit after the motor has reached its nominal speed. Contact Rulmecca for more information on how to run single phase motors using the Start and Run capacitors.

8) Clearance:

- It is necessary to design conveyor frame and all chutes such that structure and/or product jamming against the Motorized Pulley is avoided.
- The "non-rotating shaft" feature of Motorized Pulleys offers a higher margin of safety than exposed drives with rotating shafts. However, Motorized Pulley end housings, lagging or tube may be damaged if structure or product jams against pulley while it is rotating.

9) Electrical Installation:

- The equipment manufacturer (OEM) must ensure that the Motorized Pulley is not put into operation before it is
 - Correctly installed
 - Correctly connected to the power supply
 - Correctly protected
- A specialist must perform the electrical connection of the Motorized Pulley in accordance with electrical regulations. If in doubt, contact Rulmecca.
- A wiring diagram is always supplied with the Motorized Pulley. Always refer to the connection instructions and ensure that the motor power and control circuits are properly connected.
- Standard Rulmecca Motorized Pulleys are delivered with clockwise rotation when viewed from the terminal box end of the Motorized Pulley.
- Always refer to the connection instructions and ensure that the motor is connected as required to the correct power supply.
- Connect system ground wire to grounding screw located in the terminal box.
- When using cable options, the green/yellow wire must be connected to the system ground wire.

10) Electromagnetic Brake:

- The spring-loaded electromagnetic brake is intended for use as a conveyor belt holding device and not a conveyor belt stopping device.
- The control circuit for the Motorized Pulley motor and brake must be designed to stop the pulley motor before brake clamps shut and start the pulley motor after the brake is released.
- Spring-loaded electromagnetic brakes are designed to release when power is applied to the brake coil. This is a "fail safe" feature. They clamp shut when brake power is removed (either during normal operation or during an emergency loss of overall system power).
- Control circuit must be designed so that motor and brake never work against each other. The brake should never be clamped shut when the motor is on except for "emergency stop" condition. The motor should never be powered on (including "jog" command) when the brake is clamped shut.
- Electromagnetic brakes are DC-powered. They are supplied with AC to DC rectifiers to be mounted in a remote panel (by others). Rectifiers must be fuse-protected.
- Motor control circuit must be designed to kill motor power in the event of loss of brake power. If this safety provision is not made, it is possible for pulley motor to be "powered through" a clamped brake, ruining brake and/or motor.
- A wiring diagram is supplied with every Motorized Pulley. Always ensure that motor and brake power and control circuits are connected according to instructions. Wiring diagrams are available separately, at any time, upon request.
- For rectifier connection and protection instructions, refer to rectifier data sheet supplied with Motorized Pulley.
- The built-in brake disc is a wear part. Its lifetime depends on the operating conditions.
- Neglecting these instructions could cause damage to the motor and/or brake and *voids product warranty*.

11) Guarding and Lock Out/Tag Out:

- If repair or maintenance is required, the Motorized Pulley must be disconnected from the power supply before the terminal box can be opened. Turn the electrical power off at the electrical panel board (circuit breaker or fuse box) and lock and tag the panel board door to prevent someone from turning on power while unit is being serviced. Failure to do so could result in serious electrical shock, burn, or possible death.
- During a test run, the shaft ends must be correctly fixed to the support frame and guarding must be provided around the rotating parts for the protection of all personnel.

WARNING: *DO NOT operate without guards in place. Failure to follow these instructions could result in death or serious injury.*

12) High Duty Cycle:

- Rulmecca Motorized Pulleys are designed to operate either continuously or intermittently. The table below gives each standard model's maximum allowable start/stop duty cycle for intermittent operation. Operating Motorized Pulley above this maximum could cause motor and/or gearbox damage and *voids product warranty*.

Technical Precautions for Design, Installation and Maintenance



Maximum Number of Start/Stops per Minute		
Model	3 phase	1 phase
80LP, 80LS, 113LP, 113LS	15	10
138LS	4	Contact Rulmeca
165LS	3	Contact Rulmeca

- Optional Motorized Pulley designs are available to operate at higher duty cycles working with soft start devices or appropriately programmed Variable Frequency Drives. Contact Rulmeca before designing a system to operate at a duty cycle higher than specified in this catalog.
- Note that a conveyor control system that incorporates a “jog” command should be timed to restrict the number of jogs to the maximum allowable start/stop duty cycle for each pulley model.

13) Lagging Description:

- Smooth, diamond pattern, and profiled lagging is available in different colors. Approximate rubber hardness is 65-70 durometer (shore hardness A).
- Cold bonded or hot vulcanized lagging is available.
- Oil & grease resistant synthetic rubber is also available for oily operating conditions and/or certain types of belting material. Check with belting supplier if belt/lagging material compatibility could be a problem.
- Adequate Motorized Pulley heat dissipation is necessary. Lagging thickness and width greatly effect pulley heat dissipation characteristics.
- Contact Rulmeca before applying any lagging to pulley surface to obtain thickness and width specifications and *maintain Motorized Pulley warranty coverage*.
- Lagging material is a wear item and should be replaced when it wears out. Service life depends upon the application. *Product warranty does not include lagging wear*.
- Rulmeca Motorized Pulleys shown in this catalog must be fitted with a conveyor belt to prevent overheating. Motorized Pulleys fitted without a belt must be referred to Rulmeca.

14) Mechanical Backstops:

- Motorized Pulleys fitted with mechanical backstops are used on inclined conveyors to prevent run back of the loaded belt when power supply is off.
- The backstop is built into the Motorized Pulley and mounted on the rotor shaft.
- If pulley is supplied with optional mechanical backstop, direction of proper rotation of pulley is indicated by an arrow which is fastened to the end housing on the terminal box (or power cord) side of the pulley. Clockwise and counterclockwise backstops are available.
- Rotation direction is to be specified when placing the order.
- Pulley rotation is specified from the point of view of a person looking at the pulley from the terminal box (or power cord) side of the pulley.
- The identity of each of the three phases of the power supply must be determined before attaching power supply wires to the pulley to prevent the motor from driving against the backstop. The identities of the three phases of the motor are clearly labeled on the terminal strip or wires (in power cord type).
- Driving the motor against the mechanical backstop may damage motor and/or backstop and *voids product warranty*.

15) Motor Current Overload and Overcurrent Protection:

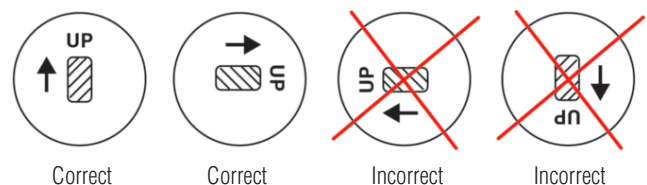
- Motor control system must include protection against operating pulley motors in excess of Full Load Amperage (FLA). The control system should also include protection against voltage spikes and excessive jogging of motors. Failing to provide adequate current overload and over current protection could stress the motor and *voids product warranty*.
- Electrical connection diagrams for many models are included in this catalog. Connection diagrams for all other models are available upon request.
- FLA data is available for all motors upon request. FLA data is also supplied on motor label for each Motorized Pulley.
- Electrical power, control, and protection for Motorized Pulleys must adhere to all pertinent regulations.

16) Motor Thermal Protection:

- All Motorized Pulleys are supplied with thermal protection. It consists of heat-sensitive, bimetallic switches that are built into each motor winding. The switches are designed to open if motor temperature elevates to an inappropriately high level. Standard Rulmeca thermal switch has a maximum current limit of 2.5 amps at 230 volts. Other thermal switches are available.
- Switches in three phase motors must be connected to a normally closed control circuit (in series with a magnetic coil/relay device and contactor) in order to *validate product warranty*.
- Switches in certain single phase motors are installed in series with motor winding. These switches can deactivate and re-energize motors automatically.
- A motor control circuit for three phase Motorized Pulleys should kill motor power if thermal switch opens. Thermal switches will automatically close as motor cools. Cooling times vary with pulley model, power, and size. However, 30 to 60 minutes is common with most motors in an ambient temperature of 70° F.

17) Motorized Pulley Mounting Orientation:

- Rulmeca Motorized Pulleys should always be mounted with pulley shafts horizontal, parallel to idler rollers, and perpendicular to conveyor centerline.
- Motorized Pulleys are positioned such that the mounting brackets are located parallel or perpendicular to the conveyor frame. If Motorized Pulley needs to be mounted to the bottom of a horizontal beam, contact Rulmeca.
- For Motorized Pulley types 80LP - 165LS “UP” is indicated with the word “UP” stamped on the pulley shaft.



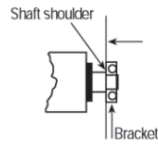
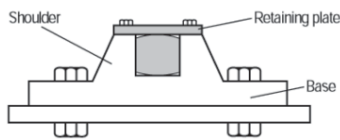
- Models 80LP - 165LS are to be mounted as shown on the sketch above.
- *In case of a non-horizontal installation > +/-5 degrees, consult Rulmeca.*
- Mounting the Motorized Pulley in a position other than those described above could cause severe product damage and *voids product warranty*.



Technical Precautions for Design, Installation and Maintenance

18) Mounting Brackets:

- Use the correct Rulmecca mounting brackets matching the respective types of Motorized Pulleys as listed in this catalog.
- Note that it is physically possible, but not permissible, to interchange mounting brackets between models. Mounting brackets designed for smaller diameters or lower-powered pulleys may not be used for larger diameters or higher-powered pulleys.
- Mounting brackets must be mounted to frame such that belt pull is resisted by the shoulder or base of the mounting bracket. Mounting brackets have a top shaft retaining plate. This plate is not designed to resist belt pull.



- The designer must select appropriate mounting bolts to resist belt forces and/or the weight of the pulley depending on the mounting position of the pulley.
- All types of mounting brackets must be fully supported by and fastened to the conveyor frame such that the shaft ends do not deform. Shaft ends must always be fully supported by the brackets..
- Mounting brackets should be fitted such that they are in contact with the shoulder of each shaft. This will:
 1. Eliminate Motorized Pulley axial play between mounting brackets.
 2. Keep shaft deflection to a minimum.
- In noise-sensitive areas, the designer should use heavier gauge support structure and appropriate vibration isolating material, as necessary.
- When Rulmecca Motorized Pulley mounting brackets are not used, it is essential that:
 1. The mounting equipment supports at least 80% of the shaft flats.
 2. The clearance between each shaft flat shoulder and its support is less than 0.030 inches.
- A Motorized Pulley with frequent reversible operations or many start/stops should be mounted with no axial clearance between the shaft flat and the brackets.
- Failing to follow these precautions could cause pulley and/or bracket damage and *voids product warranty*.

19) Non-Belt, Partial Belt, Modular Belt:

- Special Motorized Pulley designs are available for “non-belt, V-belt, partial belt, and modular belt” applications. See “Ambient Temperature Section” above.
- It is essential that each special application be designed to adequately dissipate heat from the pulley surface.
- Using a standard Motorized Pulley in one of these special applications could result in motor heat damage and *voids product warranty*.
- Contact Rulmecca for assistance with these applications.

20) Oil and Oil Seal Maintenance:

- All Motorized Pulleys are supplied with an appropriate quantity of oil. Oil type is specified by customer. Oil type and quantity are given on the motor nameplate. Only approved non-conductive oil may be used in Motorized Pulleys.
- Standard, synthetic, food grade, low viscosity (for low temperature applications,) and high viscosity (in noise-sensitive areas) are all available. For approved oil types and quantities, see page 93.
- Motorized Pulleys require periodic oil changes and are supplied with two oil fill/drain plugs in end housing. Special “vertical mount” pulleys have four oil plugs (two in each end housing.)
- Mineral oil should be changed after each 20,000 operating hours under normal operating conditions.
- Synthetic oils should be changed after each 50,000 operating hours under normal operating conditions.
- Magnetic oil plug(s) should be cleaned during each oil change.
- Note that oil seals, regardless of oil type used, should be changed after 30,000 operating hours. Rulmecca service personnel or authorized local service providers can perform this work.
- Take special precautions when changing brands of oil and types of oil because of potential oil incompatibility. Contact your local oil supplier for assistance. For example, when changing from standard to synthetic oil, it is necessary to:
 1. Completely drain old standard oil;
 2. Partially fill pulley with “Clean-Flush-Lubricate” (CFL) fluid;
 3. Run pulley for 20 minutes;
 4. Drain CFL fluid completely; then
 5. Fill pulley with appropriate amount of new synthetic oil.
- Failing to observe these oil & oil seal precautions could shorten pulley service life and *voids product warranty*.
- All the above instructions refer to Motorized Pulleys constantly working under full load. In case of Motorized Pulleys not working continuously under full load, the service life will increase considerably. When checking the oil, the cleanliness of the oil is always the best guideline of:
 - The wear and condition of the gears and bearings
 - Whether to change the oil immediately or possibly delay the oil change

21) Pulley Diameter:

- The type and size of conveyor belt will determine the minimum allowable Motorized Pulley diameter. Using a pulley diameter too small for the belt can cause belt delamination, belt splice damage and can shorten both belt and pulley lagging life. Contact your belting supplier before specifying a pulley diameter.

Technical Precautions for Design, Installation and Maintenance



22) Regreasable Labyrinth Seals:

- All Rulmeca Motorized Pulleys are hermetically-sealed. Standard oil seals are designed to contain oil within the Motorized Pulley during normal operating conditions. They are capable of withstanding an internal pressure rise that occurs as the pulley motor temperature increases.
- Optional regreasable labyrinth seals are available to protect oil seals from harsh operating or maintenance conditions. Each labyrinth seal provides a barrier to prevent ingress of dust and fluid through the oil seal.
- In abrasive operating conditions labyrinth seals should be periodically grease-purged to flush abrasive dust away from the oil seal. Grease should always be seen at the labyrinth gap.
- If re-grease frequency is high, an automatic greasing system is recommended.
- In wet conditions (e.g. food processing), where it is common to wash down equipment with high-pressure detergent spray, labyrinth seals provide a physical barrier to protect oil seals. Since high-pressure sprays can remove grease from the labyrinth seal, grease is not used.
- Failing to perform proper labyrinth seal maintenance could shorten service life and *voids product warranty*.

23) Reversing Conveyors:

- All Motorized Pulleys for a three-phase power supply are reversible. Mechanical backstop option is not possible for reversible conveyor applications.
- The conveyor drive control system must be designed to bring the Motorized Pulley to a complete stop before reversing conveyor belt direction.
- Reversing conveyor direction without stopping the drive motor will damage motor and gearbox and *voids product warranty*.

24) Surface Coating:

- The standard model 165LS Motorized Pulley is supplied with powder coated end housings.
- All smaller standard Motorized Pulleys are supplied with aluminum end housings.
- Carbon steel shells and shafts are treated with anti-rust wax.
- Stainless steel end housings, shells, shafts, and terminal boxes receive no surface coating.

25) Storage of Motorized Pulleys:

- During storage, Rulmeca Motorized Pulleys must be:
 - stored in a building or, as a minimum, covered by an awning.
 - protected against direct sunlight so that sealing system does not dry out.
 - rotated 180 degrees every 6 months to lubricate all internal components.

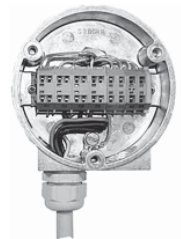
- Check that Motorized Pulley is properly fixed to the test frame during the test.
- If Motorized Pulleys must be stored longer than 1 year, they must be tested before being put into operation. Such a test should include the following:
 - Motor winding should be checked with an insulation tester
 - Winding resistance should be checked
 - Thermal protector should be checked with a continuity tester
 - Pulley should be connected to power supply and run for 30 minutes
 - Pulley should then be checked to verify that there are no oil leaks
 - Pulley should then be checked to verify that pulley body temperature does not exceed +160° F

26) Start-up:

- Prior to initial start-up of Motorized Pulley:
 - Verify that Motorized Pulley nameplate data matches customer specification.
 - Ensure electrical connections are correct.
 - Check that Motorized Pulley is free to rotate.
 - Check that slack side belt tension is adequate to prevent belt slippage.
 - Check that belt is not over-tensioned.
 - Ensure that oil is present in the Motorized Pulley.

27) Terminal Box:

- Motorized Pulleys are available with terminal boxes or power cords.
- Switch off power supply & control circuit before opening terminal box.
- Each terminal box has one or more conduit nipples and a cover plate. Cover plate should be removed to facilitate termination of power and control wires within the terminal box. After wire connections are made cover plate should be replaced.
- Terminal boxes should never be disassembled or removed from the end of the shaft.
- Modifications to terminal boxes should only be made by an authorized Rulmeca service center or after obtaining permission and instructions, in writing, from Rulmeca.
- A wiring diagram is provided with each Motorized Pulley.
- Dismantling and reassembling a terminal box could cause a short circuit in the factory set (and tested) internal wiring and *voids product warranty*.



Terminal box



Technical Precautions for Design, Installation and Maintenance

28) Transport and Handling:

- For safety reasons during transport and assembly a lifting rope suitable to support the weight of the pulley must be used. The weight of the pulley is stamped on the data plate and/or given in the catalog.
- The rope must be fixed on the shaft ends.
- Do not lift the Motorized Pulley by the power cord or terminal box.

29) Variable Frequency Drive:

- It is essential that each Variable Frequency Drive (VFD) be set to insure proper cooling of the motor. Motorized Pulleys dissipate motor heat into conveyor belts by using oil as a heat transfer medium. If operators attempt to drive the motor too slow or too fast, then oil circulation and motor cooling can become problematic and *product warranty is void*.
- When driving Rulmeca Motorized Pulleys at various frequencies with VFDs, make sure to set the device in "vector mode". In general, there will be no more than 5% torque loss. That means a Rulmeca Motorized Pulley may be set to deliver essentially "constant torque" within a set frequency range. However, do not undersize the conveyor drive when configured in this manner. Make certain the conveyor drive provides enough belt pull at each end of the desired belt speed range. Remember that horsepower is linearly proportional to frequency.
- Operating frequency ranges of 1Hz to 100Hz are possible, depending on various parameters including but not limited to ambient temperature, nominal belt speed and required belt pull. Contact Rulmeca for assistance with these special applications.
- It is possible for certain brands of VFD to set up resonant frequencies in the power line between the VFD and the motor if the power line is too long. These can cause voltage spikes in the motor. Potential resonant frequencies may be eliminated as follows: (1) limit the distance between the VFD and the motor (some VFD manufacturers recommend cable lengths of 30 feet or less), (2) install a filter on the VFD output (available from VFD manufacturer), and/or (3) select a VFD which modulates pulse width in a manner so as to avoid resonance.
- To avoid any electromagnetic interference, the cable from motor to the VFD should be screened and properly grounded.
- The power and current range of the VFD must be selected according to the full load amperage given on the Motorized Pulley data plate.
- Contact VFD supplier to properly match the VFD capabilities with the conveyor operating requirements and Motorized Pulley electrical characteristics.

