

HighRise™ - HR202

Pure Water Window Cleaning System



IPC Eagle

OPERATIONS MANUAL

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Specification of “manufacturer” and “supplier” referred to in this manual:









“Manufacturer” definition:

IPC Eagle
3650 Dodd Rd, Eagan, MN 55123
www.ipceagle.com 1-800-486-2775

“Supplier” definitions regarding contact advice in this manual:

IPC Eagle
3650 Dodd Rd, Eagan, MN 55123
www.ipceagle.com 1-800-486-2775

1. EXPLANATION OF SYMBOLS USED

<u>Safety advice</u>			
Symbol	Code word	Meaning	Possible consequence of non-compliance
	WARNING	IMMEDIATE or possibly imminent danger:	Fatal or serious injuries!
	CAUTION	possibly dangerous situation:	Minor Injuries to persons!
	WARNING	Disconnect before service	Fatal or serious injuries!
	WARNING	SAFETY TRAINING MANDATORY. DO NOT OPERATE THIS EQUIPMENT WITHOUT AUTHORIZATION.	Fatal or serious injuries!
	WARNING	CRUSH HAZARD! Stay clear. Operator must not stand under overhead equipment.	Fatal or serious injuries!
	WARNING	CRUSH HAZARD! Stay clear. Keep 60 ft./20m radius secure area below overhead equipment.	Fatal or serious injuries!
<u>Other advice</u>			
	NOTE	possibly dangerous situation:	Damage to equipment or its surroundings
	(none)	Instruction for documentation in writing (i.e. record keeping)	(none)

When the manual refers to HRCS, this means HighRise™ Cleaning System



2. General Warning



READ THIS GENERAL WARNING FIRST

IN SUSPENDED EQUIPMENT OPERATIONS, SAFETY IS A MATTER OF LIFE OR DEATH FOR RIGGERS, OPERATORS AND BY-STANDERS. THIS WARNING IS YOUR SHARE OF DUTIES FOR ACHIEVING SAFETY.

1. It is the rigger's and the operator's responsibility, and their employer's responsibility, if they operate under an employer's control, to strictly conform to the following warnings.

2. It is imperative for safety and efficiency of the operations that this manual be read and fully understood by the rigger and the operator before rigging or operating the HRCS (High Rise Cleaning System) ALL instructions contained herein must be carefully and strictly followed, including applicable S.I.A. guidelines for safe practice (see pages 54 and 55).

3. Should you hand over a HRCS, under whatever conditions, to any party operating out of your control, you must

join a clean copy of this manual and draw other party's attention that strictly following all the instructions therein is a matter of life or death.

4. Before rigging and operating this HRCS, the rigger and the operator must become aware of all the requirements of federal, state, provincial and local safety regulations not only applicable to the TIRAK® hoist but also to the entire suspended HRCS and any component of it.

5. Never use the HRCS for any job other than cleaning glass curtain wall buildings according to the instructions of this manual.

6. Never load the TIRAK® hoist above its rated load.

7. Read and understand Tractel-TIRAK operation manual.

YOUR DUTY TO INSPECT AND MAINTAIN

8. Keep this manual available at all times for easy reference whenever required. Extra copies are available from the supplier or online at ipceagle.com.

9. Carefully take notice of all the labels affixed to the HRCS and TIRAK®. Never rig or operate the HRCS if any label, normally fixed on the hoist is obscured or missing (see page 40-42). The supplier will supply extra labels on customer's request.

10. Every time the HRCS is to be rigged or used, check that the hoist, wire rope and other components

of the HRCS are complete and in good working condition, prior to proceeding.

11. A careful and regular inspection of the TIRAK® hoist, its wire rope and other components of the installation is part of the safety requirements. If you have any questions, call the supplier.

12. After each de-rigging and before re-rigging, the TIRAK® must be inspected by a competent person familiar with the TIRAK® hoist and professionally trained for the purpose.

YOUR DUTY TO TRAIN AND CONTROL PEOPLE

13. An operator must not be assigned to a suspended job or to rigging for a suspended job, or to de-rigging after the job, if that person is not: a) mentally and physically fit for the purpose, specially at heights b) competent for the job to be performed, c) familiar with all applicable safety rules and requirements, d) familiar with the HRCS equipment as rigged, e) provisionally trained for working under the above requirements.

14. Never disassemble the TIRAK® hoist by yourself or by your staff. People's life may be at risk.

Except for the operations described in this manual, the maintenance of the TIRAK® hoists, as well as disassembly and repair, must be exclusively done by qualified repairers authorized in writing by the supplier. TIRAK® spare parts in accordance with the serial number of each machine must be exclusively utilized. No substitutions are allowed.

15. Never let the TIRAK® hoist and HRCS be managed or operated by a person other than authorized and assigned to the job. Keep the equipment, either rigged or unrigged, out of reach of unauthorized persons, while out of operation.

16. Training operators and riggers includes Emergency Decent System procedure should the wash head be brought to a standstill during a job. Such procedure must be set up by a competent person of the user, or of its technical consultant, according to the working conditions, prior to putting the equipment into operation.

17. Every suspended job must be placed under the control of a person having the required competence and the authority for checking that all the instructions prescribed by this manual be regularly and efficiently carried out.

YOUR DUTY OF SAFETY BEYOND THE TIRAK HOIST

As being only one piece of the High Rise Cleaning System, the Tirak® hoist can contribute to the required safety only, if:

18. It is fitted on compatible equipment, including the wire rope used in the Tirak® hoist;

19. other components meet the requirements of the applicable safety regulations and are of the proper quality, and assembled to form a safe suspended system;

20. every upper support of the roof top suspension system is stable, sufficiently strong and properly tied back to the structure, according to the dynamic loads for the entire system;

21. supporting system and tie-back provide the requested resistance to every load to be applied during rigging or operating the High Rise Cleaning System equipment;

22. all the requirements in strength and resistance are obtained with the necessary safety factor (see regulations and professional standards);

23. all the calculations, design and subsequent work necessary to the above requirements have been made by a competent person on the basis of proper technical information regarding the site.

YOUR DUTY TO AVOID TAKING CHANCES

24. Once the High Rise Cleaning system wash head has been lifted off its initial support (ground or any other level), it is imperative not to release, remove, alter or obstruct any part of the equipment under load.

25. Never allow any condition which would result in a suspension wire rope becoming SLACK during the operation.

26. Never operate the High Rise Cleaning System in a potentially explosive atmosphere.

27. Never operate the High Rise Cleaning System during or pending high wind or storm conditions.

28. For any cleaning job to be performed, consider and control the specific risks related to the nature of the job.

29. Should you decide the Tirak® hoist is no longer to be used, take precautions in disposing of it so that it cannot be used anymore.

AN ULTIMATE RECOMMENDATION

29. Operators of the High Rise Cleaning System should be equipped with an emergency means of

communication such as a radio device or telephone should rescue be necessary.

This manual is neither a regulations compliance manual nor a training guide on suspended equipment operations. You must refer to proper instructions delivered by manufacturers of the suspension rigging equipment. Whenever calculations and specific rigging and handling are involved, the operator should be professionally trained to that end and secure relevant information prior to commencing such work.



WARNING	
	DISCONNECT BEFORE SERVICING
	SAFETY TRAINING MANDATORY. DO NOT OPERATE THIS EQUIPMENT WITHOUT AUTHORIZATION.
	CRUSH HAZARD! Stay clear. Operator must not stand under overhead equipment.
	CRUSH HAZARD! Stay clear. Keep 60 ft./20m radius secure area below overhead equipment.



WARNINGS

If machine is used with a generator, generator must have general ground circuit protection.

Danger! Crush Hazard! Stay clear. Keep 60 ft./20m radius secure area below overhead equipment. Operator must not stand under overhead equipment. With the goal of personal safety, adjust safety zone as necessary to conform to limiting constraints, i.e., buildings and roadways.

Disconnect before servicing.

Safety training mandatory. Do not operate this equipment without authorization.

Unlawful to operate this equipment within 10 ft/3m of overhead high voltage lines.

Anyone working on, or from a roof with a fall exposure should be tied off with a safety line. The safety line should be attached to a specifically engineered independent anchorage point.

“Portable support device” should be set up with appropriate counterweights and tie-backs. The tie-backs need to be attached to approved, specifically engineered anchorage points.

All persons who work at heights, should be trained, educated, and knowledgeable in all aspects of the safe use of their tools and equipment and be made aware of all the hazards related to their job.

Work safety and fall protection plans should be developed and implemented at all work sites. Building owners and contractors should conduct pre-job inspections to review job requirements and safe work plans.

Do not operate during rain or stormy conditions. Beware of lightning.

Two Way Radios- commercial quality must be used when operating this equipment. (Not included with unit)

a) DO NOT lock in running position push-buttons marked “UP” or “DOWN”.

b) DO NOT operate the hoist, if it is functioning improperly, or damage is noted.

c) NEVER lift or pick up a load beyond the rated capacity appearing on the hoist.

d) STOP OPERATIONS IMMEDIATELY, if at any time, when the hoist operates, the wire rope does not move (i.e. no UP or DOWN travel). It is likely that damaged wire rope is jamming the hoist. Continued operation might cause wire rope failure or damage to the hoist. Investigate by a qualified technician. In case the problem is confirmed: CONTACT the SUPPLIER!

e) IN CASE OF AN INCIDENT involving injury, or property damage, contact the supplier immediately. DO NOT disturb, alter, or move any equipment at the scene of the incident.

f) OPERATING IN EXPLOSIVE ATMOSPHERE: Never operate hoist or any other electric equipment in a potentially explosive atmosphere – such as around distilleries, refineries, chemical plants, ship or silo interiors. Always obtain official approval before commencing operations at these or similar locations.

g) If the push buttons or EMERGENCY STOP button do not function properly, remove hoist from service until repaired by a qualified person.

3. DESCRIPTION

3.1 General Description

The IPC Eagle High Rise™ cleaning system is an unmanned semi-automatic machine used to maintenance clean non-porous, exterior surfaces of midrise and high rise buildings. Smooth glass exteriors surfaces with frames less than 3 inches (7.5 cm) deep are the ideal types of structures to be cleaned with this equipment. By design, the machine cleans the entire exterior surface including the mullions, glass, seals, aluminum, marble, granite, Alumabond, Dryvit or any other non-porous materials used in the construction of the building.

Maintenance cleaning of the building surface is accomplished without the use any chemicals. Chemical application may be required in restoration cleaning jobs. Using the combination of ultra pure water and the mechanical action of the rotating brush, the dirt is loosened from the surface during the first pass of the machine as it climbs up the building. The ultra pure water breaks down and holds the dirt in suspension, releasing it from the surface. As the machine travels back down the same path, the rotating brush scrubs the surface a second time with another spray of pure water to rinse the surface clean. The surface is allowed to air dry naturally. As there are no dissolved solids in the rinse water, the surface will dry spot free.

The wash head is a self climbing device. It utilizes a Tractel Tirak™ grip hoist for vertical movement along the wire rope used for suspension from the roof top suspension rigging system. Note: Roof top suspension rigging system is not included with the IPC Eagle High Rise™ system. The Tirak™ hoist is controlled with an industrial grade wireless remote control system rated for use up to 1500 ft (450 meters) distance. Each machine has its own special frequency programmed into it so as to eliminate any interference from other wireless devices.

The brush is made from special closed cell foam called Neo-Glide designed and used extensively in the car wash industry. This unique material composition along with the 68 rpm rotational speed allows it to provide an aggressive scrubbing action without scratching the surfaces. It also has a secondary polishing effect that enhances the gloss finish on the glass and other surfaces.

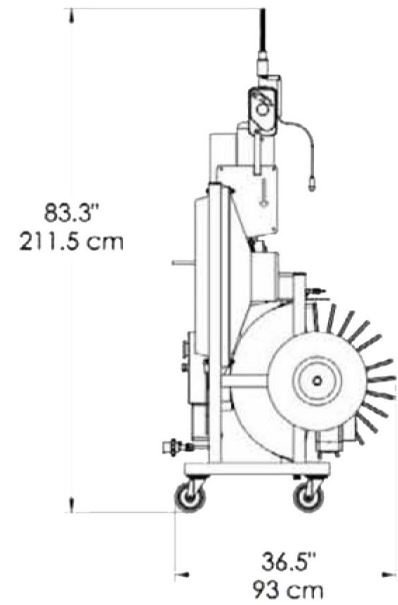
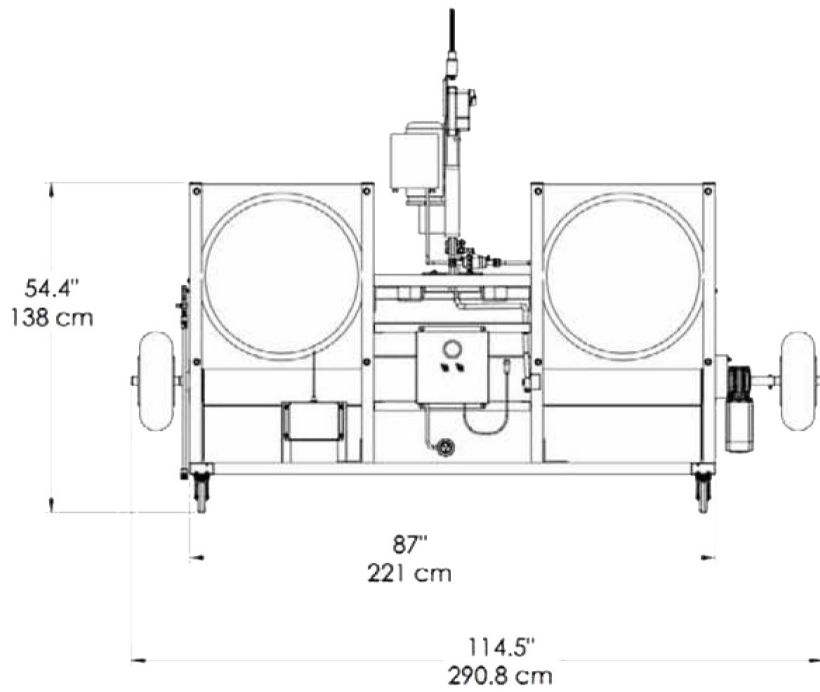
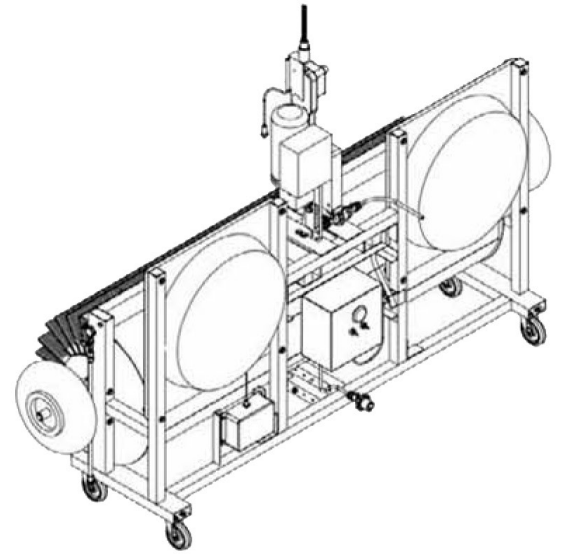
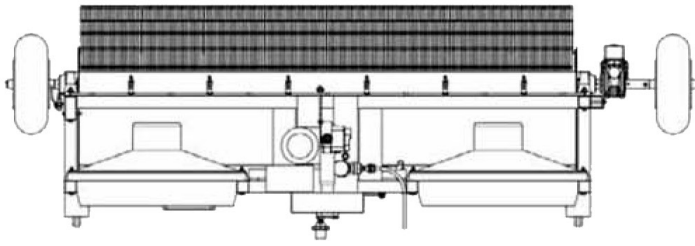
Machine stabilization is created by the use of Thruster technology. The Thruster fans create a powerful, positive force to keep the wash head against the vertical surface of the building and to provide the correct, consistent pressure for the brush to operate properly over the entire cleaning path.

Pure water production is from the IPC Eagle UltraPure™ electric cart. This is a reverse osmosis and deionizing system that removes 99% of the dissolved solids from the potable water supply at the job site. The pure water is supplied to the wash head with a positive displacement boost pump capable of providing the same consistent flow at any height without changing the nozzle pressure.

Application of the pure water to the building surface is done through a 316 stainless steel distribution manifold with Ultra Rain Drop nozzles. These nozzles create droplet sizes that are similar to rain. This ensures that 97% of the water reaches the building surface even with wind speeds up to 20 mph (32K/hr). Each nozzle is protected by its own inline filter to prevent clogging.

Power and water is supplied to the wash head by an engineered support line system that ensures the proper operation for the given designed length and demand. It has a nylon sleeve keeps the lines together and clean for easier use. A load suspension hanger provides the correct method and strength for attaching the support line assembly to the bottom center of the wash head.

3.2 Overall Dimensions



3.3 Technical Specifications

ELECTRICAL -

Volts..... 220 - 230 volts AC
 Amps, 2 fan unit..... 15.1 max amp draw
 Frequency..... Euro Model: 50 Hz single-phase, North American Model: 60 Hz single-phase

PHYSICAL -

Machine weight..... 477 lbs. / 216.4 kg
 Brush width..... 80 in. / 203.2 cm
 Brush diameter..... 24 in. / 61 cm
 Overall width..... 94 in. / 238.8 cm
 Overall height..... 62 in. / 157.5 cm
 Overall depth..... 34 in. / 86.4 cm
 Power cord..... 3 x 4.0 min (in case of replacement contact mfr.)
 Power cord weight..... 0.182 lbs/ft (165 ft power cord weight: 31 lbs) or .27 kg/m (50m power cord weight: 14.2 kg)
 Water supply hose..... 3/8 ID / 9 mm reinforced rubber hose
 Hose weight (dry)..... 0.169 lbs / ft or .28 kg/m
 Hose water volume..... 1.325 cubic inches/ft = 0.048 lbs/ft or 21.71 cc = .082 kg/m
 Hose weight (wet)..... 0.271 lbs/ft or .32 kg/m
 165ft / 50m Hose weight (wet)..... 33 lbs / 14.9 kg
 Total 165ft / 50m support line assembly weight..... 80 lbs/ 36.2 kg (includes fittings, plug, load hanger and nylon sheath)
 Wire rope weight..... 0.16 lbs/ft (165 ft wire rope: 30.7 lbs) or .278 kg/m (50m wire rope: 13.9 kg)
 Remote control..... Euro Model #: H13-00042, Manufacturer: Hetronics, Category: 3, Transmitter Range: 50 Meters, Transmitter Frequency: 433.1 Mhz to 434.75 Mhz
North American Model #: H13-00028, Manufacturer: Hetronics, Category: 3, Transmitter Range: 164 ft, Frequency: 458.8 to 459.2 Mhz

OPERATIONAL -

Brush speed..... 62 rpm
 Nozzle rate, yellow..... .2 gpm at 40 psi
 Nozzle rate, blue..... .3 gpm at 40 psi
 Flow rate..... 1.2 gpm at 40 psi (yellow) 4.5 LPM at 2.7 Bar; 1.8 gpm at 40 psi (blue) 6.8 LPM at 2.7 bar
 Hose rating..... 300 psi max working pressure at 20.7 bar
 Hoist capacity..... 1,000 lbs / 453.5 kg
 Hoist stall rating..... 1,100 lbs / 498.9 kg
 Vertical travel speed..... 33 ft / minute or 8m / minute (Hoist speed)
 Wire rope suspension position..... 16 inches or 40 cm from glass surface
 Noise level @ 1m..... < 20 dBA

CAUTION:



Correct wire rope diameter within the allowable diameter range is very important for the TIRAK® function!

UNDERSIZED wire rope may cause slippage in the hoisting mechanism and in the BSO secondary brake.

OVERSIDED wire rope may cause damage to the guide band and other internal parts or jam in the hoist causing damage to the wire rope itself! It also may cause the BSO secondary brake to malfunction.

wire rope classification/ construction		5 x 19, 5 x 26, with fiber core, galvanized or black, lubricated, preformed, IPS or XIPS
nominal diameter	in. mm.	5/16 in. 8.4 mm
allowable diameter range of new wire rope	in. mm.	0.319 to 0.331 8.1 to 8.4
minimum actual breaking strength	lbs kN	10,000 44.5

3.4 Equipment Lists

Equipment List

- HighRise™ Wash Head
- Two Remote Control Transmitters with Fresh AA Batteries
- Extra AA Batteries
- Support Line (hose/cord) Assembly
- Wire Rope - Wash Head Suspension
- Boost Pump Cart -
 - Euro Model: 230 Volt, 50 Hz
 - North American Model: 110 Volt, 60 Hz
- Six Foot Interconnect Hose
- Water Purification System -
 - Euro Model: IPC Eagle UltraPure Hydro Cart, 230 Volt, 50 Hz
 - North American Model: IPC Eagle UltraPure Hydro Cart, 110 Volt, 60 Hz
- Supply Water Hose - 5/8 In / 16 mm or larger
- Two Way Radios - Commercial Quality for Communication Between Operators
- Hand Held Anemometer (measures wind speed)

4. TRANSPORTATION & STORAGE

Ground transportation around job site

1. Requires 2 people to move machine, one on each end.
2. • Be aware of grades and surfaces.
 - Prevent runaway situations.
 - Prevent from tipping.
 - Watch your feet – rolling crush hazard.
 - Soft terrain makes transport difficult.
3. If lifting becomes necessary, be smart and use proper lifting technique. Bend at knee when lifting. Lift one end at a time with 2 workers. (see Fig. 3):
4. Set wheel brakes when machine stops at location. Do not leave unattended with brakes off.

Transportation in vehicle

1. Ensure machine and all supporting equipment is properly and securely tied down to the vehicle.
2. Position wash head up against the forward wall in the vehicle and secure with multiple straps.



WARNING: All equipment must be properly secure to prevent movement in case vehicle be comes involved in an accident or is forced into a hard emergency stop. Be sure to use heavy duty tie down straps and anchor points.

Storage

Overnight at job site:

1. Never leave machine unattended when suspended.
2. Lower machine to ground and secure to prevent movement.
3. Lock brakes.
4. Take wireless remote control transmitters with you when you leave. They act as a key. The machine cannot operate without them.

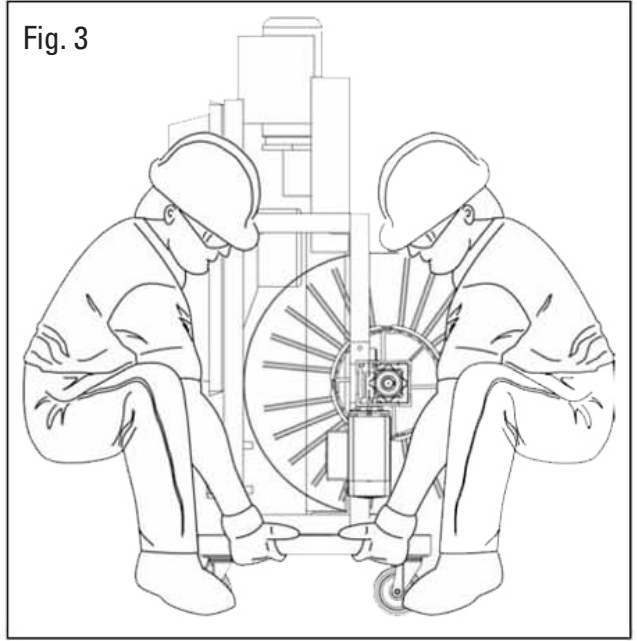
Rooftop:

1. Lower machine to rooftop and secure to prevent movement.
2. Lock brakes.
3. Take wireless remote control transmitters with you when you leave. They act as a key. The machine cannot operate without them.

Outdoors: Cover to protect from sun UV radiation.

Wintertime: Remove nozzles and blow water out from manifold. Reinstall nozzles. Cover to keep clean.

Fig. 3



Bend at the knees when lifting. Lift one end at a time with two workers.

5. RIGGING INSTRUCTIONS

5.1 GENERAL

5.1.1 Operational Safety

All rigging and testing operations must be carried out under safe conditions for the riggers and for the environment. Risk on site must be evaluated by safety specialists before rigging, and performed according to applicable safety regulations. Proper measures must be taken to set up operational safety before starting rigging operations. Operators must be equipped with individual fall arrest devices when required.

5.1.2 Scope

Instructions and advice in this manual exclusively refer to the following items (see Fig. 4):

- TIRAK® scaffold hoist including BLOCSTOP® BSO secondary brake
- Special TIRAK® wire rope
- Power supply cord

This manual does not deal with support equipment and tie-backs, nor with support rigging and anchoring operations. Figs. 4 are shown only as reference to a general layout of the overall installation, in which the TIRAK® hoist is used.

5.1.3 Checks before rigging

It is a qualified person's responsibility to check the whole installation to meet all safety requirements of:

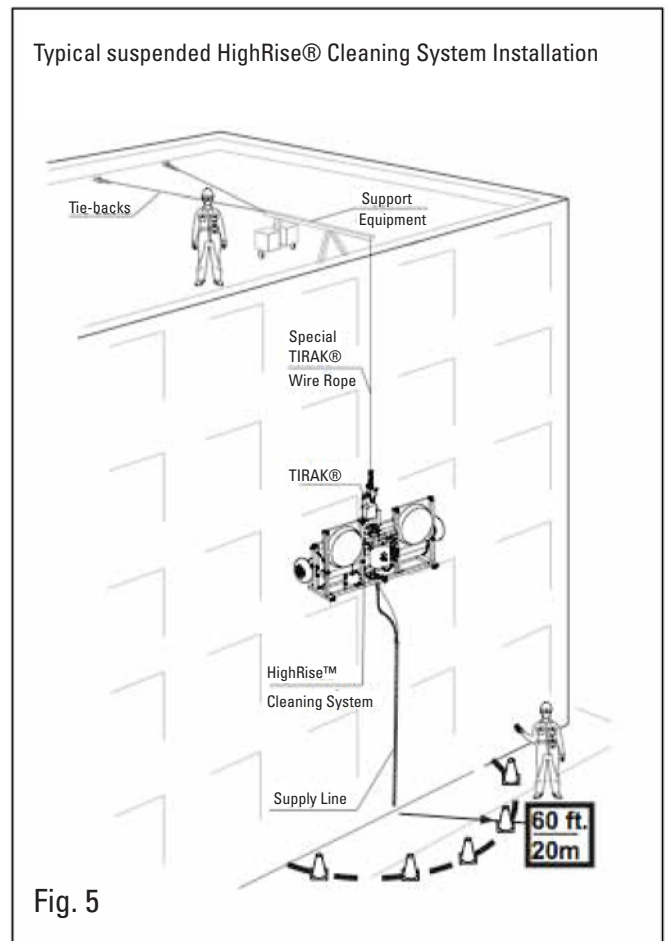
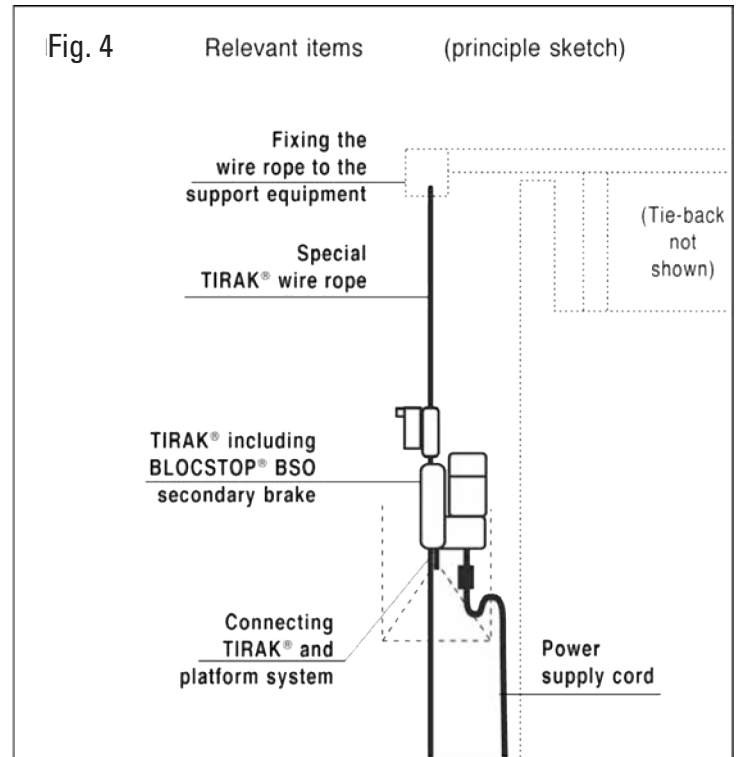
- OSHA regulations and federal, state, provincial or local safety regulations,
- the proper instructions delivered by the manufacturers of the other pieces of equipment included in your suspended scaffold installation.

Main pieces are:

- Support equipment including tie-back;
- safety equipment (personal fall arrest system)
- barricade below the drop of the HRCS. (see Fig. 5)



NOTE: This information is NOT to be considered as a complete checklist for your specific installation. It is only a sample list of some general components, which make part of a typical suspended scaffold installation (Fig. 5).



5.2 POWER SUPPLY AND HOIST CONTROL

5.2.1 General

- (1) Check if voltage indicated on the hoist nameplate corresponds to the power supply rating.
- (2) Single phase motors are factory connected for 230 VAC.
- Three phase machines are factory connected for 230 VAC, 3 Ø.



NOTE: SINGLE-PHASE motors are more sensitive to overloading and voltage drop than three phase motors, especially when starting to lift a load. Therefore never exceed maximum rated load, and see that the 230 VAC power supply be always available.

In case of difficulties have an electrician or qualified person read voltage at motor terminal during lifting operation. Especially for high lifting operations, which require long cords, it is essential to use power cords of sufficient size (see par. 5.2.3) to avoid excessive voltage drop.



WARNING: NEVER OPERATE THE HOIST OR ANY OTHER ELECTRIC EQUIPMENT IN A POTENTIALLY EXPLOSIVE ATMOSPHERE: around distilleries, refineries, chemical plants, ship or silo interiors.

Always obtain official approval before commencing operations at these or similar locations.

5.2.2 Fuses / Circuit breakers

If connected to a circuit protected by a fuse, use Time- Delay-Fuse. Check if specification of fuses, which protect electrical equipment, corresponds to the amperage indicated on the machine nameplate. For the recommended service requirements per hoist see table 3:

Table 3

Single phase	Three phase	Amps
230 V	230 V	20

If not using fuses, unit should be connected to a earth leakage circuit breaker.

5.2.3 Power Cords and Grounding

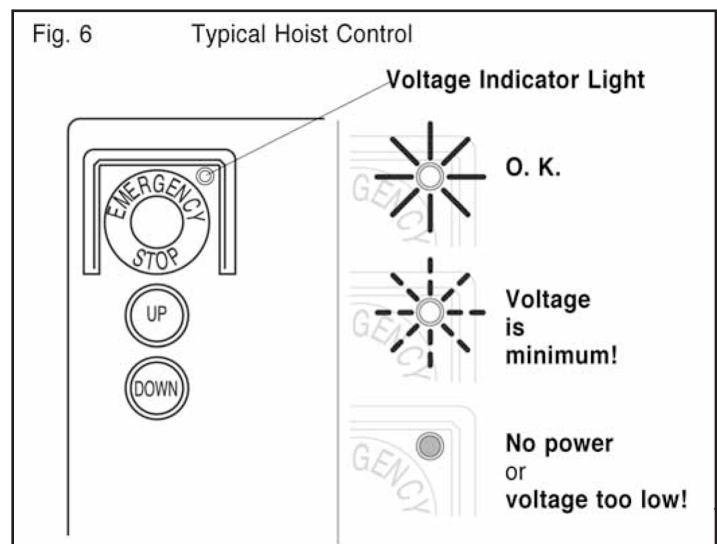
- (1) To prevent voltage drop exceeding the allowable 10% we recommend to use at least #10, STO type power cords, 600 VAC rating. To minimize voltage drop due to power cord length on high lifts, select an outlet at the halfway point to reduce the total power cord length on the job.

- (2) In some cases, a booster transformer will be needed to compensate for power cord losses or low-source voltage. If a booster transformer is needed, call supplier.



NOTE: DO NOT OPERATE THE MOTOR FOR ANY REASONS, IF THE MEASURED RUN VOLTAGE IS HIGHER OR LOWER THAN THE MOTOR NAMEPLATE RATING!

- 3) Where supplied, check the Voltage Indicator Light (see Fig. 6).
 - If it is ON, the voltage is above minimum.
 - If it is flashing, the voltage is minimum.
 - If it is OFF, the power is off, or the voltage is too low and must be corrected before use of the hoist.

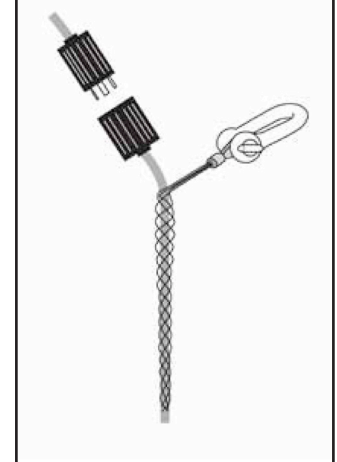


- (4) Always secure the power cord to the HRCS with a strain relief fitting and shackle (Fig. 7), so the cord weight will be off the connector.

- (5) When finished for the day, make certain the power cord is disconnected at the hoist pigtail as well as at the main outlet.

- (6) Be sure to ground all electric equipment. Do not use wire rope as a ground!

Fig. 7 Strain Relief Fitting



5.2.4 Hoist Control

- Control (Fig. 6) is by
- push-buttons, which automatically return into STOP-position, when not activated, and an
 - EMERGENCY STOP button. DO NOT lock in running position push-buttons marked “UP” and “DOWN”.

6. WIRE ROPE

6.1 Wire rope specification

Use only TIRAK® wire ropes specified by the manufacturer:

(1) Classification/Construction:

5x19, or 5x26, with fiber core, galvanized or black, lubricated, preformed IPS or XIPS.

wire rope diameter ¹⁾	min. actual breaking strength	for TIRAK® hoists with rated load
5/16 in. 8.4 mm	10,000 lbs 44.5 kN	1,000 lbs 450 kg

- 1) Allowable diameter range of NEW wire rope: 0.319 to 0.331 in. (8.1 to 8.4 mm)
- 2) Replace wire rope when diameter has decreased by 10% i.e. 8.3mm new – replace at 7.47mm used

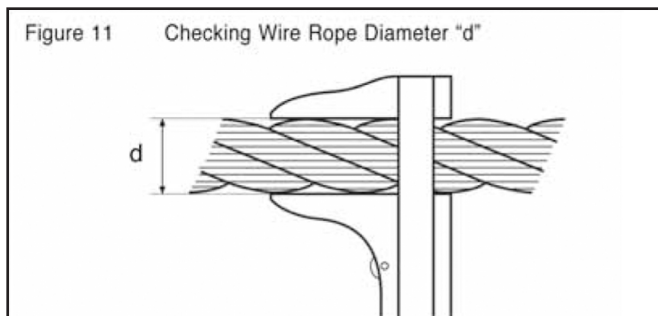
(2) Diameter:



CAUTION: Correct wire rope diameter within the allowable diameter range is very important for the TIRAK® function! **UNDERSIZED** wire rope may cause slippage in the hoisting mechanism and in the BSO secondary brake. **OVERSIZED** wire rope may cause damage to the guide band and other internal parts or jam in the hoist causing damage to the wire rope itself! It also may cause the BSO secondary brake to malfunction.



NOTE: How to measure wire rope diameter: The correct diameter of the wire rope is the largest cross-sectional measurement across the strands (and not the valleys). The measurement should be made carefully with calipers as shown in Fig. 11.



6.2 Wire rope rigging instructions



CAUTION: Always wear gloves when handling wire rope!



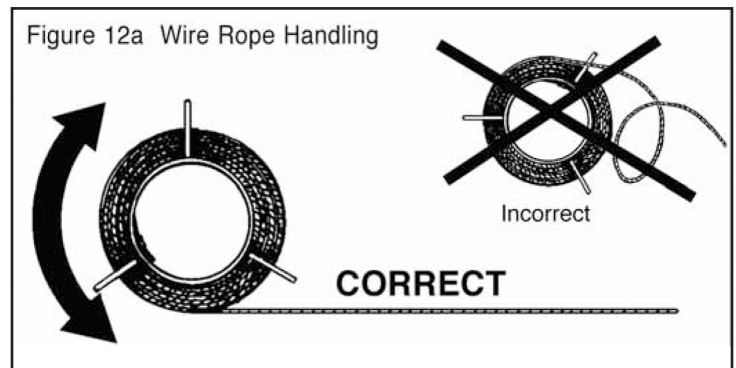
WARNING: Be sure to use a wire rope with the diameter marked on the TIRAK® nameplate.

(1) RIG FROM TOP

You should have enough wire rope to reach to the ground or other safe level with about five feet (1.5m) extra for ensuring safety.

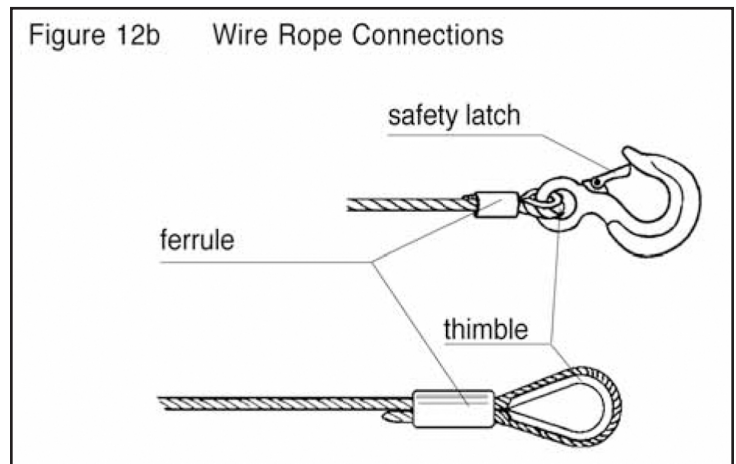


CAUTION: Always unreel and reel the wire rope in a straight line (Fig. 12a) to prevent kinks, which make it unusable for the hoist.



(2) Check the rope condition for damage:

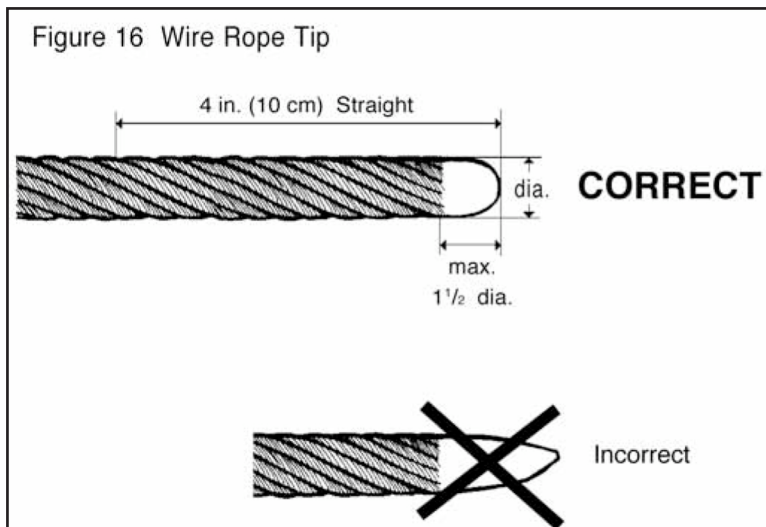
- proper connections (thimble, ferrule); on wire ropes with hook: hook is not bent, safety latch is in place (Fig. 12b)
- the wire rope has no visible damage along its total length.



6.1 Wire rope rigging instructions (continued)

In use, wire ropes will stretch and reduce in diameter. In accordance with good rigging and maintenance practices, the wire rope end termination should be inspected periodically for wear, abuse and general adequacy.

- (4) Anchor the wire rope end to a rigging device, which complies with all relevant safety requirements. Be sure to use compatible connecting devices, e.g. a 2 ton anchor shackle or similar with adequate strength and safety factor. Secure it.
- (5) Insure that the anchor points of the wire rope are directly above the position of the hoists, 19 inches or 48 cm from glass surface.
- (6) Plan for emergency decent system as explained on p. 29-32 or equivalent.
- (7) Check that wire rope tip is welded round (Fig. 16). IF NOT:
 - (a) Prepare ends by brazing or welding - make sure all end wires are captured.
 - (b) Grind end to approximately 1/4" diameter. DO NOT grind end flat or to a cone shape. End must be rounded (Fig. 16).
 - (c) the last 4 in (10 cm) of wire rope must be straight for proper reeving.



6.3 Wire rope reeving

- 1) Open the BSO secondary brake by pushing down the control lever (d1) until it locks (Fig. 17).
- 2) Push the rope through the BSO secondary brake at (A) into the hoist rope inlet (B). Push it inside, and press UP-button, until the wire rope reeves itself automatically and exits at (C) on the other side (Fig. 18).



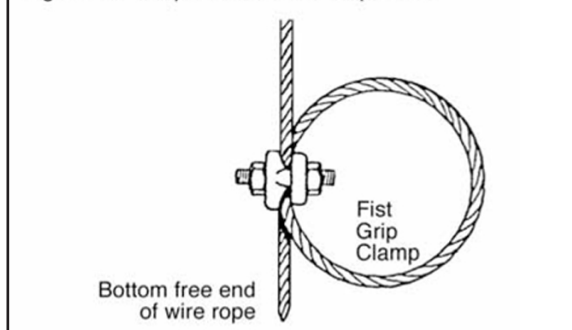
CAUTION:
Check that wire rope exit (C) is not blocked in any manner. Never load the wire rope exiting from (C).

- 3) After reeving through the hoist, be sure to loop and clamp the free end of the wire rope, to prevent the rope from inadvertently unreeving through the hoist. Always tie this loop, using a fist grip clamp, when the platform is at ground level or other safe surface (Fig. 19).



WARNING: AT EVERY SET-UP OR RE-RIGGING check the wire rope length to ensure that it reaches the ground or other safe level with about five feet (1.5 m) extra for safety.

Figure 19 Loop at Free Wire Rope End



6.4 De-Rigging

- 1) Before de-rigging each TIRAK® hoist must be unloaded by bringing down the platform to a safe and stable support.
- 2) Remove the loop at the free wire rope end.
- 3) Press DOWN button to let the wire rope run out.
- 4) With gloved hands slowly pull the wire rope through BSO secondary brake.
- 5) Clean the wire rope, reel it (Fig. 20), and store it in a clean and dry place.
- 6) Unbolt the hoist from its stirrup or anchor device. Remove from site and store.

Figure 17 Opening of BSO Secondary Brake

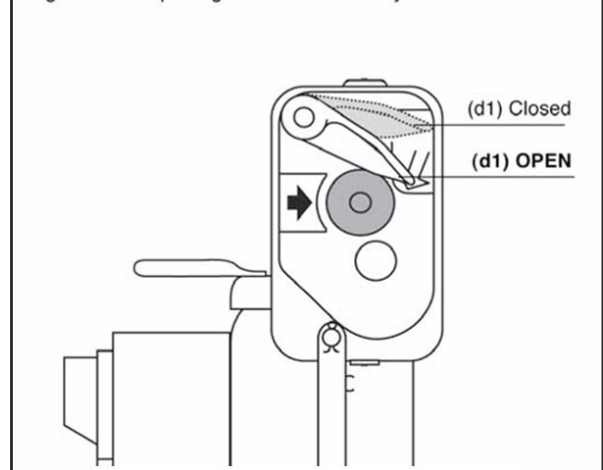


Figure 18 Wire Rope Reeving

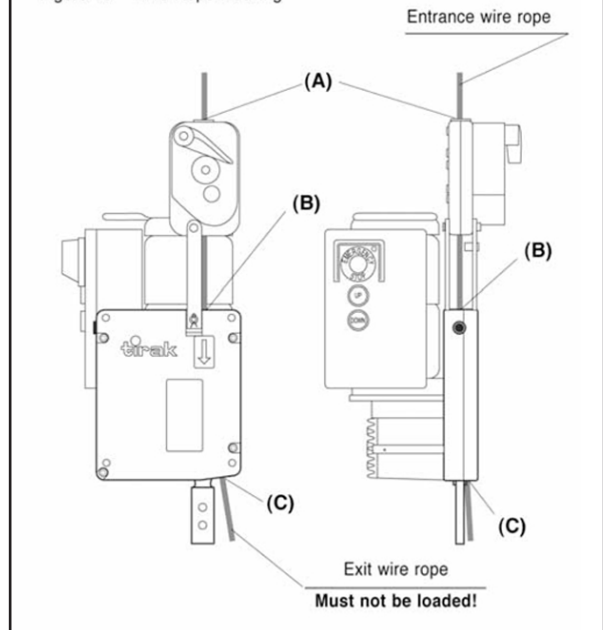
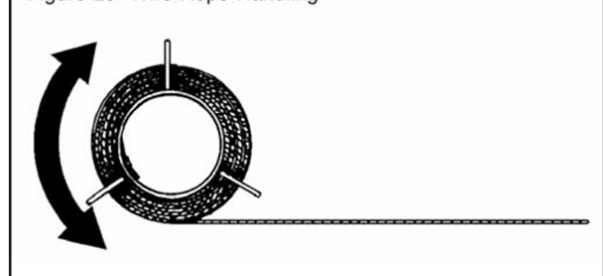
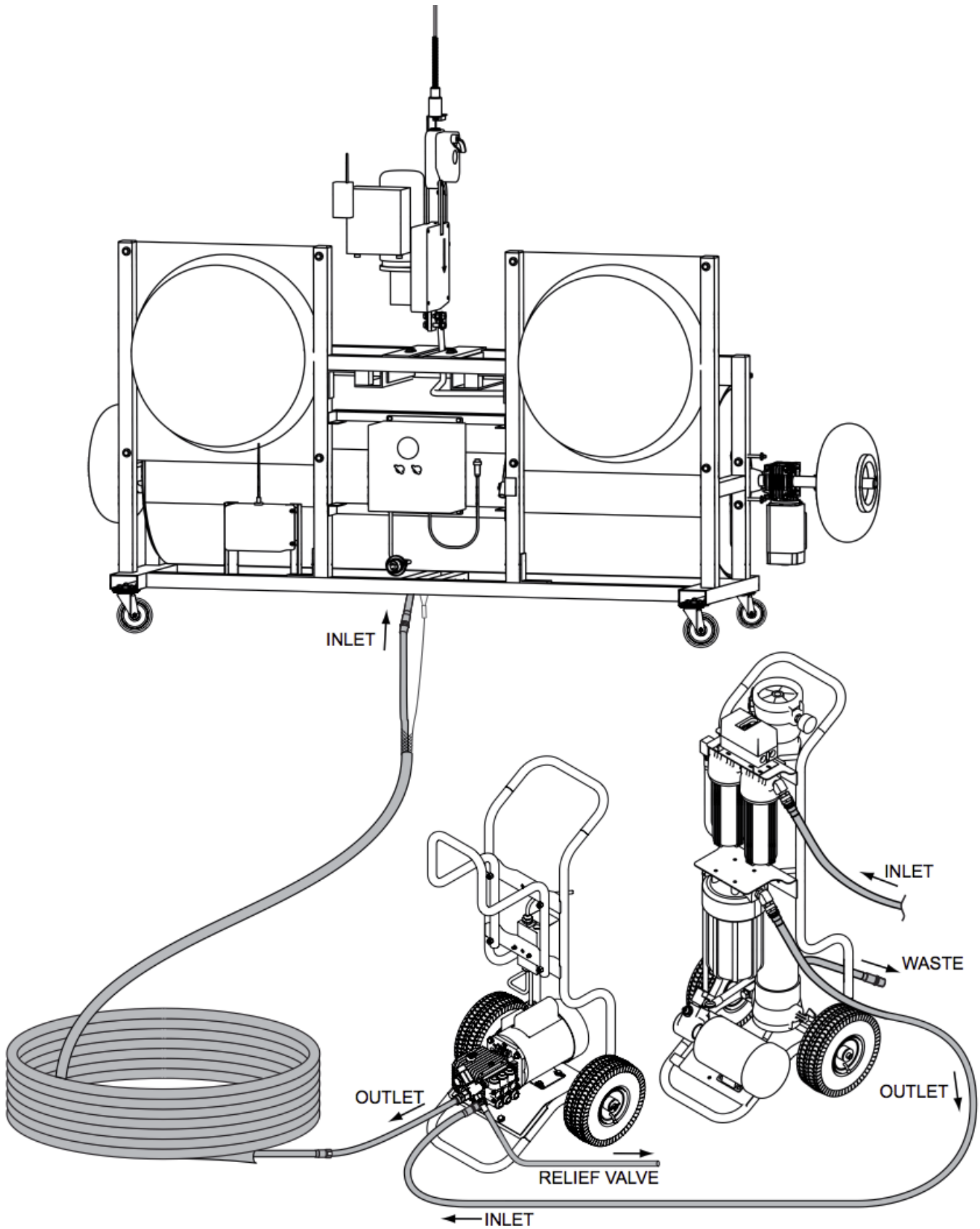


Figure 20 Wire Rope Handling



7. WATER SYSTEM DIAGRAM



8. OPERATING INSTRUCTIONS

1. Make an operational plan of your worksite. This should include water source locations, your starting location and your direction pattern for cleaning. Plan your set ups and moves prior to starting.

2. Evaluate weather conditions, use hand held anemometer to determine wind direction and speed at your site to see how it impacts your operational plan.



WARNING - 20 mph/ 32kph MAX WIND SPEED FOR OPERATION OF UNIT



WARNING - Do not operate during rain or stormy conditions. Beware of lightning. Beware of gusty wind conditions.

3. Determine the starting location of machine at base of building based on operational plan and weather conditions.

4. Go to rooftop starting location and determine the suspension method at your starting location. Rig as per section 5 of this manual.



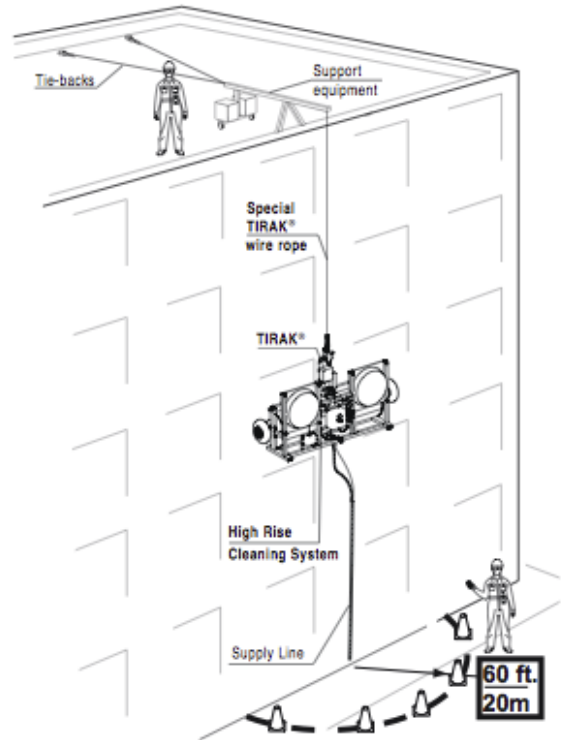
WARNING - All portable equipment must have a safety tie back line in place at all times.



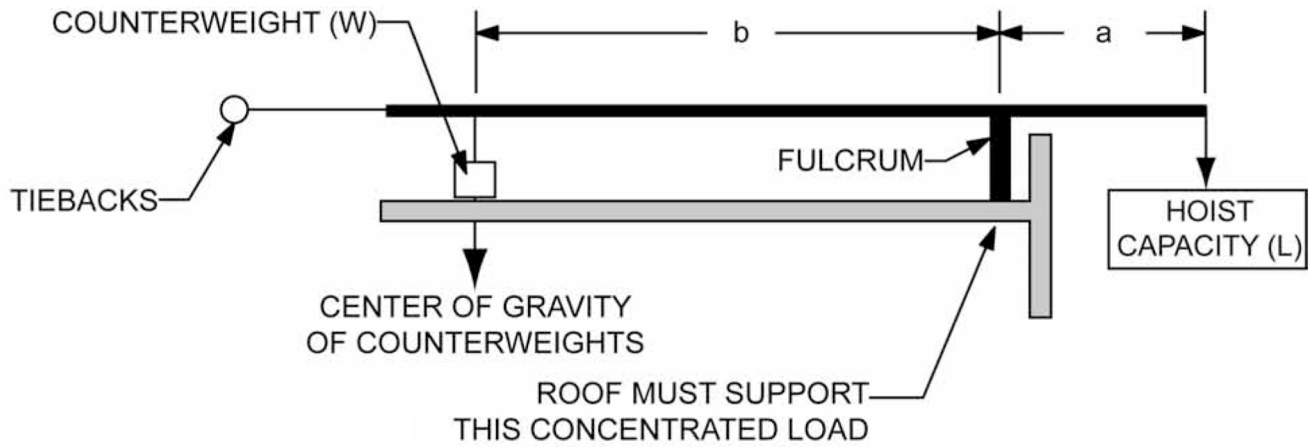
WARNING - If roof top parapet wall is less than 42 in/ 107 cm height, fall protection harnesses and safety tie back lines are required for all personnel on roof when within 30 ft / 9 m of edge.

Before rigging and operating this HRCS, the rigger and the operator must become aware of all the requirements of federal, state, provincial and local safety regulations not only applicable to the TIRAK® hoist but also to the entire suspended HRCS and any component of it.

Typical suspended High Rise Cleaning System Installation



8.1 Counterweight Formula



W = COUNTERWEIGHT

L = LOAD CAPACITY OF HOIST

a = ARM REACH

b = BACKSPAN DISTANCE (Distance between the fulcrum point and the center of the counterweights)

3 = SAFETY FACTOR (3:1)

NOTE: Counterweights must be a nonflowable material, and they must be attached to the outrigger beam

Always use taut tie back wire ropes capable of holding the full load.

$$W = \frac{(La)3}{b}$$

	Standard	Metric
Machine Weight	477 Lbs	216.4 Kg
Wire Rope Weight	.188 lbs x _____ft = _____lbs	.085 kg x _____m = _____kg
Support Line Weight	.76 lbs x _____ft = _____lbs	.34 kg x _____m = _____kg
Total System Weight	_____lbs	_____kg

5. Unload High Rise Washing Head and position at desired location or near desired location.

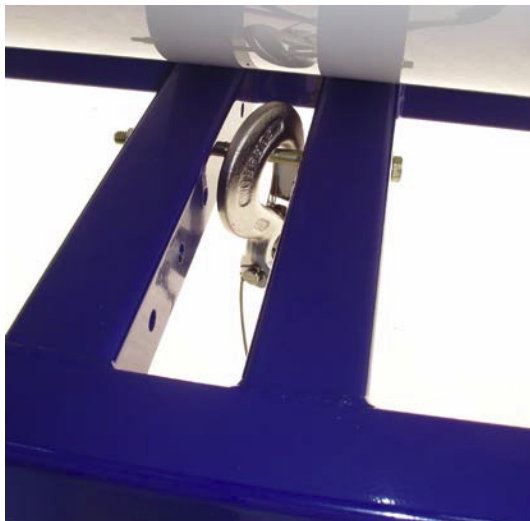


NOTE: Machine may be lifted over landscaping obstacles or other obstructions during start up.

6. Secure area around building to be cleaned with cones and rope/tape to prevent people from entering or exiting the area. No one should be allowed to be underneath the machine while suspended. See fig. at beginning of operating section.

7. Wire Rope, Hose/Cord and Remote Controls near the wash head.

8. Attach the Suspension grip on the Support Line assembly to security pin on the underside of the wash head.



9. Starting at the machine, un-coil and stretch out the Support Line assembly along building and then back to the power source and boost pump. Maintain organization of lines to eliminate kinks, tangles or binding.

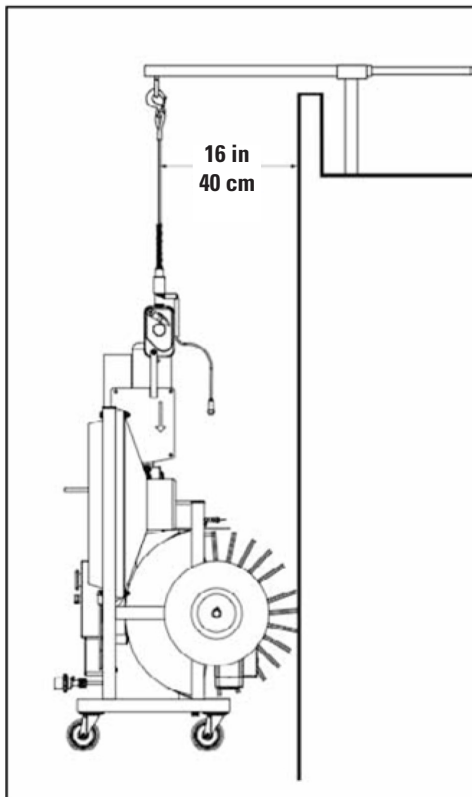


10. Uncoil and stretch out the Wire Rope. Be sure to keep the hook end at the High Rise machine washing head.



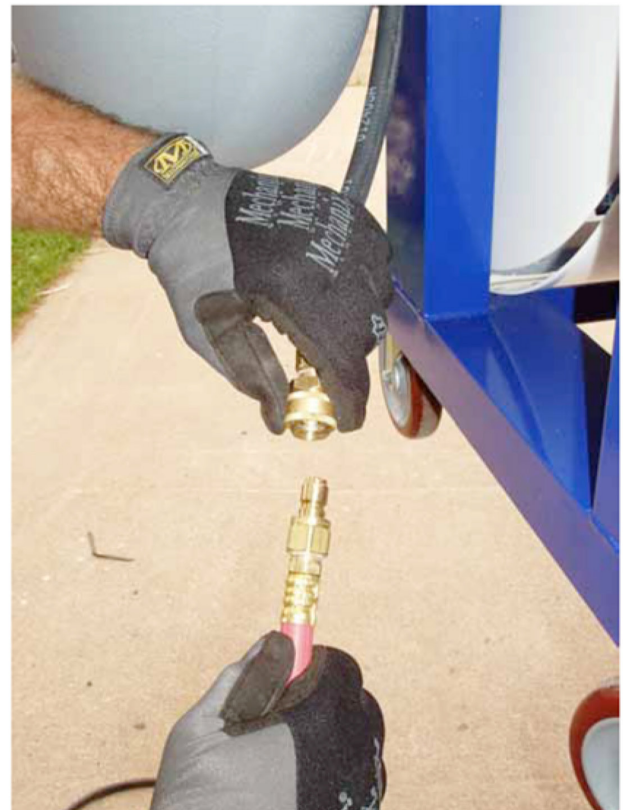
11. With a two-way radio in the rooftop operators possession, have them lower a rope down to the ground. Attach the hook end of the Wire Rope to it. Signal him to pull the rope up along with the Wire Rope attached. Leather gloves should be used when handling Wire Rope. Ground operator should hold tension on Wire Rope to prevent hook and Wire Rope from colliding into building. Inspect wire rope for frays during this procedure.

12. Once the hook has reached the roof, attach hook to the suspension device. Position Wire Rope approximately 16 inches or 40 cm from glass surface.



* This will vary with surfaces and height of the building.
Should not exceed 45 cm / 18 in

13. Connect the Water hose and Power Cord to the machine. For Power Cord line up connector tabs, insert together and twist to lock. Be sure the Power Cord plug is fully inserted and twist locked into place. Note: Water hose is a quick connect fitting.



14. Connect the other end of power cord to appropriate power source.

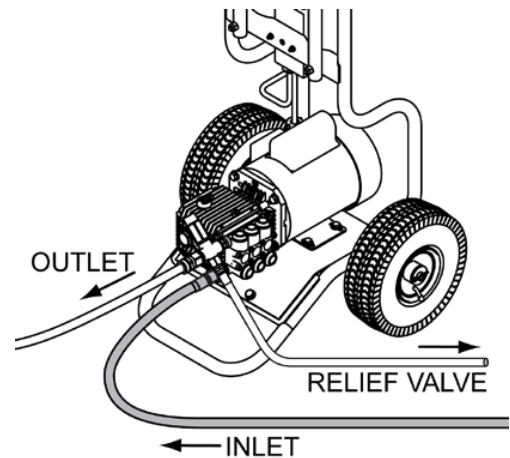
15. Hook up HydroCart Reverse Osmosis/De-ionizing machine (or equivalent RODI system and Boost Pump) to a pressurized water source.



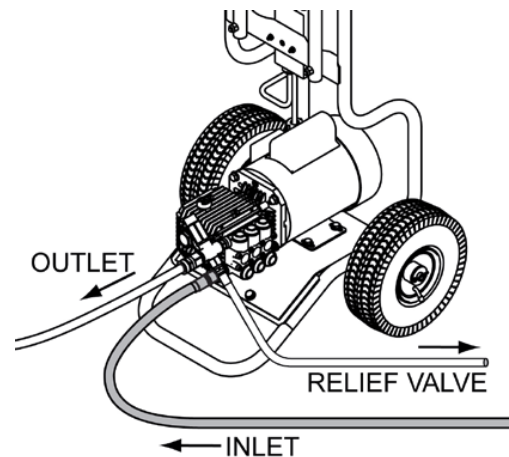
16. Place the HydroCart Waste Water Hose into drain or landscaping.



17. Attach the outlet of the HydroCart system to the boost pump inlet connection.



18. Attach the other end of the Support Line assembly hose to the Boost Pump.



19. Plug in the Boost Pump cord and the HydroCart system cord into an appropriate power source.

20. Double check all connections up to this point. We are now ready to feed the wire rope through the winch on the HighRise wash head.

8.2 CONTROL SYSTEM OPERATION

Emergency Stop: There are 3 large red Emergency Stop buttons that control the wash head.

1. The **Emergency Stop** button located on the hoise disconnects the power only to the hoist.
2. The **Emergency Stop** button located on the main control panel disconnects all power to the entire wash head.
3. The **Emergency Stop** button located on the wireless remote control transmitters disconnects all power to the entire wash head.

Emergency Activation: In any situation where the power needs to be turned off immediately; **Push** the red **Emergency Stop** button on the main control panel or on the wireless remote control transmitter.

Resetting emergency stop button:

1. Tirak® hoist - Twist button clockwise and pull outward.
2. Main Control Panel - Twist button clockwise and pull outward.
3. Wireless Remote Control Transmitter - press double bar (II) button twice. Green light will flash.

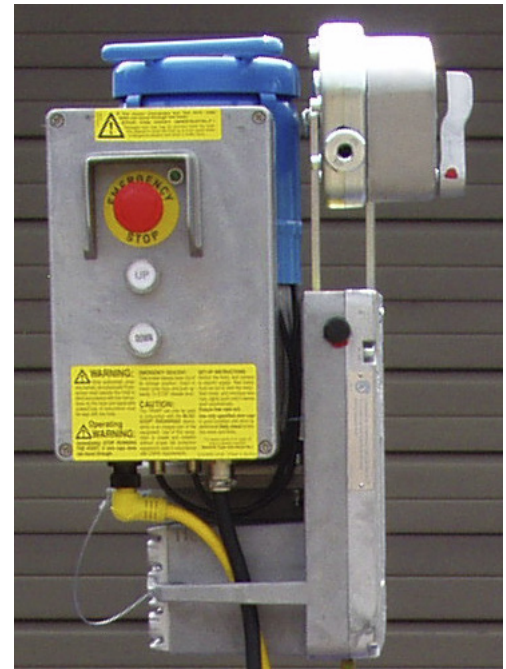
Wash Head Setup:

NOTE: Control buttons on hoist may also be used for this procedure.

1. Reset emergency stop button on Tirak® hoist.
2. Reset emergency stop button on main control panel.
3. Activate wireless remote control transmitter by pressing double bar (II) button twice. Green light will flash.
4. Press the up ↑ button on the remote control or on the Tirak® hoist to feed wire rope into hoist.
5. Press the down ↓ button on the remote control or on the Tirak® hoist control to remove the wire rope from the hoist.

Wash Head Operations

1. Press the up ↑ button on the remote control to make the machine go up.
2. Press the down ↓ button on the remote control to make the machine go down.



Emergency Stop - Hoist



Emergency Stop - Control



Emergency Stop-Remote Control Panel

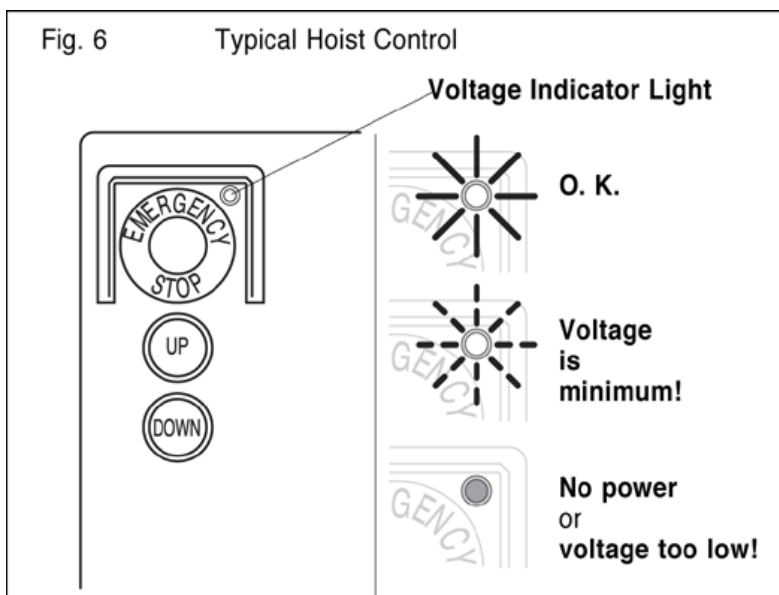
Emergency Activation: In any situation where the power needs to be turned off immediately; Push the red Emergency Stop button on the wireless remote control transmitter.



WARNINGS

- a) **DO NOT** lock in running position push-buttons marked “UP” or “DOWN”.
- b) **DO NOT** operate the hoist, if it is functioning improperly, or damage is noted.
- c) **NEVER** lift or pick up a load beyond the rated capacity appearing on the hoist.
- d) **STOP OPERATIONS IMMEDIATELY**, if at any time, when the hoist operates, the wire rope does not move (i.e. no UP or DOWN travel). It is likely that damaged wire rope is jamming the hoist. Continued operation might cause wire rope failure or damage to the hoist. Investigate by a qualified technician. In case the problem is confirmed: **CONTACT the SUPPLIER!**
- e) **IN CASE OF AN INCIDENT** involving injury, or property damage, contact the supplier immediately. **DO NOT** disturb, alter, or move any equipment at the scene of the incident.
- f) **OPERATING IN EXPLOSIVE ATMOSPHERE:** Never operate hoist or any other electric equipment in a potentially explosive atmosphere – such as around distilleries, refineries, chemical plants, ship or silo interiors. Always obtain official approval before commencing operations at these or similar locations.
- g) If the pushbuttons or **EMERGENCY STOP** button do not function properly, remove hoist from service until repaired by a qualified person.

WARNING: Activation of the Emergency Stop Button while the machine is suspended on the side of a building will also disable the stabilization thruster fans. This will cause the machine to be unstable and float away from the building wall. Damage to the building and/or machine may occur if machine gets blown around by wind and contacts the building. The support line may be used as a guide line to stabilize the machine from the ground by pulling it taut and off to the side. NEVER stand directly below suspended equipment.



21a. Activate the Remote Control system by pressing the double bar button on the transmitter. The green light will illuminate to signal activation.



21b. Take the bullet end of the Wire Rope and feed it into the Bloc Stop while pressing the up arrow on the Remote.



21c. As it feeds through be sure to watch as it comes out the other end of the Bloc Stop and goes through the Hoist.



21d. As it feeds through be sure to watch as it comes out the other end of the winch and goes through the guide tube.



21d. Once the wire rope has come through the guide tube, keep feeding it through while pulling the wire rope away from the machine.



21e. Feed the wire rope just until it is about to lift the machine off the ground. It is very important to communicate with your co-worker on the roof before lifting the High Rise machine off the ground!

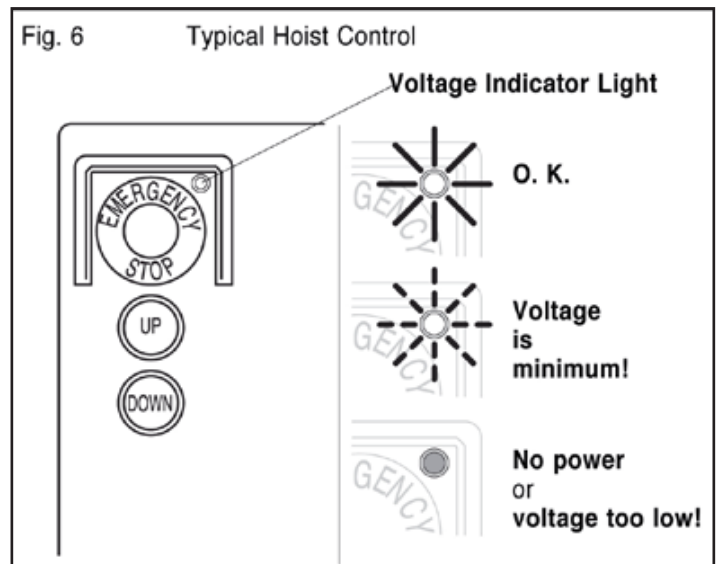
21f. Once your co-worker has given approval, Lift the machine off the ground by pressing the up arrow on the remote.



21g. Lift the machine a few feet off of the ground and stop.

21h. Check EMERGENCY STOP button and pushbutton control (Fig. 6)

- i) Check that the UP and DOWN pushbuttons return to their normal open position when released. They should move freely without sticking.
- ii) For three phase model: If the motor does not run, it could be caused by the phase control relay preventing reversed operation of the hoist. If so, apply to a qualified technician to change two phases inside the plug.
- iii) Push the red EMERGENCY STOP button. It should lock and remain depressed. Now try pushing the UP or DOWN pushbutton – the motor should not turn. Twist the EMERGENCY STOP button in the arrow direction to disengage it – it should pop out, and the hoist should now operate normally. Repeat this check a few times to check function of pushbuttons and the EMERGENCY STOP.



21i. CONTINUOUSLY CHECK rigging, lines, clearances, and all other elements throughout the entire time on the job.

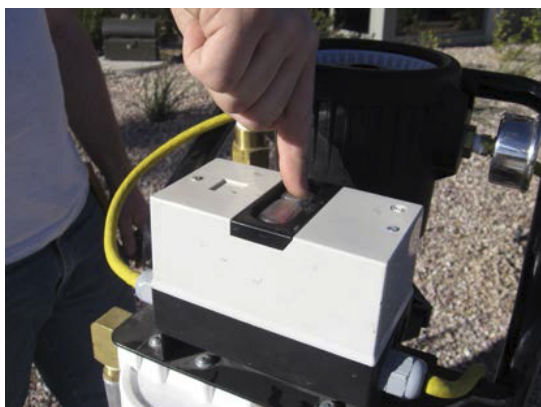
22. Start the HydroCart system and verify water flow from the waste water hose.

22a. Turn on water supply.

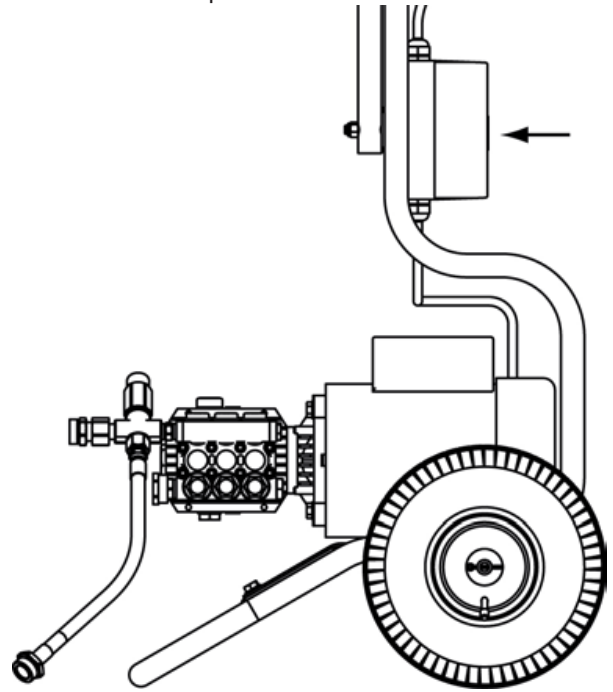
22b. Bleed air through flush valve.



22c. Press the black start button on HydroCart.



23. Start the Boost Pump.



24a. Push and hold Power Button on Remote for 1 second.

24b. Repeat.

24c. Turn on Fans on Control Box.

24d. Turn on Brush Power on Control Box.

Note: This energizes the Brush circuit, but does not start the brush rotation. The rotation of the brush will start upon activation of the directional arrow buttons on the remote control. The direction of the rotation of the rush is linked to the direction of the movement of the hoist.

25. Start cleaning by pressing the up button on the Remote Control transmitter.



9. SITE QUOTATIONS AND SITE PLANNING

9.1 Site Evaluation Form

Job Name _____

Job/Quote# _____

Contact Phone# _____

Date _____

By _____

Overall footprint dimensions: _____

Maximum elevation: _____

Roof top suspension support system description: _____

Encumbrances: _____

Operational restrictions: _____

Security issues: _____

Ground/Roof Top issues: _____

High Rise machine model: _____

Total drops (cleaning path runs) _____

Drop time (up & down) _____

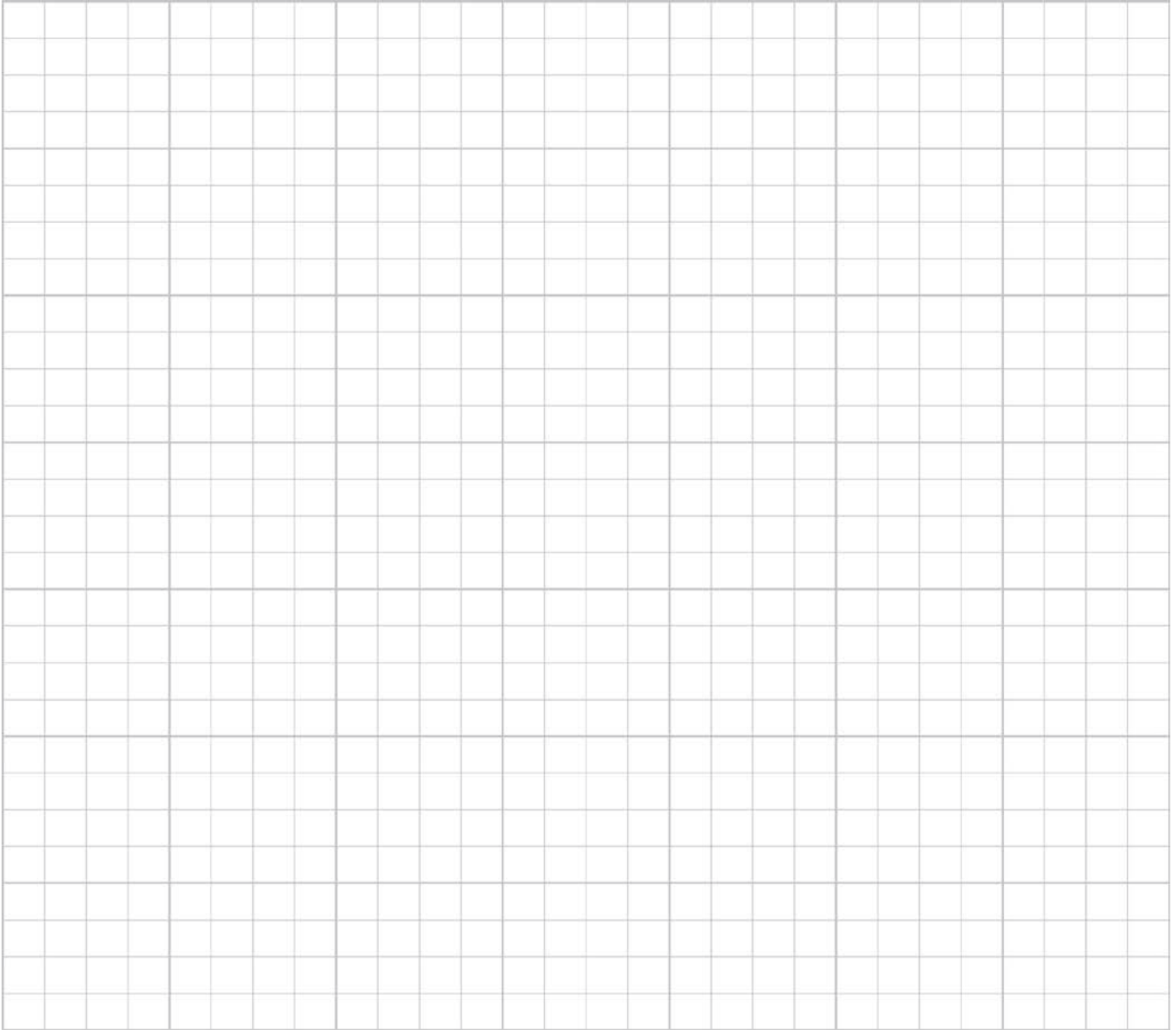
Rigging setup and tear down time: _____

Rigging move time between drops: _____

Transportation time, Job total: _____

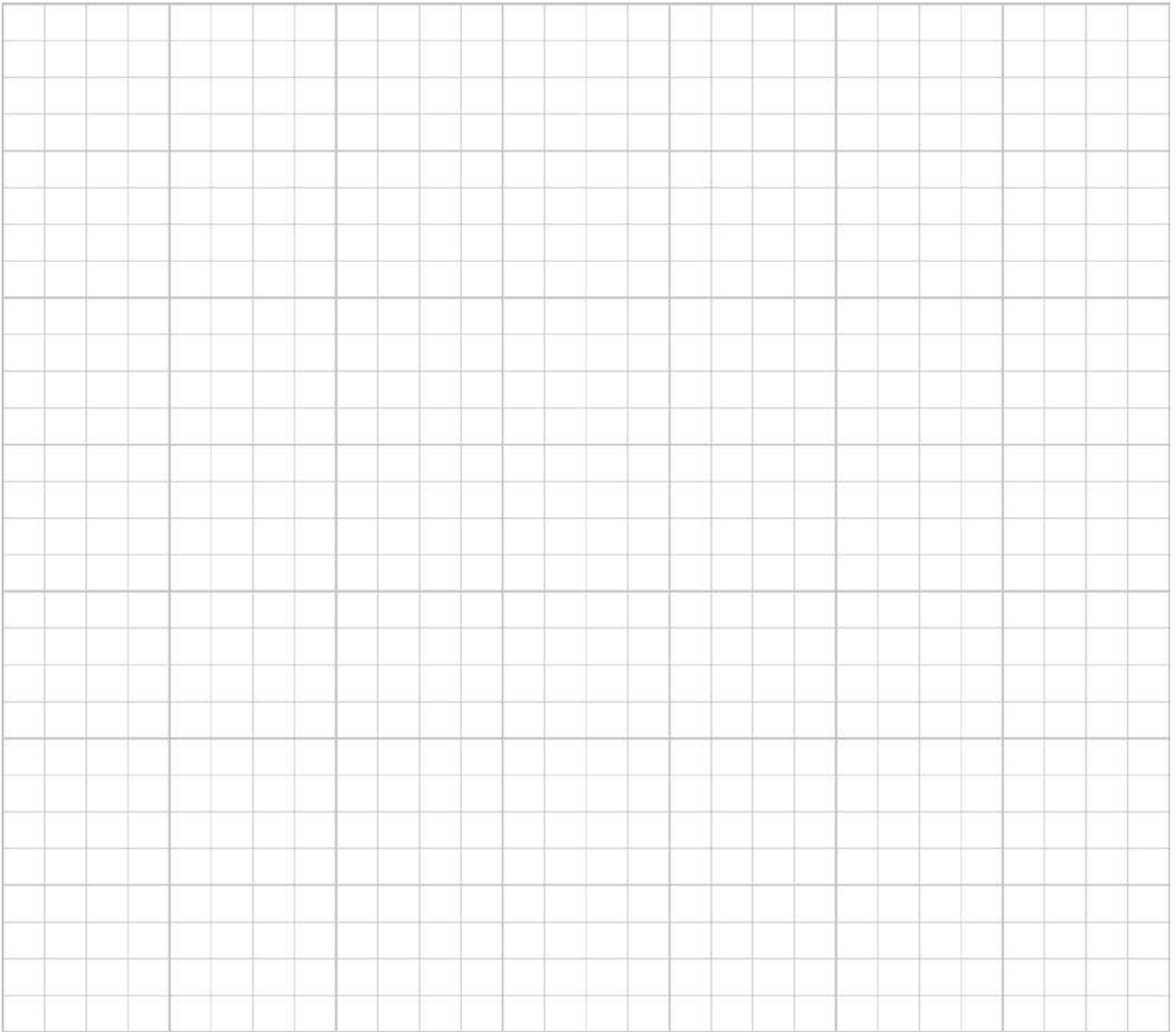
Total time for entire job: _____

9.2 SITE DRAWING - GROUND



- Ⓜ Water
- ⓔ1 Electric connection- 230 VAC
- ⓔ3 Electric connection- 3 Phase
- Ⓣ Tree
- Ⓛ Landscape Obstruction

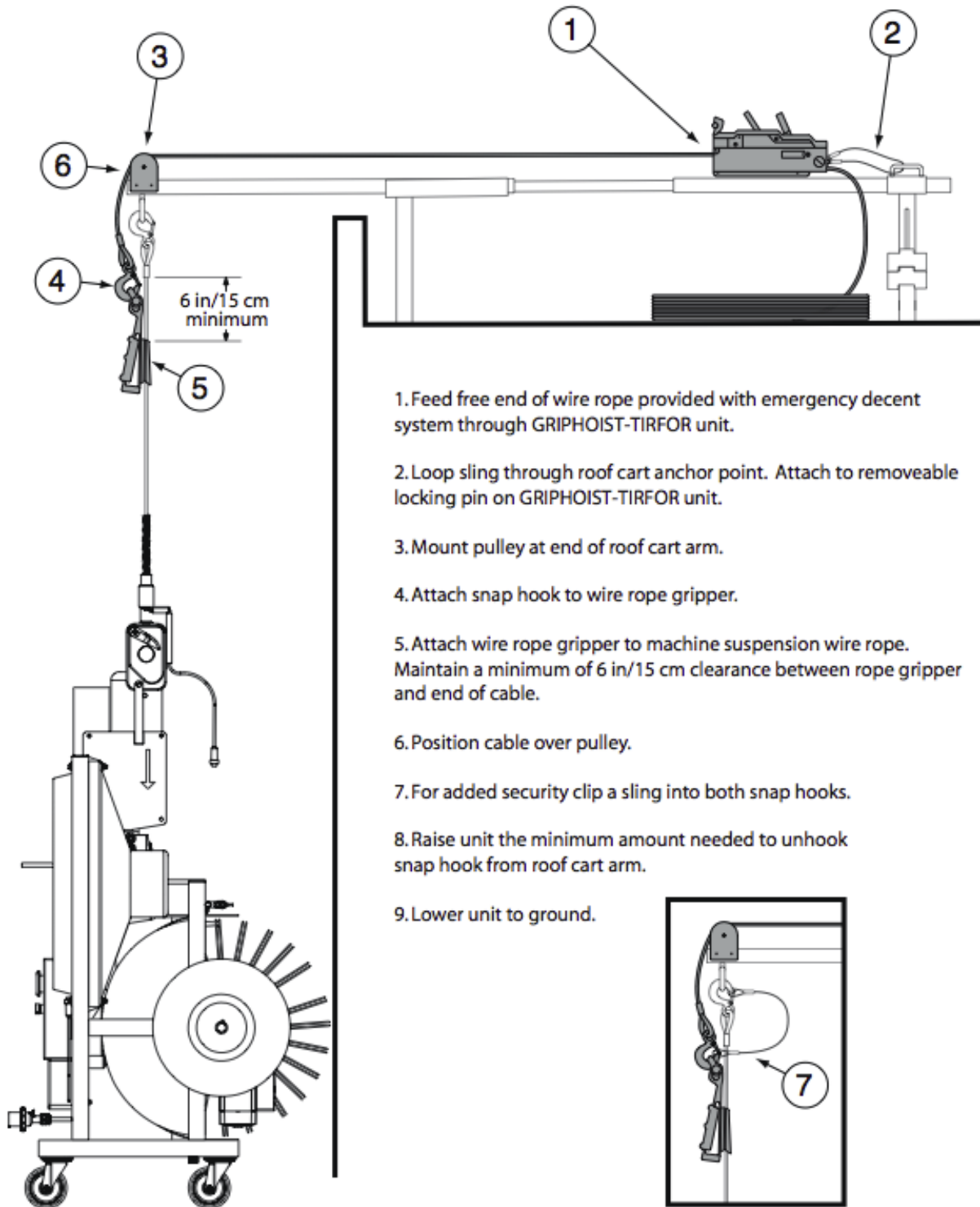
9.3 SITE DRAWING - ROOFTOP



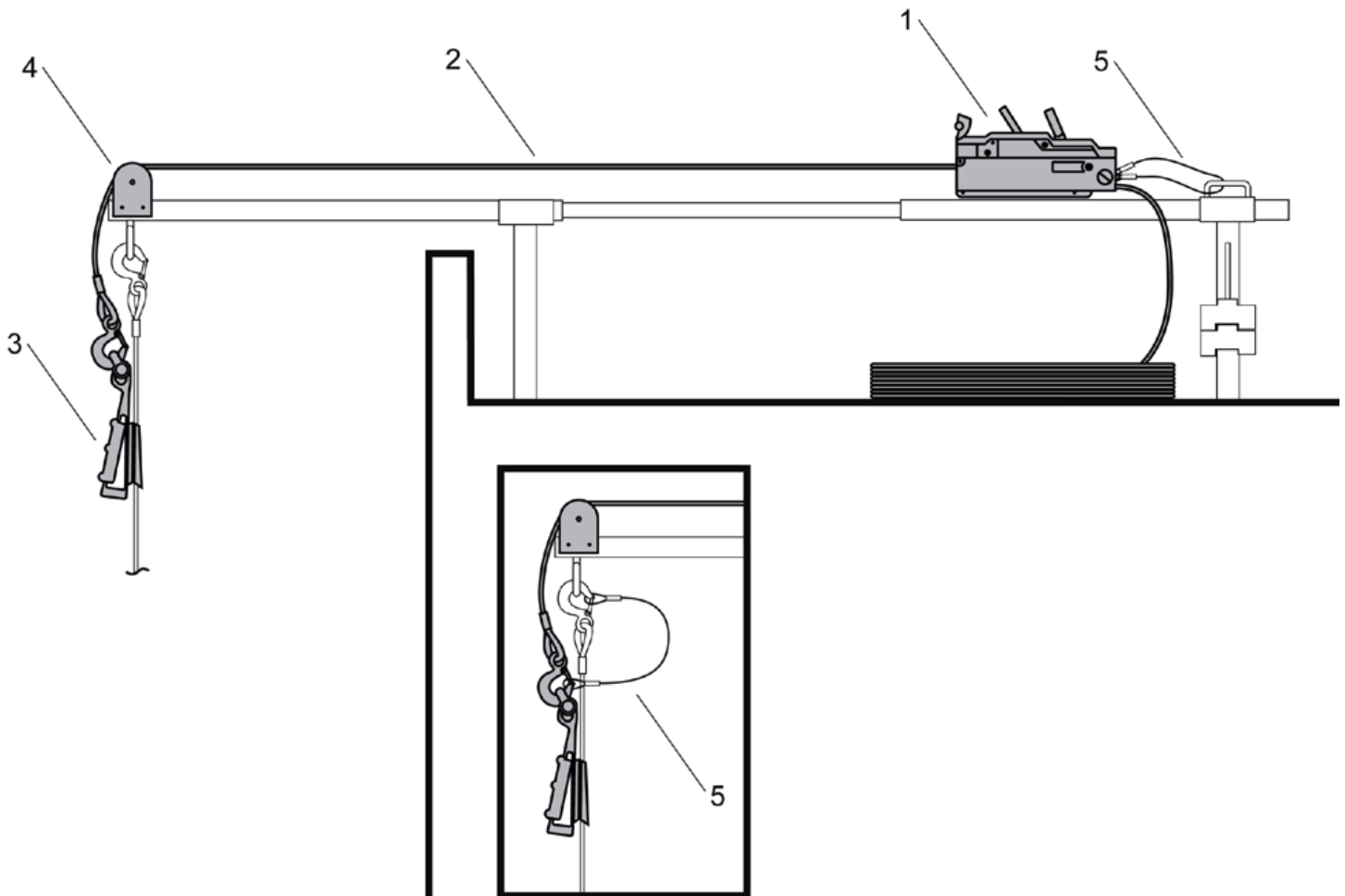
- Ⓜ Water
- ⓔ1 Electric connection- 230 VAC
- ⓔ3 Electric connection- 3 Phase
- Ⓣ Tree
- Ⓛ Landscape Obstruction

10. EMERGENCY DECENT SYSTEM

10.1 Emergency Decent System - Manual Powered Instructions



10.2 Emergency Decent System - Manual Powered Parts List



Position	Part Number	Qty	Description
1	BD210211	1	Griphoist Tirfor Model T-508
2	BD210212	2	Wire Rop Asm., w/Snap Hook, 1/4" (6.4mm) diameter x 300ft. (91.5m) length
3	BD210213	3	Wire Rope Gripper, Coni-Klam
4	BD210214	4	Pulley Assembly
5	BD210215	5	Sling

10.3 Emergency Decent System - Electric Powered Instructions

OPTION 1

1. Feed free end of wire rope provided with emergency decent system through Minifor TR30 unit.
2. Attach snap hook from Minifor TR30 unit to roof cart anchor point.
3. Attach snap hook to wire rope gripper.
4. Attach wire rope gripper to machine suspension wire rope. Maintain a minimum of 6 in/15 cm clearance between rope gripper and end of cable.
5. For added security clip a sling into both snap hooks.
6. Raise unit the minimum amount needed to unhook snap hook from roof cart arm.
7. Lower unit to ground.

TO HIGH RISE CLEANING SYSTEM ↓

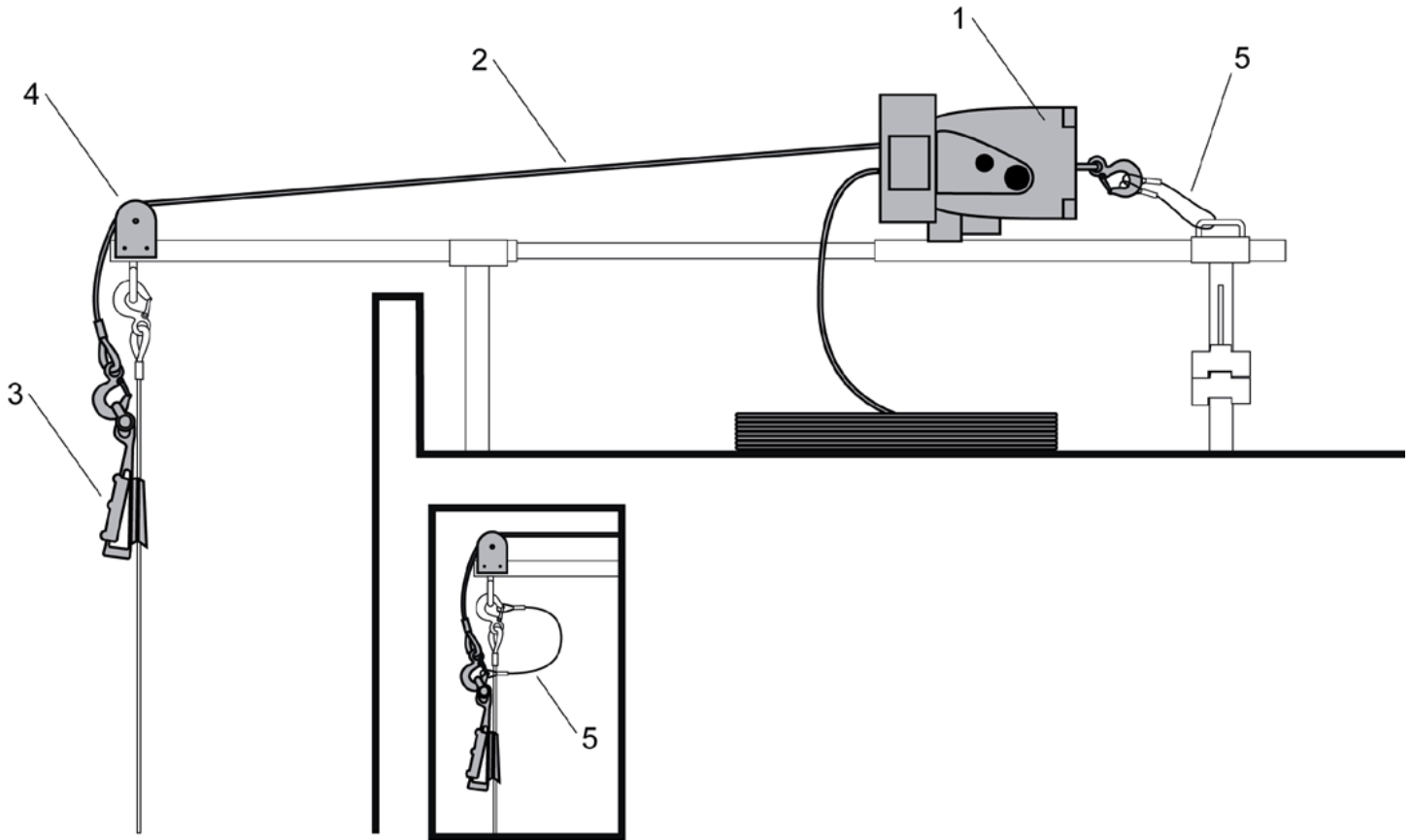
OPTION 2

1. Feed free end of wire rope provided with emergency decent system through Minifor TR30 unit.
2. Loop sling through roof cart anchor point. Attach to snap hook on Minifor TR30 unit.
3. Mount pulley at end of roof cart arm.
4. Attach snap hook to wire rope gripper.
5. Attach wire rope gripper to machine suspension wire rope. Maintain a minimum of 6 in/15 cm clearance between rope gripper and end of cable.
6. Position cable over pulley.
7. For added security clip a sling into both snap hooks.
8. Raise unit the minimum amount needed to unhook snap hook from roof cart arm.
9. Lower unit to ground.

6 in/15 cm minimum

TO HIGH RISE CLEANING SYSTEM ↓

10.4 Emergency Decent System - Electric Powered Parts List



Position	Part Number	Qty	Description
1	BD210177	1	Tractel TR30 hoist, 230 VAC, 60 Hz, Single phase, USA
1	BD210185	1	Tractel TR30 hoist, 230 VAC, 50 Hz, Single phase, Intl.
2	BD210212	1	Wire Rop Asm., w/Snap Hook, 1/4" (6.4mm) diameter x 300ft. (91.5m) length
3	BD210213	1	Wire Rope Gripper, Coni-Klam
4	BD210214	1	Pulley Assembly
5	BD210215	2	Sling

11. TROUBLESHOOTING




WARNINGS Avoid injuries:

1. Checks and repair of the electric equipment must only be carried out by **QUALIFIED ELECTRICIANS!** Wiring diagrams are found in the control box of the motor.

2. **DO NOT OPEN ANY CONTROL BOX OR PENDANT CONTROL WITH POWER SUPPLY TO HOIST!**

3. Any other repair should only be carried out by a **TRACTEL authorized technician, and only original spare parts shall be used.**

11.1 Wire Rope Drive Mechanism Troubles

Problem	Cause	Remedy
Wire rope does not move through, i. e. no UP nor DOWN movement.	It is likely that damaged wire rope is jamming the hoist.	 <p>WARNING: STOP OPERATIONS IMMEDIATELY! Continued operation might cause wire rope failure. Contact the supplier.</p>


11.2 Hoist Motor Troubles

Problem	Cause	Remedy
1. Motor does not run at all.	<ul style="list-style-type: none"> a) Power failure b) Incorrect wiring c) On 3 phase motor: stop by the phase control relay 	<ul style="list-style-type: none"> a) Check voltage indicator light, fuses, power cords, connections; on single phase motor: starting capacitor. b) Compare wiring with wiring diagram. c) Change two phases inside the plug to reverse operation of the hoist.
2. Motor does not start with a load.	<ul style="list-style-type: none"> a) Overload b) Brake not released c) Voltage too low d) Incorrect wiring 	<ul style="list-style-type: none"> a) Check load and reduce, if necessary. b) Check motor with brake released by hand. Check brake according to para. 5.1 (2), page 15. c) Check voltage indicator light and voltage when running the motor. Use power cord(s) with higher cross section. d) Compare wiring with wiring diagram.
3. Motor stalls under load.	Low voltage	Check voltage when running the motor. Use power cord(s) with higher cross sections.
4. Overheating when running without load	<ul style="list-style-type: none"> a) Insufficient cooling b) Incorrect wiring c) Voltage too high d) Short circuit in the coil 	<ul style="list-style-type: none"> a) Clean motor fan cover. b) Compare wiring with wiring diagram. c) Check voltage and no-load current. d) Contact the supplier.
5. Overheating	<ul style="list-style-type: none"> a) Overload b) High or low voltage c) Starting capacitor still activated. Centrifugal switch defect. d) Crooked motor shaft. e) Brake not (correctly) released. 	<ul style="list-style-type: none"> a) Check load and reduce if necessary. b) Check current consumption, and compare with motor label specifications. Check current and voltage. Check power cords c) Check current at the auxiliary winding in the control box, when running the motor. For centrifugal switch repair contact the supplier. d) Contact the supplier. e) Check brake according para. 6.3.
6. Abnormal motor noise	<ul style="list-style-type: none"> a) Electric parts (noise disappearing immediately, when stopping motor) b) Mechanical parts (noise continuous until hoist stands still) 	<ul style="list-style-type: none"> a) Causes/remedies see above 1. to 5. b) Contact the supplier.

11.3 Primary Brake Troubles

Problem	Cause	Remedy
Brake does not open (lack of "click" switch noise, when starting/stopping the hoist)	<ul style="list-style-type: none"> a) Defective supply conductor, brake coil, rectifier. b) Worn brake rotor 	<ul style="list-style-type: none"> a) Have supply conductor, current passage in brake coil, rectifier checked by an electrician or qualified person. b) Contact the supplier.

11.4 BSO Secondary Brake Troubles

Problem	Cause	Remedy
1. Hoist goes up but not down.	BSO secondary brake is closed: Primary wire rope has run out or has failed.	 WARNING: STOP DOWNWARD TRAVEL! Proceed according para. 5.4, (3), page 16.
2. BSO secondary brake automatically closes without apparent reason.	<ul style="list-style-type: none"> a) Mechanical defect. b) Oversized or damaged wire rope 	<ul style="list-style-type: none"> a) Contact the supplier. b) Check wire rope and replace, if necessary.

If you cannot find a trouble's cause, contact the supplier.

11.5 Thruster Fan Trouble

Problem	Cause	Remedy
1. Fan does not run	No power	<ul style="list-style-type: none"> a) Check fan control power switch b) Check fuse inside control box c) Reset thermal overload button on fan motor starter inside control box.

11.6 Brush Motor Trouble

Problem	Cause	Remedy
1) Brush does not run	No power	<ul style="list-style-type: none"> a) Check brush motor power switch b) Check fuse inside control box c) Reset thermal overload button on brush motor starter inside control box. d) Check directional control relays inside control box e) Check batteries in remote control transmitter. Note: Brush only runs when up and down buttons on remote are activated.

12. INSPECTIONS & MAINTENANCE



NOTE: A maintenance program should start when HRSC is entered into service. This maintenance program should comply with recommendations in the applicable parts of the Instruction Manual, and all pertinent Federal, State, Provincial and Local regulations.

Unauthorized replacement parts: Use only Tractel replacement parts. The replacement of any part with anything other than a Tractel authorized replacement part may adversely affect the function and safety of this hoist and voids the warranty. Tractel disclaims liability for any claims of damages, whether warranty, property damage, personal injury or death arising from the use of unauthorized parts.

12.1 Inspections

12.1.1 DAILY INSPECTIONS

EACH DAY PRIOR TO USE AND DURING OPERATION CHECK:

(1) Primary brake function: “click” noise, when starting /stopping the hoist. (optional)

(2) BLOCSTOP BSO secondary brake function.

I) At ground level first close the BSO secondary brake by pushing EMERGENCY STOP button (d2). Then push DOWN-button and make the wire rope form a loop between TIRAK® casing and BSO secondary brake (Fig. 26). Open BSO secondary brake by pulling down control lever (d1) until it locks in the open position. With gloved hands sharply pull wire rope in arrow direction (Fig. 26) – the BSO secondary brake should close immediately (Fig. 27). Reset BSO secondary brake by pushing down control lever (d1) until it locks in the open position.

II) Lift platform 3 ft. (1 m) above ground or safe surface, and push EMERGENCY STOP button (d2) of the BSO secondary brake (Fig. 27). Lower the platform to check that the BSO secondary brake holds the load. Raise platform until the hoist supports the load. Reset (d1) to the open position.

III) During operation regularly check through the window (d3) that the centrifugal weights are rotating (Fig. 27).

(3) Wire rope damage: kinks, cuts, broken wires, birdcages, heat damage, contamination etc. – replace if such damage is noticed.

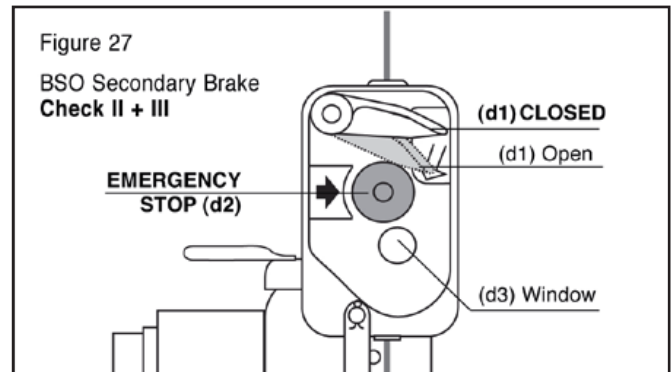
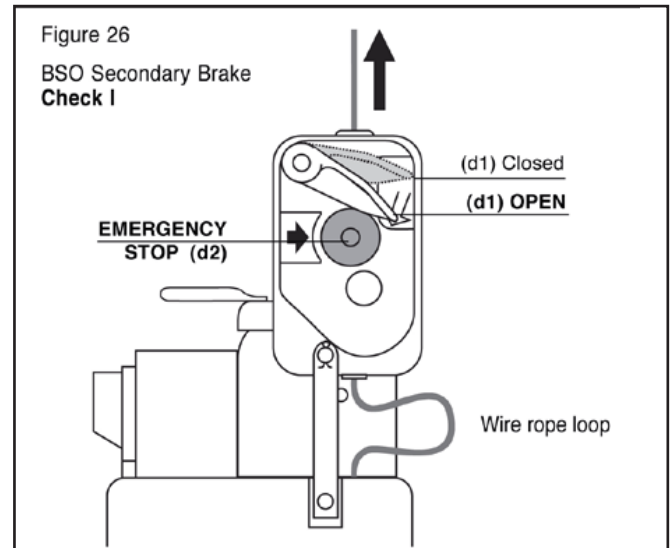
(4) Wire rope connections (thimble, ferrule), and if provided: hook is not bent, safety latch is in place.

(5) Wire rope corrosion due to acid or caustics. Replace wire rope if exposed to these contaminants.

(6) Wire rope lubrication: The wire rope has to be clean and lightly lubricated.



Regular inspections should be followed along the life of the hoist and documented by written inspection records.



(7) Rigging

Wire rope termination, connection to the suspension system. It must be aligned and secure.

(8) Check for parts damage.

(9) Safety harness(es), lifeline(s), fall arrester(s) and lanyard(s) must be used at all times in accordance with the requirements of OSHA regulations and state, provincial or local codes



WARNINGS

If there is apparent damage on any part: STOP working, unless the damaged part(s) is (are) replaced

12.1.2 MONTHLY INSPECTIONS

(1) All items under daily inspection.

(2) Wire Rope Inspection



All wire rope should be inspected once a month, and a signed and dated inspection record maintained.

WIRE ROPE SHOULD BE REPLACED, IF ANY OF THE FOLLOWING CONDITIONS ARE NOTED:

Conditions that require immediate wire rope replacing:

- Broken wires or strands.
- Excessive corrosion.
- Heat damage, evident through discolored wires.
- Reduction from nominal diameter of more than 10%
- Kinking, crushing, birdcaging, or any other distortion of the wire rope structure (Fig. 28).



NOTE: How to measure wire rope diameter: The correct diameter of the wire rope is the largest cross-sectional measurement across the strands (and not the valleys). The measurement should be made carefully with calipers as shown in Fig. 29.



WARNING: REPLACEMENT WIRE ROPE MUST BE SAME SIZE, GRADE, AND CONSTRUCTION AS THE WIRE ROPE SPECIFIED BY THE SUPPLIER! (See pages 7, 11) THE SUPPLIER DECLINES ALL RESPONSIBILITY FOR MACHINES USED WITH A WIRE ROPE OTHER THAN SPECIFIED BY HIM.

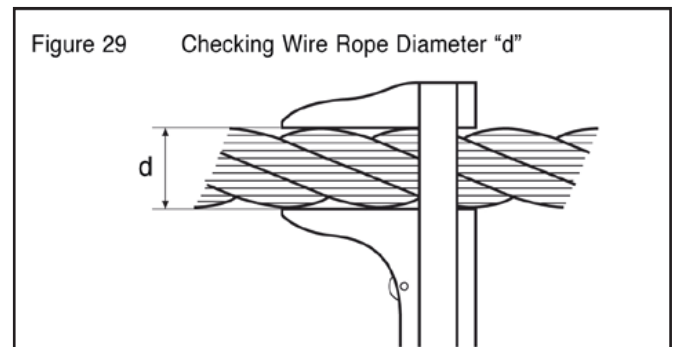
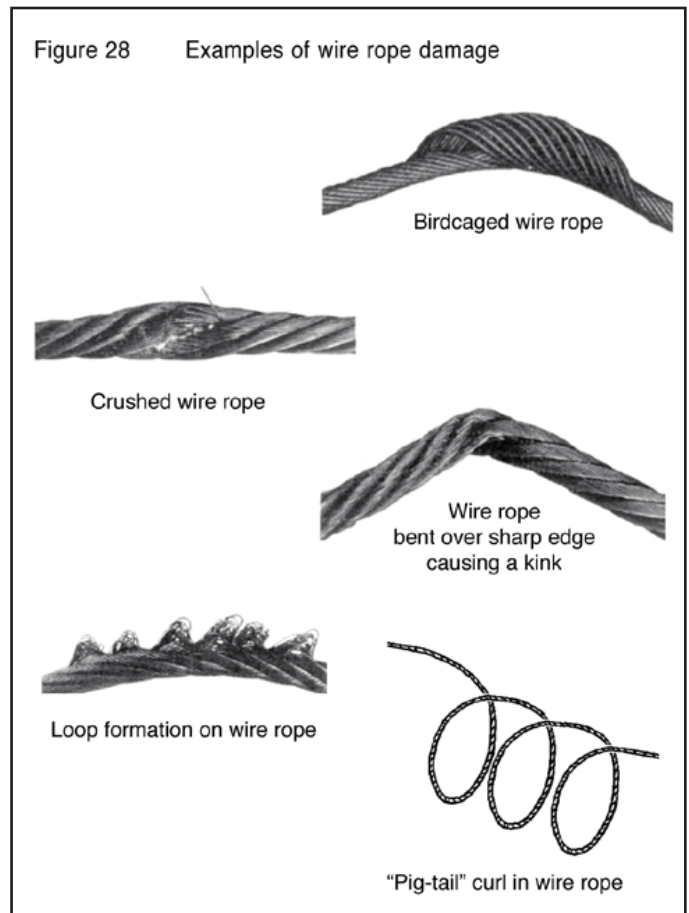
12.1.3 1/2 YEAR INSPECTIONS



NOTE: The hoist should be examined every 6 months by the supplier or a repair shop agreed by him.



A signed and dated inspection record should be maintained.



If a gearbox oil change is necessary, a qualified person should take one of the synthetic oils specified below. The oil is selected according to the temperature range that the hoist usually will be used in.

Quantity
Required:

LE 500 P-Series: **1.4 litres**

Temperature range	-5 to 176 degF -15 to +80 °C	-31 to 104 degF -35 to +40 °C
API Specification	Synthetic oils ²⁾	
Prescribed oil	CLPPG or PGLP ISO VG 460 ¹⁾	CLPPG or PGLP ISO VG 100
(other oils on request)	NOTE: DO NOT use other oils without written authorization from the manufacturer or the supplier.	

Table 5

¹⁾ Standard charge

²⁾ Use only synthetic oils!

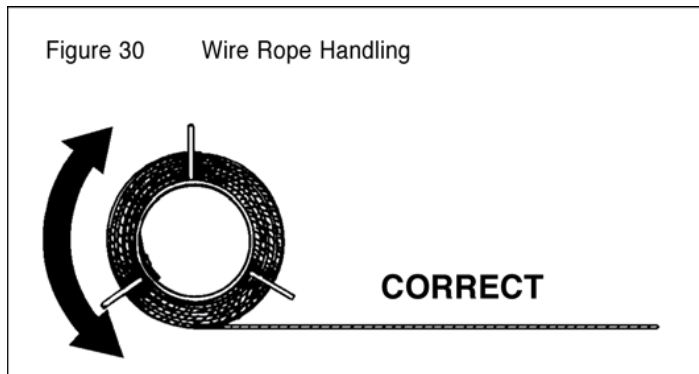
12.2 Maintenance

12.2.1 TIRAKHoist

- (1) Daily check the primary and BSO secondary brake.
- (2) Daily check for visible part damage.
- (3) Keep wire ropes clean and lightly lubricated to prevent abnormal wear of the wire rope driving mechanism.

12.2.2 Wire Ropes

- (1) Use only wire ropes, which meet the manufacturers specifications. For details see pages 7 and 11. This will ensure the reliable function of the hoist.
- (2) To warrant maximum lifetime we recommend:
 - The wire rope must be unreeled and reeled in a straight line (Fig. 30).
 - Keep wire ropes clean.
 - Lubricate wire ropes regularly with a rag soaked with oil.
 - Never let the wire ropes rub against sharp edges.
 - Always see that the wire rope outlet is not obstructed.
 - Let the free wire rope end untwist to prevent wire rope from making loops.
 - If the wire rope changes direction, it should be guided by sheaves or rollers to avoid damage.



(optional)

12.2.3 BLOCSTOP BSO Secondary Brake

Besides the daily checks, keep all wire ropes clean and lightly lubricated.

12.3 Long Term Maintenance of Hoist

If the hoist is not used for periods greater than 6 months, the hoist should be reinspected by the supplier or repair shop agreed by him prior to reuse.

12.4 Maintenance of High Rise Wash Head

DAILY INSPECTION AND MAINTENANCE

- Inspect wire rope for frays and kinks.
- Inspect all electrical connections and electrical wiring for loose connections, frayed wires and damage.
- Inspect water lines for any loose connections and leaks.

MONTHLY INSPECTION AND MAINTENANCE

- Grease brush shaft pillow block bearings monthly

YEARLY INSPECTION AND MAINTENANCE

- Winch should be serviced annually
- Clean nozzle filters
- Check all fasteners for tightness and corrosion
- Inspect frame and welds for cracks and corrosion

3

Type		No.	
phase	60 Hz	rpm	
<input type="radio"/>	kW	cos ? <input type="radio"/>	
V		A	
Connect.	Protection IP 55	Insul. class F	

Code 22410

4

Brake type			
<input type="radio"/>	Power	W	Voltage
<input type="radio"/>	Moment	Nm	<input type="radio"/>


Code 22420

5

Wire rope Ø 5/16"	On TIRAK®
	LE 500 P1 LE 501 P1 LE 501 PA1

Code 27660


6



If the motor energizes but the wire rope does not move through the hoist: STOP THE HOIST IMMEDIATELY!
 Damaged wire rope may be jammed inside the hoist. Any attempt to move the hoist up or down could cause a dangerous situation and result in bodily injury.

Code 22080


7



NOTICE: This hoist is equipped with a controlled descent device that will automatically engage in case of primary brake failure. Descent can be stopped with manual operation of the secondary brake.

Code 22230

8




Emergency Descent
 Brake release lever in lever support
Descente d'urgence
 Manette de commande du frein dans son logement
Notablaß
 Bremslüfterhebel in Halterung


S 017-02/02

Code 27660

9



WARNING
FOR SAKE OF SAFETY:
 Only authorized, properly trained, and physically fit personnel shall operate this hoist.
 Prior to use, they must have read and fully understood the rigging, operating and maintenance instructions of the manual and on the hoist. A copy of the manual must be kept with the hoist.
 Operation must be in strict accordance with these instructions and applicable codes!




WARNING
BLOCSTOP® OVERSPEED device is an integral part of the hoist and essential for safety. **NEVER DETACH!**
 This equipment must be used with proper fall protection equipment in accordance with OSHA requirements.
EMERGENCY DESCENT:
 Take brake release lever out of its storage position, insert in motor cover hole, and push upwards. To STOP release lever.

SET-UP INSTRUCTIONS:
 Anchor the hoist, and connect to electric supply. Red button must be out to start the motor. Start motor, and introduce wire rope, lightly push until it reeves itself automatically.
Ensure free rope exit.
Use only specified wire rope in good condition with short tapered end! **Daily check** for broken wires and kinks.
 For spare parts or in case of inquiry please mention **Machine Type and Serial No.!**

G442.1-07/02 Printed in Germany

Code 22730

10



Classified by Underwriters Laboratories Inc.® as to load capacity, electrical fire and shock hazards only.

400DS

G0212-10/01

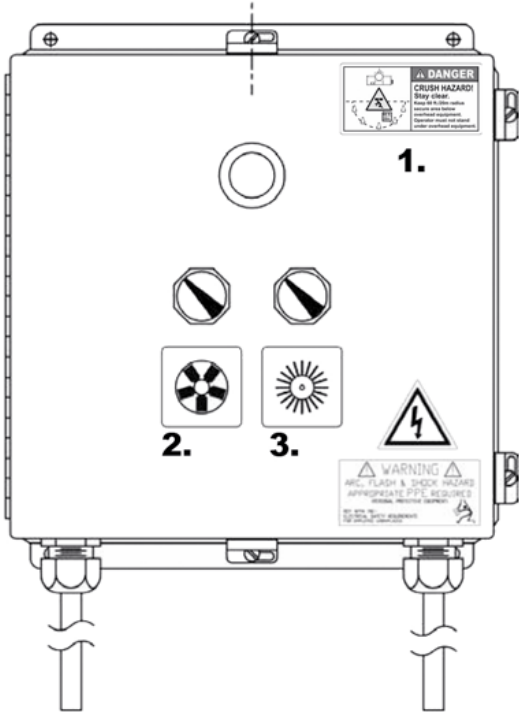
Code 22240

13.3 Labels for High Rise Cleaning System

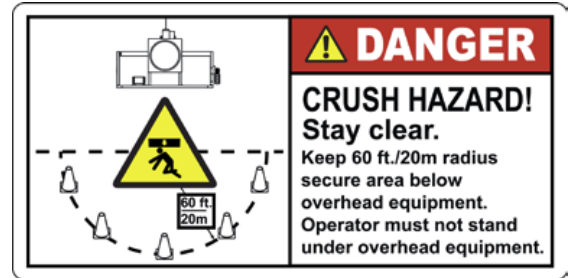
1. Danger label (crush hazard)
2. Fan label
3. Brush label
4. Warning label (label panel)



NOTE: If any nameplate or label is missing or obscured, contact the supplier for replacement nameplates/labels.



1.

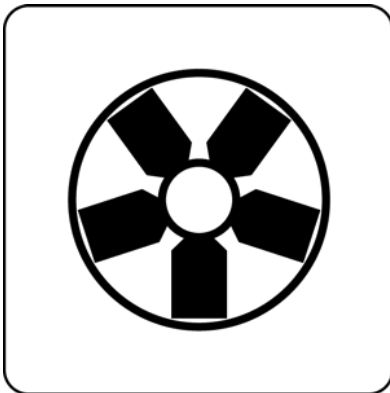


4.

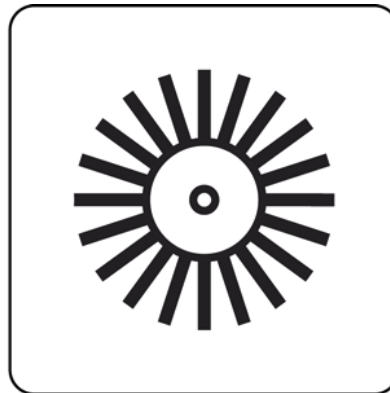


4. Note: Warning label located on spray shield, not show in picture.

2.



3.



14. PARTS LIST - Twin Thruster System

Item	Part Number	Description	Qty	U/M
1	BD210352	HR202 Self Balancing Frame Assembly Complete	1	Ea
2	BD210054	Lead Shot	20	Lbs
3	BD210362	Cover, HR200 Series Frame Counter Balance Tube	1	Ea
4	BD210015	Hoist, Gripwinch, 220 VAC, 50 Hz, Single Phase W/ Block Stop	1	Ea
5	BD545125	Connector, Mini Woodhead, .55 dia. x 90_ Male Plug 4 Pole	1	Ea
6	BD545124	Connector, Mini Woodhead, .55 Dia. x Female Receptacle, 4 Pole	1	Ea
7	BD545103	Power Cable Male, Upper Limit Switch	1	Ea
8	BD545104	Power Cable Female, Upper Limit Switch	1	Ea
9	BD545064	Upper Switch Assembly, Includes Bracket and Switch Assem	1	Ea
10	BD545090	Plug, 3 Pin Euro Style IP67	2	Ea
11	BD545091	Connector, 3 Pin Euro Style IP67	1	Ea
12	BD210069	Socket, 8 Pin Relay Switch (Not Shown)	2	Ea
13	BD210308	Relay, DPDT, 8 Pin 240 VAC, 1 Hp (Not Shown)	2	Ea
14	BD210360	Transmitter, Hetric Wireless Remote Control, European Frego Enoy	1	Ea
15	BD210361	Receiver, Hetric Wireless Remote Control Receiver / Mini	1	Ea
16	BD545023	End Cap, 2" Square Tube Insert Vendor P/N SQR111224A	5	Ea
17	BD210289	Control Box Assembly	1	Ea
18	BD515127	Liquid-Tite Cord Grip, 90_ Elbow x 1/2" NPT (Not Shown)	5	Ea
19	BD515165	1/2" sealing Gasket Assembly, Steel Backed Neoprene (Not Shown)	5	Ea
20	BD515166	1/2" Gasketed Sealing Locknut Appleton P/N BLSG50 (Not Shown)	7	Ea
21	BD545007	1/2" Straight Non-Metal Liquid Tite Conduit Connector (Not Shown)	1	Ea
22	BD545009	1/2" Non-Metal Liquid Tite Conduit (Not Shown)	3 Ft	Ea
23	BD545010	1/2" Conduit Strap, Single Hole (Not Shown)	1	Ea
24	BD210013	Thruster Fan, 24 inch, 240 VAC, 50 Hz	2	Ea
25	BD210020	Wire Fan Guard, 24 inch Flat Exhaust	2	Ea
26	BD210324	Wire Fan Guard, Fan Intake 24" Diameter	2	Ea
27	BD210048	Assembly, Motor Mount, Left	1	Ea
28	BD210343	Motor, Brush, 50/60 Hz 230 VAC Single Phase, Double Shaft	1	Ea
29	BD210011	Bearing, Pillow Block, 1-1/2" Shaft	2	Ea
30	BD210028	Brush Shaft 2M HR Machine Complete	1	Ea
31	BD470000	Set Screw, Socket Cup Point, 14-20 x .375 Long Black Zinc	10	Ea
32	BD210080	Key, Square, 1/4" x 1.50 Long McMaster P/N 98870A230	2	Ea
33	BD210004	Brush, 10" Long x 12" Diameter Plastic Hub Section, Complete	8	Ea
34	BD210046	Spray Shield, 2 Meter High Rise	1	Ea
35	BD210209	Guard, Brush Side	2	Ea
36	BD210084	Spray Bar Manifold, S/S, 80 Inches Long, 6 Port	1	Ea
37	BD545066	Nozzle Body, Brass 1/4" NPT Male	6	Ea

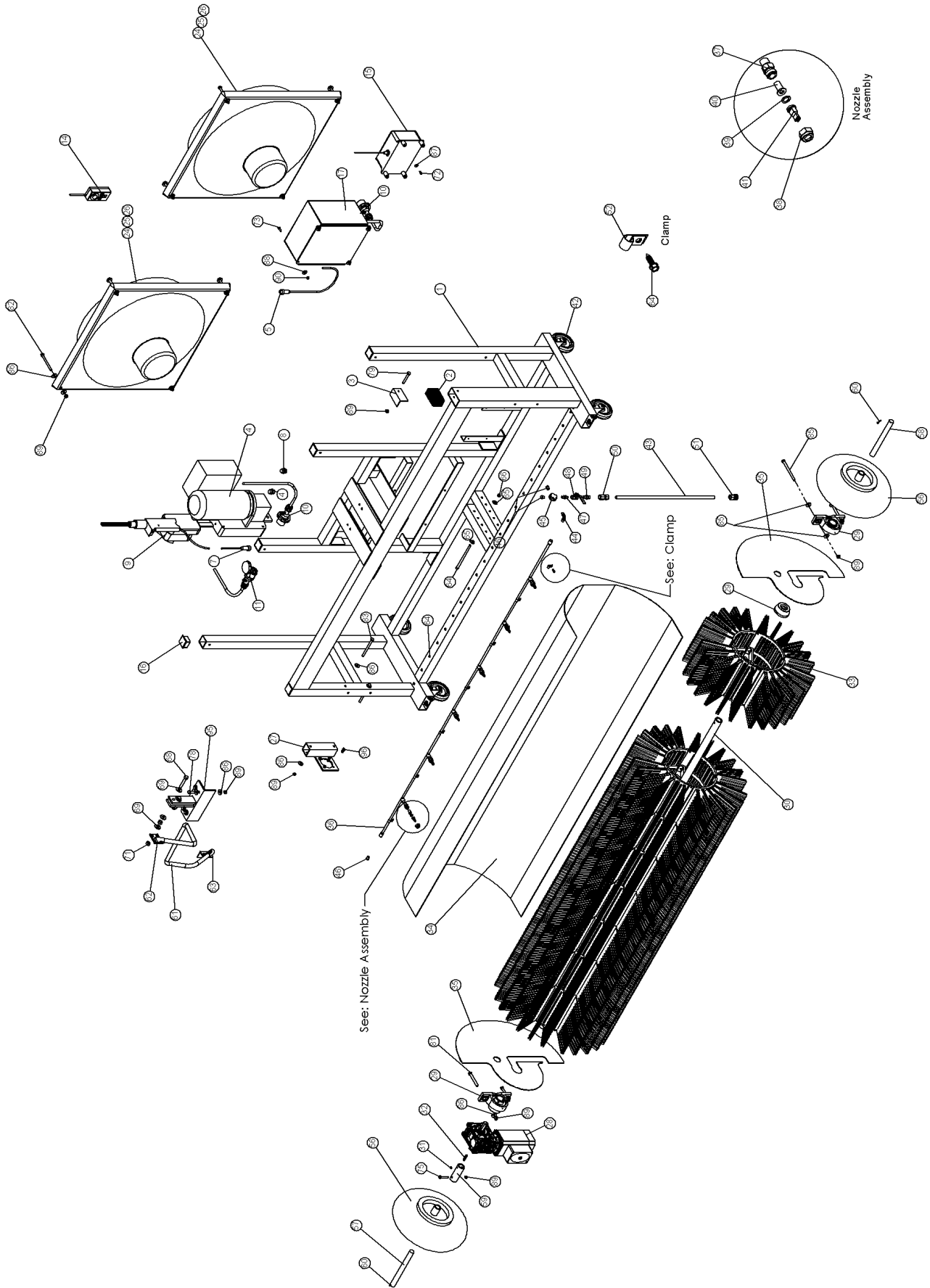
PARTS LIST CONTINUED - Twin Thruster System

38	BD545067	Nozzle Body Cap, Brass	6	Ea
39	BD210095	Nozzle Gasket Seal, Nylon	6	Ea
40	BD210097	Strainer, Nozzle, 100 Mesh S/S	6	Ea
41	BD210222	Nozzle #2, Rain Drop Ultra Plus	6	Ea
42	BD545156	Casters, 5" x 1-1 1/4 with Brake S/S	4	Ea
43	BD210202	Hose Assembly, Spray Bar Inlet	1	Ea
44	BD545033	Fitting, 1/4" NPT Male Elbow Brass	1	Ea
45	BD545034	Fitting, 1/4" NPT Female Cross Brass	1	Ea
46	BD545011	Fitting, 1/4" NPT Hex Head Plug, Brass	3	Ea
47	BD545013	Fitting, Reducing Hex Nipple, 3/8 NPT x 1/4" NPT Brass	1	Ea
48	BD545022	Valve, 3/8" NPT Brass Ball, Full Open	1	Ea
49	BD515219	Fitting, 3/8" Hex Nipple, Brass	1	Ea
50	BD545106	Check Valve Inline, 3/8" NPT S/S	1	Ea
51	BD545017	Fitting, QD Coupler 3/8" x 3/8" NPT-M, Brass	1	Ea
52	BD210170	Tube Clamp, Vinyl Coated, 3/8" Diameter Tube x 1/2" Wide	19	Ea
53	BD515159	Cord Clamp, Vinyl Coated, 1/2" Dia. (Not Shown)	5	Ea
54	BD545100	Power Cable, 50Hz Fans Only (Not Shown)	10 ft	Ea
55	BD545102	Power Cable, 50Hz Brush Motors (Not Shown)	6 Ft	Ea
56	BD210295	Wheeze Wheel 49cm Diameter x 1" Bushing	2	Ea
57	BD210339	Axle Shaft, Side Wheel Motor Side, Complete	1	Ea
58	BD210340	Axle Shaft, Side Wheels, NON Motor Side, Complete	1	Ea
59	BD210322	Side Brush Shaft Adapter Complete	1	Ea
60	BD515007	Cotter Pin, .125 Diameter x 1-1/4" Long Bright Zinc	2	Ea
61	BD210318	Cable Exit Guide Spring, 1" Diameter x 36" Long S/S	1	Ea
62	BD210363	Assembly, Wire Rope Upper Spring Exit Guide	1	Ea
63	BD210364	Assembly, Wire Rope Lower Spring Exit Guide	1	Ea
64	BD407002	Screw, #12 X 3/4" Long Flange Hex Head Self Tapping	80	Ea
65	BD412847	Bolt, 3/8-16 x 6-1/2" long HHCS Grade 8 Yellow Zinc	1	Ea
66	BD433001	Washer, 3/8" USS Thru Hardened Yellow Zinc, Grade 8	2	Ea
67	BD443001	Nut, 3/8-16 Nylock, Grade 8 Yellow Zinc	1	Ea
68	BD414819	Bolt, 1/2-13 x 2-3/4" Long HHCS Grade 8 Yellow Zinc	2	Ea
69	BD435000	Washer, 1/2" USS Thru Hardened Yellow Zinc Grade 8	2	Ea
70	BD445002	Nut, 1/2-13 Standard Hex, Bright Zinc	2	Ea
71	BD445001	Nut, 1/2-13 Nylock Grade 8, Yellow Zinc	2	Ea
72	BD490605	Bolt, M6 x 1.0 x 12mm Long HHCS 18-8 S/S	4	Ea
73	BD490809	Bolt, M8 x 1.25 x 20mm Long HHCS 18-8 S/S	16	Ea
74	BD490807	Bolt, M8 x 1.25 x 16mm Long HHCS 18-8 S/S	4	Ea

PARTS LIST CONTINUED - Twin Thruster System

75	BD490821	Bolt, M8 x 1.25 x 50mm Long HHCS 18-8 S/S	2	Ea
76	BD490823	Bolt, M8 x 1.25 x 55mm Long HHCS 18-8 S/S	1	Ea
77	BD490807	Bolt, M8 x 1.25 x 16mm Long HHCS 18-8 S/S	1	Ea
78	BD491009	Bolt, M10 x 1.5 x 30mm Long HHCS 18-8 S/S	4	Ea
79	BD491025	Bolt, M10 x 1.5 x 70mm Long HHCS 18-8 S/S	1	Ea
80	BD491027	Bolt, M10 x 1.5 x 75mm Long HHCS 18-8 S/S	2	Ea
81	BD491031	Bolt, M10 x 1.5 x 90mm Long HHCS 18-8 S/S	2	Ea
82	BD491035	Bolt, M10 x 1.5 x 110mm Long HHCS 18-8 S/S	8	Ea
83	BD491037	Bolt, M10 x 1.5 x 120mm Long HHCS 18-8 S/S	2	Ea
84	BD491039	Bolt, M10 x 1.5 x 130mm Long HHCS 18-8 S/S	2	Ea
85	BD491041	Bolt, M10 x 1.5 x 140mm Long HHCS 18-8 S/S	2	Ea
86	BD498100	Washer, M10 Flat, 18-8 S/S	48	Ea
87	BD498600	Washer, M6 Flat, 18-8 S/S	4	Ea
88	BD498800	Washer, M8 Flat, 18-8 S/S	20	Ea
89	BD499100	Nut, M10 x 1.5 Nylon Insert, 18-8 S/S	14	Ea
90	BD499801	Nut, M8 x 1.25 Nylon Insert, 18-8 S/S	18	Ea
91	BD210350	Label Warning Set, High Rise "Italian Version" (Not Shown)	1	Ea
92	BD210060	Label, High Rise "IPC Eagle" (Not Shown)	1	Ea
93	BD210061	Label, High Rise "High Rise" Logo (Not Shown)	1	Ea
94	BD210365	Label, CE Serial Number, Model HR202 High Rise (Not Shown)	1	Ea
95	BD210121	Winch Mount Assembly	1	Ea
96	BD462801	Bolt, M8 x 1.25 x 16mm long SHCS	4	Ea

15. EXPLODED VIEW - Twin Thruster System



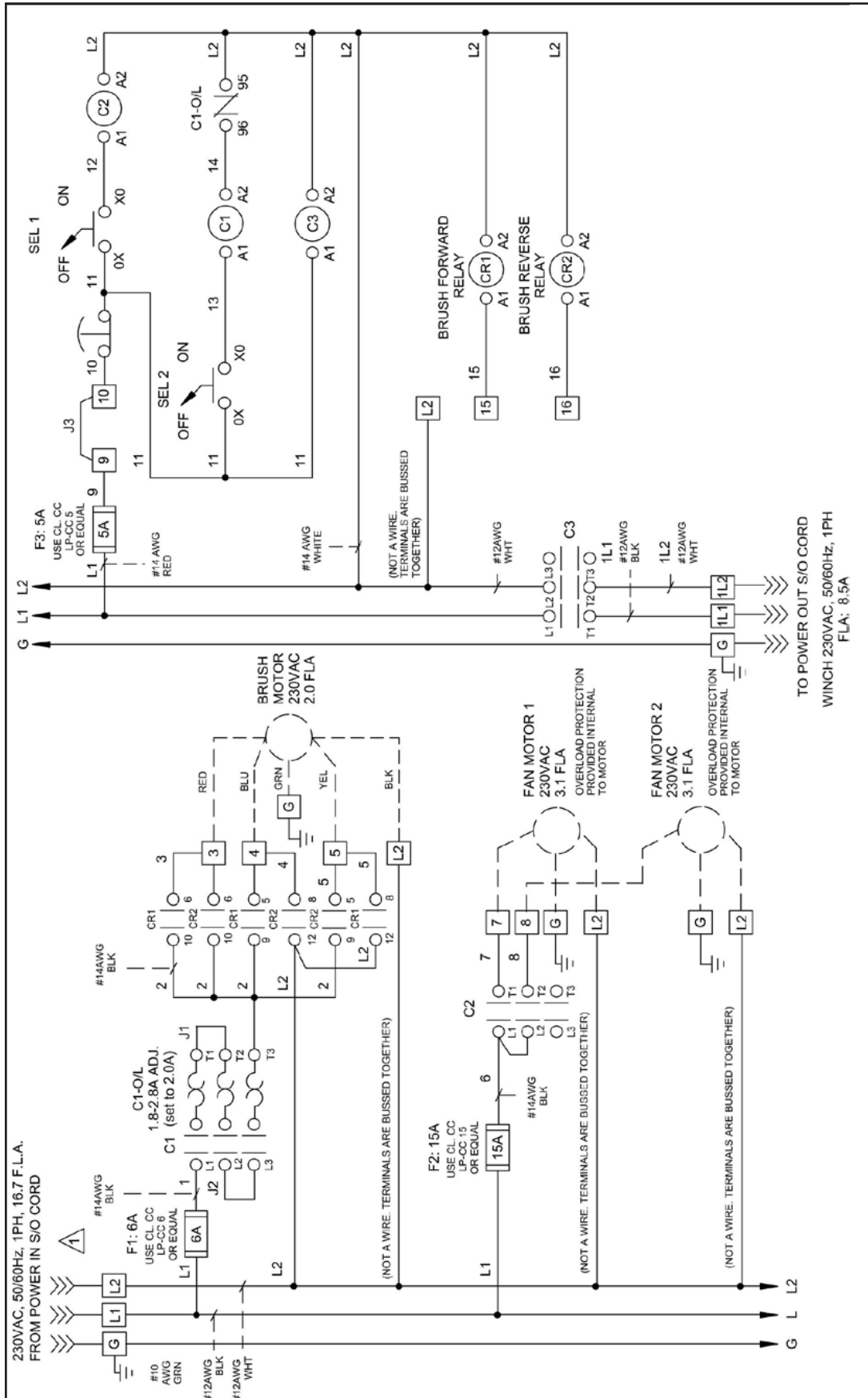
17. CONTROL BOX PARTS LIST CONTINUED

WSC - 3MC3P - N4 - 00

KIT LIST

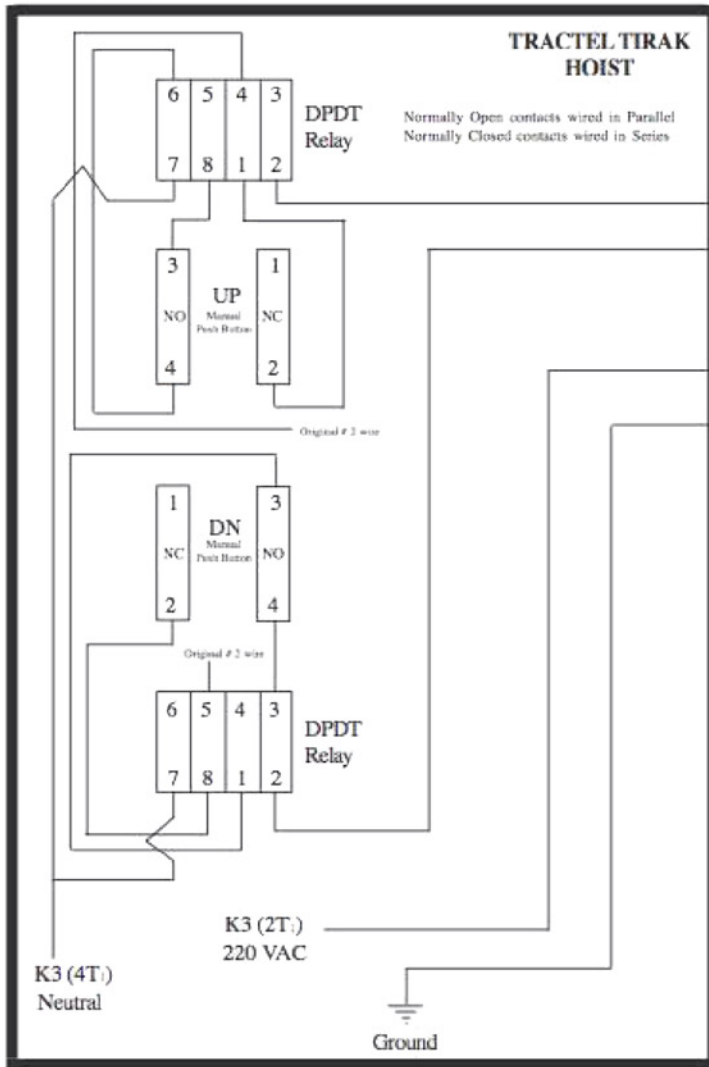
Item	Descriptor	Ref. Des.	P/N	Description	Qty.	Unit	Revs.
1	enclosure	ENCL	BD220015	HAMBOX; ENCLSORE, NEMA4/12	1	EA	
2	contractor	C1-3	BD220009	RIKEN; CONTACTOR, 3POLE,24A	3	EA	
3	overload relay	C1-O/L	BD220010	RIKEN;O/L RELAY, 1.8-2,8A	1	EA	
4	fuse	F1	BD545139	BUSSMAN; FUSE, 15A,300VDC	1	EA	
5	fuse	F3	BD545137	BUSS;FUSE,TIME DELAY, 600V	1	EA	
6	fuse	F2	BD220016	BUSSMAN; FUSE,6A,300VDC	1	EA	
7	fuseholder	F1-F3	BD220017	BUSS;CL.CC GLOBAL MOD.FH	3	EA	A
8	selector	SEL1-2	BD220018	SCHLEGEL;SEL.SWITCH,22MM	2	EA	
9	emerg. stop	ES	BD220019	SCHLEGEL;RONDEX MUSHROOM	1	EA	
10	c.b. holder	SELS,ES	BD220020	SCHLEGEL;MODULER CONTACT	3	EA	
11	contact block	ES	BD220021	SCHLEGEL;CONTACT MODULE	1	EA	A
12	contact block	SEL 1-2	BD220022	SCHLEGEL;CONTACT MODULE	2	EA	
13	terminal block	TB	BD220023	SCHLEGEL;TERMINAL BLOCK	18	EA	A
14	terminal ground	TB	BD220024	SCHLEGEL;EARTH CONNECTION	5	EA	
15	terminal clamp	TB	BD220025	SCHLEGEL;END CLAMP FOR	5	EA	A
16	terminal end	TB	BD220026	SCHLEGEL; END PIECE FOR	2	EA	
17	terminal buss	TB	BD220027	SCHLEGEL; CONNECTING LINK	1	EA	
18	relay	CR1,2	BD220028	IDEC MIDGET POWER RELAY	2	EA	
19	socket	CR1,2	BD220029	IDEC; RELAY SOCKET, 3PDT	2	EA	
20	cord	CORD	BD210099	600VAC SO CORD 3 #10LEADS	5	EA	
21	ground lug	GND	BD220030	PENN;ALUM.SOLDERLESS LUG	1	EA	
22	cable gland	CG	BD220031	SEALCON; CABLE GLAND,PG21	2	EA	
23	cable gland nut	CG	BD220032	SEALCON:3/4" NPT LOCK RING	2	EA	

18. SCHEMATIC

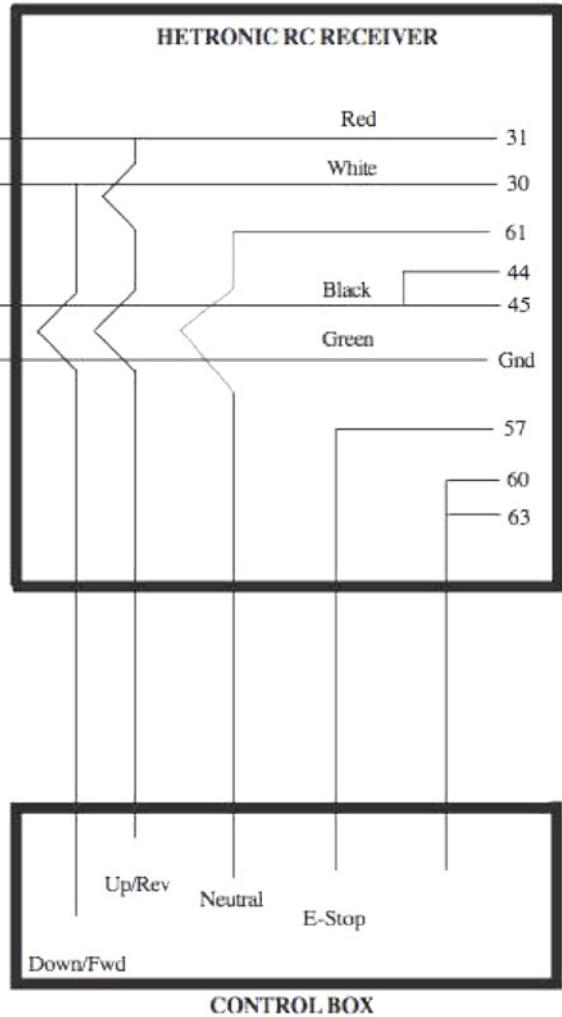


19. CONTROL SYSTEM WIRE DIAGRAM

Normally Open contacts wired in Parallel



Note: Hoist wiring diagram located inside hoist electrical control box.



20. CE DECLARATION



DECLARATION OF CONFORMITY *(Annex II – 98/37/EC, 2006/42/EC Machinery Directive)*

The manufacturer:

IPC Eagle
3650 Dodd Rd
Eagan, MN 55123 USA

Declares under its sole responsibility that the machinery/equipment described below:

Product family: **High Rise Window Cleaning Systems**
(Automated systems for cleaning windows of High Rise Buildings)

Models: HR200 Euro

complies with the provisions of Machinery Directive 98/37/EC, 2006/42/EC

It also complies with the following Directives

2004/108/EC (EMC Directive)

Done at IPC Eagle, Eagan, MN, USA
On September 8, 2009

Patrick Marsh
President
IPC Eagle Corporation

GIVE TO RIGGING ERECTOR & SYSTEM OPERATOR AND POST ON JOB SITE

THE HIGH RISE CLEANING SYSTEM HAS THE SAME OPERATIONAL AND SAFETY REQUIREMENTS AS SUSPENDED POWERED SCAFFOLDS. IT IS IMPERATIVE TO FOLLOW THE FOLLOWING CODE FOR SAFE PRACTICE.

CODE OF SAFE PRACTICES FOR SUSPENDED POWERED SCAFFOLDS

It shall be the responsibility of all employers and users to read and comply with the following common sense guidelines, which are designed to promote safety in the erection and use of suspended powered scaffolds. These guidelines do not purport to be all-inclusive nor to supplant or replace other additional safety and precautionary measures to cover usual or unusual conditions. If these guidelines conflict in any way with any state, local or federal statute or governmental regulation, said statute or regulation shall supersede these guidelines. It is the responsibility of each user to comply with these guidelines.

I. GENERAL GUIDELINES

A. POST THESE SAFETY GUIDELINES in a conspicuous place and be sure that all persons who erect, use, locate, or dismantle suspended scaffold systems are fully aware of them.

B. FOLLOW ALL EQUIPMENT MANUFACTURERS' RECOMMENDATIONS as well as all state, local and federal codes, ordinances and regulations relating to suspended powered scaffolding.

C. SURVEY THE JOBSITE.

A survey shall be made of the jobsite for hazards such as exposed electrical wires, obstructions that could overload or tip the suspended powered scaffold when it is raised or lowered, unguarded roof edges or openings, inadequate or missing tiebacks.

Those conditions should be corrected before installing or using suspended powered scaffold systems.

D. INSPECT ALL EQUIPMENT BEFORE EACH USE.

Never use any equipment that is damaged or defective in any way. Tag damaged or defective equipment and remove it from the jobsite.

E. ERECT AND DISMANTLE SUSPENDED POWERED SCAFFOLD EQUIPMENT in accordance with design and/ or manufacturer's recommendations.

F. DO NOT ERECT, DISMANTLE, OR ALTER SUSPENDED POWERED SCAFFOLD SYSTEMS unless under the supervision of a competent person.

G. DO NOT ABUSE OR MISUSE SUSPENDED POWERED SCAFFOLD EQUIPMENT. Never overload platforms or hoists.

H. ERECTED SUSPENDED POWERED SCAFFOLDS SHOULD BE CONTINUOUSLY INSPECTED by the user to ensure that they are maintained in a safe condition. Report any unsafe condition to your supervisor.

I. NEVER TAKE CHANCES! IF IN DOUBT REGARDING THE SAFETY OR USE OF SUSPENDED SCAFFOLDS, CONSULT YOUR SCAFFOLD SUPPLIER.

J. NEVER USE SUSPENDED SCAFFOLDS EQUIPMENT FOR PURPOSES OR IN WAYS FOR WHICH IT WAS NOT INTENDED.

K. CARE SHOULD BE TAKEN WHEN OPERATING AND STORING EQUIPMENT DURING WINDY CONDITIONS.

L. SUSPENDED POWERED SCAFFOLD SYSTEMS should be installed and used in accordance with the manufacturer's recommended procedures. Do not alter components in the field.

M. SUSPENDED POWERED PLATFORMS MUST NEVER BE OPERATED NEAR LIVE POWER LINES, unless proper precautions are taken. Consult the power service company for advice.

N. ALWAYS ATTACH FALL ARREST EQUIPMENT when working on suspended powered scaffolds.

O. DO NOT WORK ON OR INSTALL SUSPENDED POWERED SCAFFOLDS if your physical condition is such that you feel dizzy, or unsteady in any way.

P. DO NOT WORK ON SUSPENDED POWERED SCAFFOLDS when under influence of alcohol or illegal drugs.

II. GUIDELINES FOR ERECTION AND USE OF SUSPENDED SCAFFOLD SYSTEMS.

A. RIGGING:

1. **WEAR FALL PREVENTION EQUIPMENT** when rigging on exposed roofs or floors.

2. **ROOF HOOKS, PARAPET CLAMPS, OUTRIGGER BEAMS, OR OTHER SUPPORTING DEVICES** must be capable of supporting the hoist machine rated load with a factor of safety of 4.

3. **VERIFY THAT THE BUILDING OR STRUCTURE WILL SUPPORT** the suspended loads with a factor of safety of 4.

4. **ALL OVERHEAD RIGGING** must be secured from movement in any direction.

5. **COUNTERWEIGHTS USED WITH OUTRIGGER BEAMS** must be of a non-flowable material and must be secured to the beam to prevent accidental displacement.

6. **OUTRIGGER BEAMS THAT DO NOT USE COUNTERWEIGHTS** must be installed and secured on the roof structure with devices specifically designed for that purpose. Direct connections shall be evaluated by a competent person.

7. **TIE BACK ALL TRANSPORTABLE RIGGING DEVICES.** Tiebacks shall be equivalent in strength to suspension ropes.

8. **INSTALL TIEBACKS AT RIGHT ANGLES TO THE FACE OF THE BUILDING** and secure, without slack, to a structurally sound portion of the structure, capable of supporting the hoisting machine rated load with a safety factor of 4.

IN THE EVENT TIEBACKS CANNOT BE INSTALLED AT RIGHT ANGLES, two tiebacks at opposing angles must be used to prevent movement.

9. **RIG AND USE HOISTING MACHINES DIRECTLY UNDER THEIR SUSPENSION POINTS.**

B. WIRE ROPE AND HARDWARE:

1. USE ONLY WIRE ROPE AND ATTACHMENTS as specified by the hoisting machine manufacturer.
2. ASSURE THAT WIRE ROPE IS LONG ENOUGH to reach to the lowest possible landing.
3. CLEAN AND LUBRICATE WIRE ROPE in accordance with the wire rope manufacturer's instructions.
4. HANDLE WIRE ROPE WITH CARE.
5. COIL AND UNCOIL WIRE ROPE in accordance with the wire rope manufacturer's instructions in order to avoid kinks or damage.
6. TIGHTEN WIRE ROPE CLAMPS in accordance with the clamp manufacturer's instructions.
7. DO NOT USE WIRE ROPE THAT IS KINKED, BIRD- CAGED, CORRODED, UNDERSIZED, OR DAMAGED IN ANY WAY. Do not expose wire rope fire, undue heat, corrosive atmospheres, electricity, chemicals, or damage by tool handling.
8. USE THIMBLES AND SHACKLES AT ALL WIRE ROPE SUSPENSION TERMINATIONS.
9. USE J-TYPE CLAMPS OR SWEDGE FITTINGS. Do not use U-bolts. Retighten J-Clamps under load and retighten daily.
10. WIRE ROPES USED WITH TRACTION HOISTS MUST HAVE PREPARED ENDS. Follow manufacturer's recommendations.

C. POWER SUPPLY:

1. GROUND ALL ELECTRICAL POWER SOURCES AND POWER CORD CONNECTIONS and protect them with circuit breakers.
2. USE POWER CORDS OF THE PROPER WIRE SIZE THAT ARE LONG ENOUGH for the job.
3. POWER CORD CONNECTIONS MUST BE RESTRAINED to prevent their separation.
4. USE STRAIN RELIEF DEVICES TO ATTACH POWER CORDS TO THE SUSPENDED SCAFFOLD to prevent them from falling.
5. PROTECT POWER CORDS AT SHARP EDGES.
6. USE GFI WITH POWER TOOLS.

D. FALL ARREST EQUIPMENT:

1. EACH PERSON ON A SUSPENDED POWERED SCAFFOLD must be attached to a separate fall arrest system unless the installation was specifically designed not to require one.
2. EACH LIFELINE MUST BE FASTENED to a separate anchorage capable of holding a minimum of 5000 pounds.
3. DO NOT WRAP LIFELINES AROUND STRUCTURAL MEMBERS unless lifelines are protected and a suitable anchorage connection is used.
4. PROTECT LIFELINES AT SHARP CORNERS to prevent chafing.
5. RIG FALL ARREST SYSTEMS to prevent free fall in excess of six feet.

M. SUSPENDED POWERED PLATFORMS MUST NEVER BE OPERATED NEAR LIVE POWER LINES, unless proper precautions are taken. Consult the power service company for advice.

N. ALWAYS ATTACH FALL ARREST EQUIPMENT when working on suspended powered scaffolds.

O. DO NOT WORK ON OR INSTALL SUSPENDED POWERED SCAFFOLDS if your physical condition is such that you feel dizzy, or unsteady in any way.

P. DO NOT WORK ON SUSPENDED POWERED SCAFFOLDS when under influence of alcohol or illegal drugs.

II. GUIDELINES FOR ERECTION AND USE OF SUSPENDED SCAFFOLD SYSTEMS.

A. RIGGING:

1. WEAR FALL PREVENTION EQUIPMENT when rigging on exposed roofs or floors.
 2. ROOF HOOKS, PARAPET CLAMPS, OUTRIGGER BEAMS, OR OTHER SUPPORTING DEVICES must be capable of supporting the hoist machine rated load with a factor of safety of 4.
 3. VERIFY THAT THE BUILDING OR STRUCTURE WILL SUPPORT the suspended loads with a factor of safety of 4.
 4. ALL OVERHEAD RIGGING must be secured from movement in any direction.
 5. COUNTERWEIGHTS USED WITH OUTRIGGER BEAMS must be of a non-flowable material and must be secured to the beam to prevent accidental displacement.
 6. OUTRIGGER BEAMS THAT DO NOT USE COUNTERWEIGHTS must be installed and secured on the roof structure with devices specifically designed for that purpose. Direct connections shall be evaluated by a competent person.
 7. TIE BACK ALL TRANSPORTABLE RIGGING DEVICES. Tiebacks shall be equivalent in strength to suspension ropes.
 8. INSTALL TIEBACKS AT RIGHT ANGLES TO THE FACE OF THE BUILDING and secure, without slack, to a structurally sound portion of the structure, capable of supporting the hoisting machine rated load with a safety factor of 4.
- IN THE EVENT TIEBACKS CANNOT BE INSTALLED AT RIGHT ANGLES**, two tiebacks at opposing angles must be used to prevent movement.
9. RIG AND USE HOISTING MACHINES DIRECTLY UNDER THEIR SUSPENSION POINTS.

These safety guidelines set forth some common sense procedures for safely erecting, dismantling and using suspended powered scaffolding equipment. However, equipment and scaffolding systems differ, and accordingly, reference must always be made to the instructions and procedures of the supplier and/or manufacturer of the equipment. Since field conditions vary, and are beyond the control of the Scaffolding, Shoring and Forming Institute and Scaffold Industry Association, safe and proper use of scaffolding is the sole responsibility of the user.

Scaffold Industry Association Inc. & Scaffolding, Shoring and Forming Institute Inc., February 1998

IPC Eagle Warranty Policy

Limited Warranty

IPC Eagle warrants new cleaning equipment against defects in material and workmanship under normal use and service to the original purchaser as detailed below.

1 Year

Subject to the conditions stated below, IPC Eagle warrants all other cleaning equipment components to be free from defects in materials and workmanship for a 1 year period. Parts replaced or repaired are warranted for the remainder of the original warranty period. Batteries are pro-rated for one year.

IPC Eagle will furnish and charge for replacement parts, including transportation to the original owner through an IPC Eagle authorized service center. If the parts is returned within 30 days and is found defective, the owner will be credited for the cost of the replacement part including shipping and handling.

Wear items exempt from warranty include belts, carbon brushes, power cords, wheels, pad drivers, clutch plates, brushes, pads, handle grips, filters, screens, throttle cables, and squeegees.

This warranty shall not apply to failures caused by misuse or abuse, improper maintenance as stated in the operation manuals, use of unauthorized repair parts, repairs by other than an IPC Eagle authorized service center, and damage in transit.

IPC Eagle disclaims and denies any liability for any direct, indirect, special incidental or consequential damage which may be suffered as a result of sale, delivery, servicing, use, loss of any product, downtime, labor, freight, or other charges not expressly included herein.

MODEL #	<u>HR202</u>
SERIAL #	_____