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# Welcome to the LynRus QR4 Basketball Goal hoist, *the* premium hoist available to the gymnasium equipment market!

In the box with the hoist, you should also find a packet of installation hardware (Figure 1), a key switch (Figure 2), a four prong twist lock receptacle (Figure 3), the QR4 hoist (Figure 4), and the receptacle cover plate (Figure 5).



Figure 1: Installation Hardware



Figure 2: Key Switch



Figure 3: Twist Lock Receptacle



Figure 4: QR4 Hoist



Figure 5: Cover Plate

Here is a list of the contents in the hardware packet:

Description	Quantity
Washer, Flat, 1/2"x 1-3/8"	4
Washer, Lock, 1/2"	4
Nut, Hex, 1/2"	4
Screw, Hex head, 1/2"x 1-3/4"	4
Screw, Square head, 3/8"x 1/2"	2
Clamp, Pipe, 3"	2

Following is a list of necessary tools:

- 3/4 inch six or twelve point socket
- Socket drive handle
- 3/4 inch combination open/box end wrench
- 3/8 inch eight point socket
- 0-100 ft\*lb torque wrench
- Center punch & drive hammer (auto-punch will do)
- 3/8 inch twist drill
- Cordless drill motor
- #3 Phillips screwdriver

Necessary items that are not supplied with your QR4:

- 35' of 1/4" Galvanized Steel, 7 x 19 stranded Wire Rope (per MIL-DTL-83420 or Equivalent) (Not available through Lynrus Aluminum Products)
- 2 ea. 1/4" cable clamps
- Key Switch, UL Listed, Rated for 15A at 120 VAC (usually sold separately)
- Twist Lock Receptacle, UL Listed, Rated for 15A at 120 VAC (usually sold separately)

## General Warnings

**WARNING:** Read all instructions prior to installation and use.

**WARNING:** This unit is intended for indoor use only.

**WARNING:** This unit is to be installed at least 12 feet or greater above floor.

**WARNING:** Ensure that people are well clear of work area, and that no-one is underneath work platform.

**WARNING:** Do not operate hoist when under the influence of alcohol or mind altering substances.

**WARNING:** Always directly observe the movement of the backstop whenever operating, watching for mechanical interference.

**WARNING:** Do not operate hoist when people are underneath backstop or in the path of motion. Failure of cable may lead to injury or death. Use a fall protection device on the backstop.

**WARNING:** Do not operate hoist during electrical storms or severe power line voltage fluctuations. Operating motor at voltages or frequencies other than the nameplate ratings will damage motor and may cause fire or explosion.

**WARNING:** Cable winding on drum poses a severe pinch hazard. Use extreme caution while installing cable. Do not guide cable onto drum with hands; use proper tools. Do not damage or nick the cable in the process of winding it onto the drum. Loose clothing, long hair, jewelry, etc. pose a snag hazard. When installing cable on drum, ensure that the opposite end of the cable is free. Do not attach cable to backstop until the hoist unit is installed and the cable wound on the drum.

**WARNING:** When installing unit ensure that work platform is stable and clear of moving equipment during hoist operation. Work platform (i.e. man lifts) may tip when extended to great heights. Make sure the work platform is clear of the backstop when testing the movement of the backstop. Do not stand on work platform during movement of backstop.

**WARNING:** Use appropriate lock-out and tag-out procedure when installing unit.

**WARNING:** Lock out and tag the circuit breaker for this unit before adjusting the limit wheel settings.

**WARNING:** The motor gets very hot during use. Do not touch the hot surface of the motor for 20 minutes after use. Use caution.

**WARNING:** During installation, use a tether on the hoist that will prevent the hoist from falling.

**WARNING:** All installations designs should be approved by a professional structural engineer!

**WARNING:** Hoisting cable must be of sufficient length to permit at least two complete safety wraps on drum at the lower limit of operation! Insufficient cable wraps may allow the cable to pull out of the drum and drop the backstop.

**WARNING:** Limit switch setting operation requires two people; one to operate key switch and one to observe the movement of the hoist and backstop. Ensure that no-one is on man lift or under backstop when moving unit.

**WARNING:** The cable drum may have sharp edges! Wear gloves when handling hoist.

**WARNING:** Cable must move freely through the range of backstop motion. Cable must not wrap over a pulley of diameter smaller than 4-1/2 inches. Cable must not rub against anything as it lifts backstop. Winding too tightly and/or abrasion may cause cable failure.

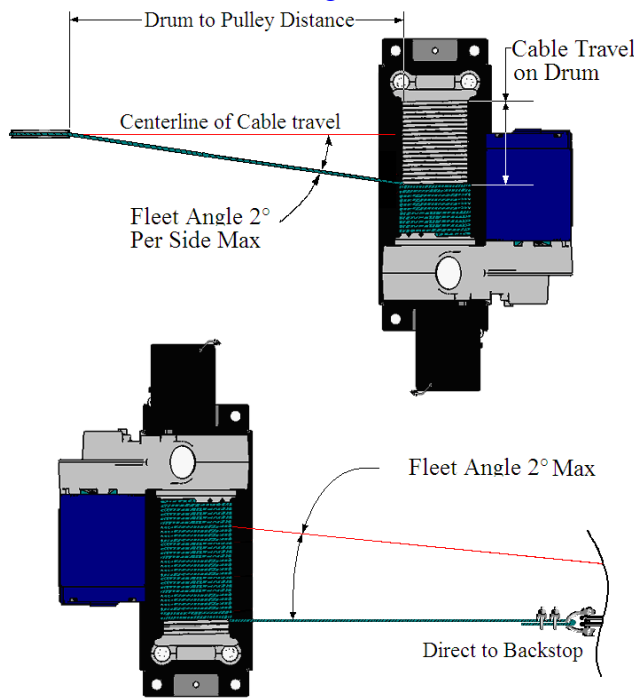
### Installation Instructions

Determine the type of installation that the hoist is going into. Lynrus recommends the installation be to a 3" pipe (outside of a 3" pipe is 3-1/2 inches) using the following steps.

**WARNING:** When installing unit ensure that work platform is stable. Work platform (i.e. man lifts) may tip when extended to great heights. Make sure the work platform is clear of the backstop when testing the movement of the backstop. Do not stand on work platform during movement of backstop.

Installation steps:

1. The basketball backstop must be in its deployed (down) position for installation of the hoist.
2. Locate the installation position of the hoist.
  - 2.1. It is important that the hoist be located a proper distance from the closest pulley or attach point.
  - 2.2. This is based on the total travel distance of the cable pulled by the hoist.
  - 2.3. Generally speaking the greater the amount of cable drawn, the greater the distance needs to be.
  - 2.4. For any length of cable, the formula is 4 inches of offset per foot of cable drawn.
  - 2.5. The hoist should be installed so that the center of cable travel on the drum is aligned with the pulley.
  - 2.6. When half of the cable to be used is paid out, the cable should be perpendicular to the drum.
  - 2.7. When installing directly to hoist cable should be perpendicular at closest approach.
  - 2.8. Please refer to [Figure 6](#) and [Table 1](#).



Winch Drum Chart			
Cable payout in feet	# turns	IN. Linear travel on drum	Min drum to pulley distance
10	8.6	2.4	48
15	12.9	3.6	60
20	17.1	4.8	72
25	21.4	6.0	86
30	25.7	7.2	103

Figure 6: cable angle

Table 1: Offset length

Determine the installation angle of the hoist (Figure 7). During the full range of motion of the backstop, the cable must:

- 2.9. Not ever rub the base plate of the hoist.
- 2.10. Not ever rub the motor of the hoist.
- 2.11. Wind onto the drum as close as possible to the pinch roller.
- 2.12. Not ever rub against the backstop or any support structure.
- 2.13. Attach the cable to the clevis provided on the backstop assembly.
- 2.14. Terminate the cable using 2 ¼ cable clamps, securely tightened.

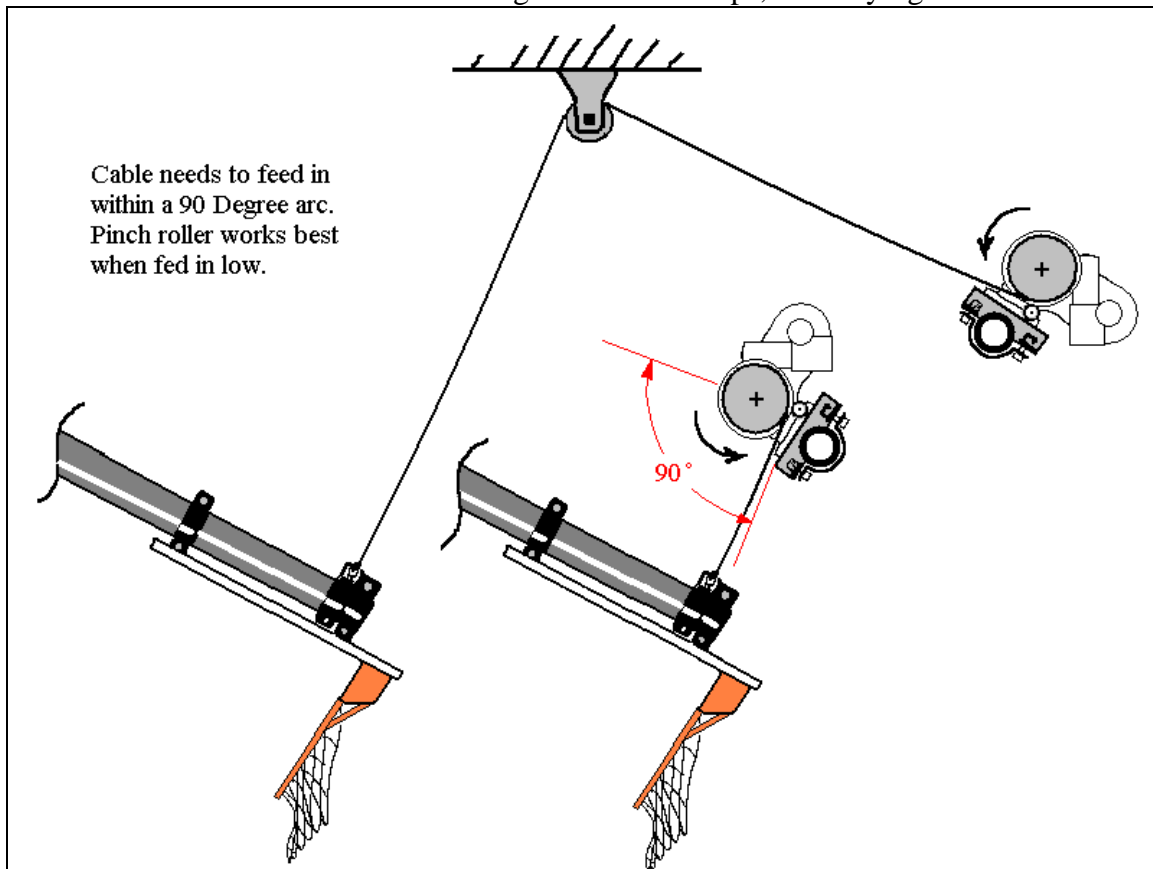


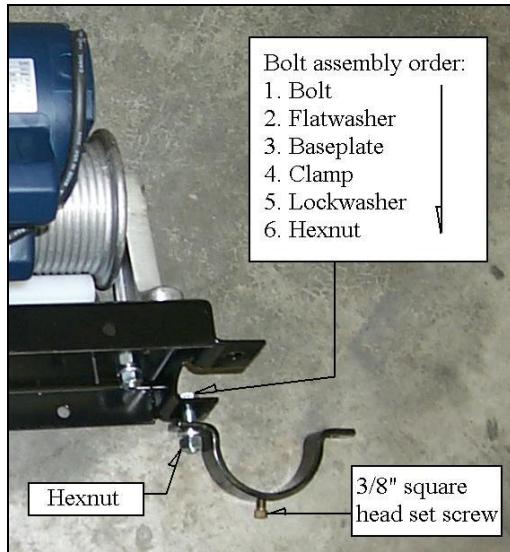
Figure 7: Installation Angle.

**WARNING:** Cable must move freely through the range of backstop motion. Cable must not wrap over a pulley of diameter smaller than 4-1/2 inches. Cable must not rub against anything as it lifts backstop. Winding too tightly and/or abrasion may cause cable failure.

3. Unpack the hoist and accompanying hardware and ensure that all of the items described above on page 4 are present.

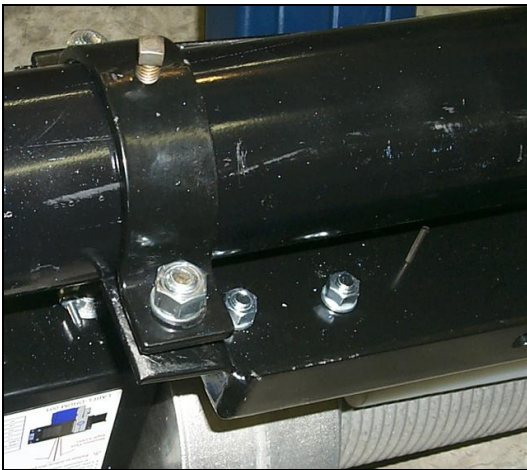
**WARNING:** The cable drum may have sharp edges! Wear gloves when handling hoist.

- Attach one half of each pipe clamp to the base plate of the hoist as shown in [Figure 8](#). This is so that you can place the hoist on the mounting structure pipe and have the clamps handy for assembly.



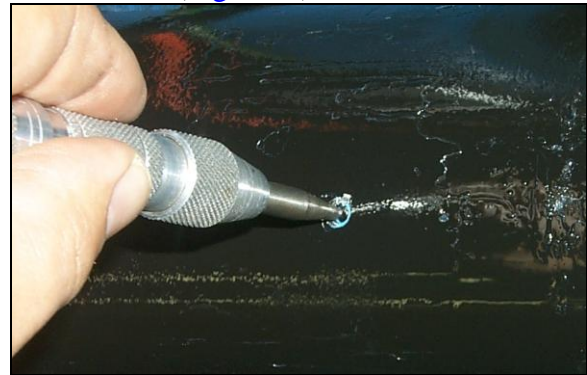
[Figure 8](#): Attaching clamps

- Insert the second set of bolts and washers into clamps and base plate. ([Figure 9](#))



[Figure 9](#): Clamp bolts

- Position the hoist and hand tighten the bolts so that the hoist will remain in position on the pipe.
- Use the 3/8" 8 point socket and drive handle to tighten the 3/8" square head set screw against the pipe so as to dent in the paint on the pipe.
- Loosen the clamp bolts enough that the QR4 Hoist can be rotated and moved about 3 inches to one side.
- Use center punch to mark and indent the centers of where the set screw upset the paint on the mounting pipe. This is so that you can drill an index hole in the pipe to prevent rotation of the hoist ([Figure 10](#)).



[Figure 10](#): Center punching with an auto-punch.

10. Drill the pipe with the 3/8" drill so that the holes pierce completely into the interior of the pipe (Figure 11).



Figure 11: Drilling index holes to prevent hoist rotation on pipe

11. Re-position the hoist clamps over the holes in the pipe and tighten the square head set screws into the holes in the pipe. Torque the set screws to 18 ft\*lbs.
12. Tighten the four half inch hex bolts that hold the clamps to the base plate. Torque the nuts on the hex bolts to 35 ft\*lbs (Figure 12).

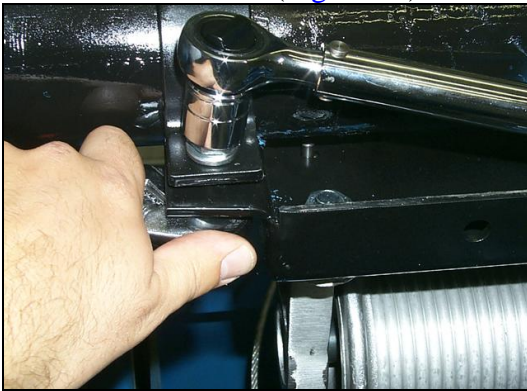


Figure 12: Tighten clamp bolts with torque wrench

13. Ensure wiring is installed and power is active. Receptacle must be pre-wired and active to install cable.
14. Ensure cable is strung and ready to go.
15. Plug twist lock plug into receptacle. Receptacle must be wired and active.
16. Use only 1/4" Galvanized Steel, 7 x 19 stranded Wire Rope (per MIL-DTL-83420 or Equivalent) Insert

cable into socket in drum, Torque set screws to 7 ft\*lbs (Figure 13).



Figure 13: Install cable in drum

17. Wind a minimum two safety wraps of cable on the drum (Figure 14).
18. The cable must wind onto the drum following the grooves in the drum. It will only wind on the drum properly in one direction (Figures 7, 13, and 14).



Figure 14: Two safety wraps on drum.

**WARNING:** Cable winding on drum poses a severe pinch hazard! Use extreme caution while installing cable. Do not guide cable onto drum with hands; use proper tools. Do not damage or nick the cable in the process of winding it onto the drum. Do not wear loose clothing, long hair, jewelry, etc. When installing cable on drum, ensure that the opposite end of the cable is free. Do not attach cable to backstop until the hoist unit is installed and the cable wound on the drum.

19. Attach far end of cable to the backstop. Leave 1-2 inches of slack in cable.
20. Lock out electrical power.

You have completed the basic mechanical installation of the QR4 hoist, now it is time to set the limit switches.

**WARNING:** The QR4 unit is very powerful! Once the cable is attached to the hoist and the backstop, the circuit breaker for the hoist must be locked out any time the work platform is in the path of the backstop travel.

**WARNING:** Hoisting cable must ALWAYS be of sufficient length to permit at least two complete safety wraps on drum at the lower limit of operation! Insufficient cable wraps may allow the cable to pull out of the drum and drop the backstop.

**WARNING:** Limit switch setting operation requires two people; one to operate key switch and one to observe the movement of the hoist and backstop. Ensure that no-one is on work platform or under backstop when moving unit!

**WARNING:** The motor gets very hot during use! Do not touch the hot surface of the motor for 20 minutes after use. Always use caution when touching unit.

21. Loosen the retaining screw and remove the Limit Box Cover (Figure 15).

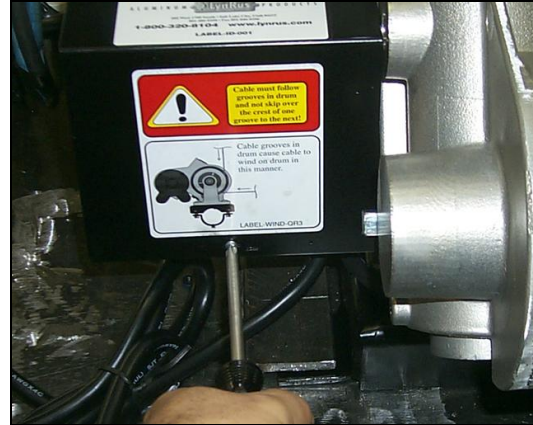


Figure 15: Limit box retaining screw.

**WARNING: HIGH VOLTAGE!** Setting the limit switches is a hazardous operation. To set the limit switches you must access the hoist while the cable is installed. Lock out and tag the circuit breaker for this unit before adjusting the limit wheel settings. This prevents electric shock, and injury due to unexpected hoist movement.

22. Press the index bar back away from the down direction index wheel rotate the wheel until the switch “clicks” indicating that the switch is active (Figure 16).

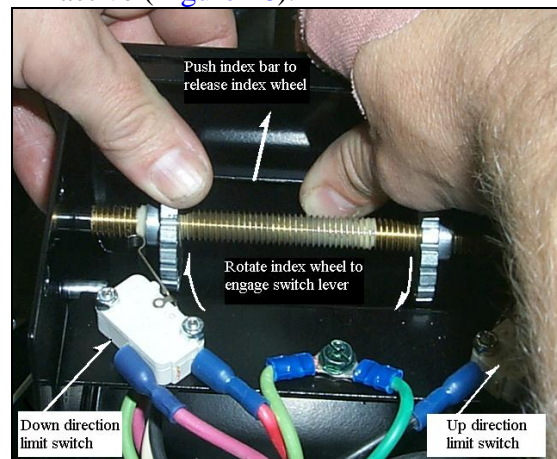


Figure 16: Limit switch adjustment

23. Unlock and restore Electrical power. Twist the key switch in the down direction to verify the down switch setting. The hoist should not move.
  24. Lock out Electrical power and adjust the down direction wheel as necessary to obtain desired setting. The cable should have 1-2 inches of slack in the down position.
  25. Estimate the amount of cable drawn when the backstop travels from the deployed (down) position to the stowed (up). The number of feet of cable is roughly equivalent to the number of threads between the two index wheels.
  26. Set the Up Direction index wheel so that the two wheels are the same number threads apart as the cable travel in feet.
  27. Unlock and Restore electrical power.
  28. Operate the hoist to raise the backstop to its stowed position. Since each rotation of the drum is about 14.2 inches, the hoist should stop short of desired stowage; the drum rotates at the same speed as the limit shaft.
- WARNING:** Always directly observe the movement of the backstop whenever operating, watching for mechanical interference!
29. Remember to appropriately lock and unlock the electrical power. Adjust the up direction limit switch until the backstop is set.
  30. Place the cover on the limit box and secure the screw with a screwdriver.
  31. The installation process is finished.

## Appendix A

## OPERATING INSTRUCTIONS

Turn key-switch towards “up” to raise  
Turn key-switch towards “down” to lower

**WARNING:** This unit is intended for indoor use only!

**WARNING:** This unit is to be installed at least 12 feet or greater above floor!

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hoist  
or

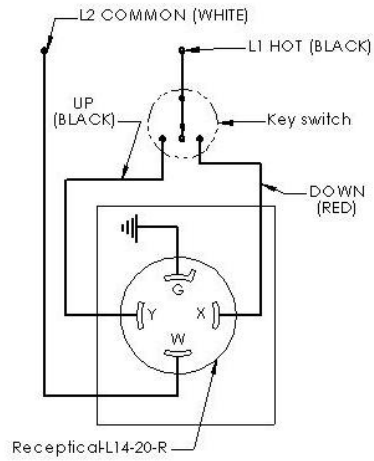
**WARNING:** Do not operate hoist when people are underneath backstop or in the path of motion. Failure of cable may lead to injury or death. Use a fall protection device on the backstop!

**WARNING:** Do not operate hoist during electrical storms or severe power line voltage fluctuations! Operating motor at voltages or frequencies other than the nameplate ratings will damage motor and may cause fire or explosion.

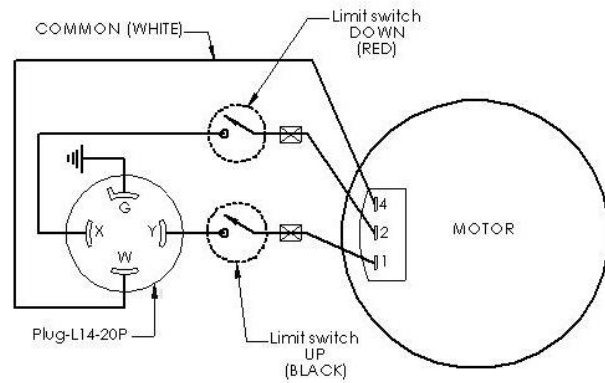
Appendix B

WIRING DIAGRAM

Key switch to receptical wiring schematic for Lynrus QR4 hoist with pigtail



Lynrus QR4 hoist wiring schematic with pigtail



Appendix C

OPERATIONAL SPECIFICATIONS

UNIT	WINCH-QR4
WEIGHT	68 LBS
LENGTH	22.85 in
WIDTH	12.75 in
HEIGHT	13.45 in
POWER	
VOLTAGE	120 AC
CURRENT	11.5 FLA
FREQUENCY	60 HZ
DUTY	Intermittent 10 min.
CAPACITY	1000 LBS Max
TRAVEL	35 Feet
SPEED	9 ft/min Max

