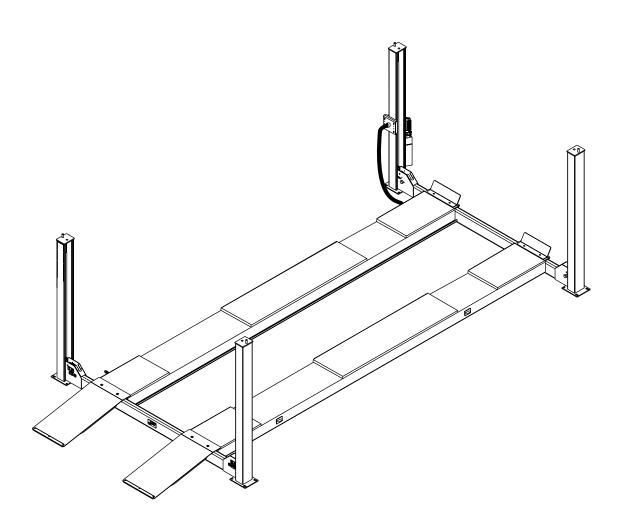


CE AR43-3/AR43-4/AR43-5 Four Post Surface Mounted Alignment Lift

(For Use With MKS System) AR43-5 Flat Top Runways - No Harting Kit

Capacity 9000 lbs. (4000 Kg.)



l NSTALLAT | 0 Ν l N S T R U C T I O N S

IN30091

Rev. E 01/10/05

INSTALLATION INSTRUCTION

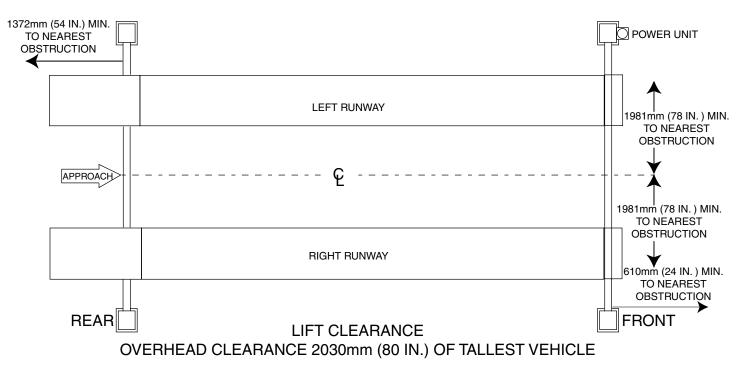


Fig. 1

Read and understand these instructions completely before proceeding with lift installation.

1. Lift Location:

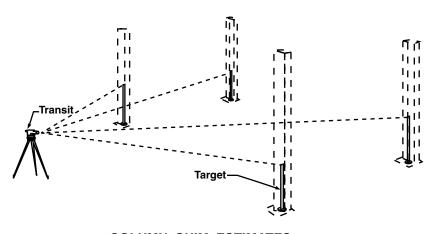
Use architect's plan when available to locate lift. Fig. 1 shows dimensions of a typical bay layout. Lift floor area should be level.

WARNING

DO NOT install this lift in a pit or depression due to fire or explosion risks.

CAUTION

DO NOT install on asphalt or other similar unstable surface. Columns are supported only by anchors in floor.



COLUMN SHIM ESTIMATES Fig. 2 Dimension at highest position minus other position

- 2. Ceiling or overhead clearance must be 2030 mm or 80in. plus height of tallest vehicle.
- 3. Estimating Column Shim requirements: In the following section, the terms "highest" and "lowest" refer to elevation of floor.
 - A. Mark locations where lift columns will be positioned in bay.
 - B. Place target at column positions and record readings, Fig. 2.

C. Find the highest of the four locations. Find the difference between the reading at each of the remaining three columns and the highest reading.

D. The difference is the estimated amount of shim

The maximum amount of shim allowable is 50mm or 2" at approach. Do not install if greater than 50mm or 2". Damage to vehicles may occur! Front may be shimmed more than 50mm or 2" if the lift is not a drive thru.

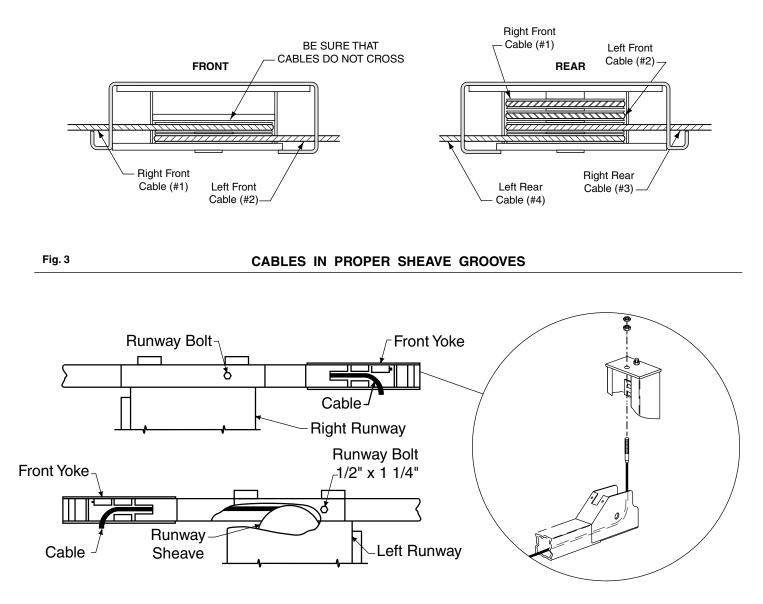


Fig. 4

FEED CABLE ENDS THROUGH YOKE OPENINGS

by

thickness needed at each column.

Note: Maximum shim thickness is 13mm or 1/2" per column using shims and anchors provided with lift. Shim thickness of 50mm or 2" is possible using optional shim kit. Contact your authorized Rotary Parts Distributor for ordering information. **DO NOT EXCEED 2**" **OR 50mm of shim at the rear of column.**

4. Runway and Yoke Tube Assembly:

A. Determine direction of approach in bay.

B. Position left runway in bay with hydraulic

cylinder hose connection to rear of bay. Cables and sheaves are pre-assembled in runway.

Runway needs to be up off floor so shipping restraints can be removed from cable ends, air and hydraulic lines, and cylinder rod. Pull cable ends, air, and hydraulic lines out for assembly. Route air and hydraulic hoses through hole in runway. Make sure cables are in proper sheave grooves, Fig. 3. Position right runway.

C. Position front and rear yokes at respective ends of runway, Fig. 1. The opening in the side of the yokes should be lined up with the cable sheaves in the runway ends. Feed cable ends through yoke openings, Fig. 4. **DO NOT ATTACH YOKES TO RUNWAY AT THIS TIME.**

IMPORTANT

Be sure cables are not crossed

inside yoke. 5. Wiring Limit Switches

3

A. Route all limit switch cords per Fig. 5.

B. Run gray limit switch cords through hole in yoke and channel on underside of runway. Use cable ties to affix cord to hydraulic hose/air line between control box and runway and inside runway.

C. Limit switch will be wired to control box at later step.

- 6. Harting Cable Kit Installation (See pictures next page): A. Boxes are identified with LF-left front. LR-left rear. RF-right front. RR-right rear to help identify location.
 - B. Run wires through rectangular slots in runway.

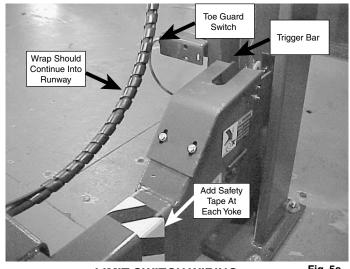
C. Attach using #8-32 x 3/4" screws and nuts, Fig. 6. D. Right runway wires need to be routed through front yoke 1" diameter hole prior to attaching runways, see Fig. 5.

E. Left and right side runway wires should be wired to the same side of the junction box terminal strip.F. Junction box should be attached on the inside of the left runway, see Fig. 5

G. Double check that wire colors and locations are correct prior to hooking up. Alignment machine damage could occur.

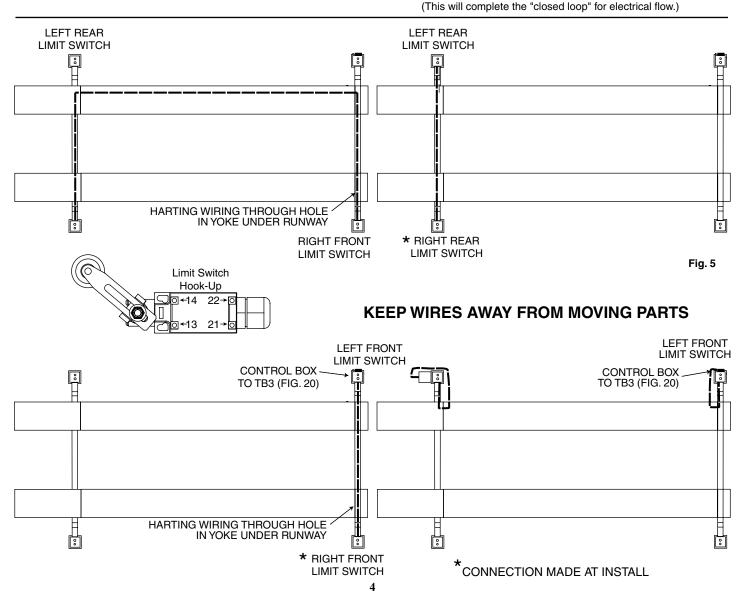
7. Attaching Runways:

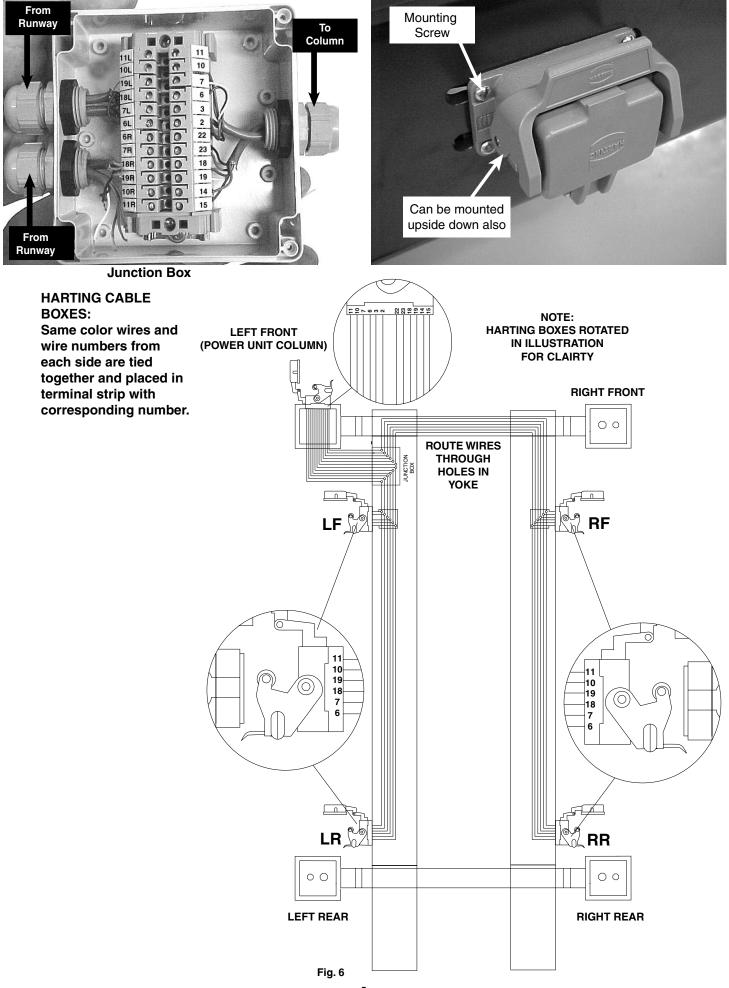
With the openings in the yoke tube side lined up with the left runway ends, align the two (2) holes in the top of



LIMIT SWITCH WIRING Fig. 5a For switches to work properly, the wires should be placed as follows: 1 black wire goes to 21 1 black wire goes to 22 (The white wires are tied together at 13)

The left front switch connects to the control box and the right front switch. The left rear limit switch connects to the right front and the right rear. The right rear switch connection is made as follows: 1 black wire on 21 1 white wire on 22





the yoke tubes with the slots in the runway end plates. Bolt runway to the yoke using four $1/2^{"} \times 1 1/4^{"}$ hex flange bolts, Fig. 4, page 3.

8. Column and Yoke Assembly:

- A. Place the power unit column at the left front corner of the lift. The hydraulic cylinder connection in the left runway should be visible from this corner. Position remaining three columns.
- B. Thread the jam nut down the threaded stud as far as pos-
- sible. The latch bar should be oriented toward the back of the column from center line of the threaded stud, Fig. 8.
- C. Start yoke end into the column, allowing slider bolt holes to stay exposed, Fig. 9. Attach sliders to each side of the yoke end with two 5/₁₆" screws provided. When both

sliders are attached, push column toward yoke end until sliders touch latch bar.

- D. Raise latch bar above sliders and move column toward yoke until the sliders contact the back of the column. Lower the latch bar into the sliders. Tighten latch bar jam nut against column top plate. Run latch bar adjustment nut down and tighten. The latch bar should engage the sliders for at least 25mm or 1" when the lift is completely lowered. Repeat this procedure for each yoke end and column.
- E. Detach limit switches and move to side. Install yoke end sheaves and plastic spacers, Fig. 11. A plastic spacer is placed on each side of the sheave, inset Fig. 11.
- Note: Failure to install plastic spacers will result in premature failure and void warranty.

F. Retain sheave pin with

⁵/₁₆" screw. Attach each cable to column top plate with spacer, nut, and jam nut, Fig. 11. Reinstall limit switches, making sure switch is activated by slack cable latch arm, Fig.9. **Make sure wires do not touch moving parts, use wire ties provided.** Install yoke end covers on each yoke end, Fig.11. Roping diagram shows a view of completed roping, Fig. 12.

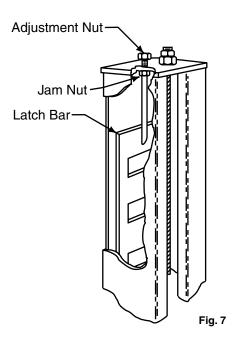
IMPORTANT

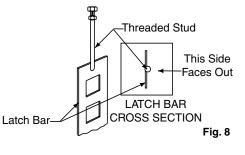
Be sure cable is located in the sheave groove.

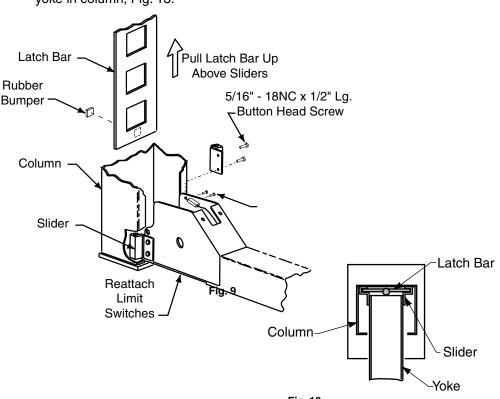
G. Prior to drilling holes in floor snug columns firmly against yokes. Slider blocks should be on yokes.

9. Column Anchoring: A. Recommended floor thickness is 127mm minimum or 5" with a minimum concrete strength at 24.13 N/mm² or 3000 psi..B. Keep columns square to center line of lift. Check lift location in the bay. Diagonals must be equal to

within 4mm or 1/8", Fig. 13. C. Move column towards yoke until the sliders contact the back of column, center yoke in column, Fig. 13.







COLUMN CROSS SECTION

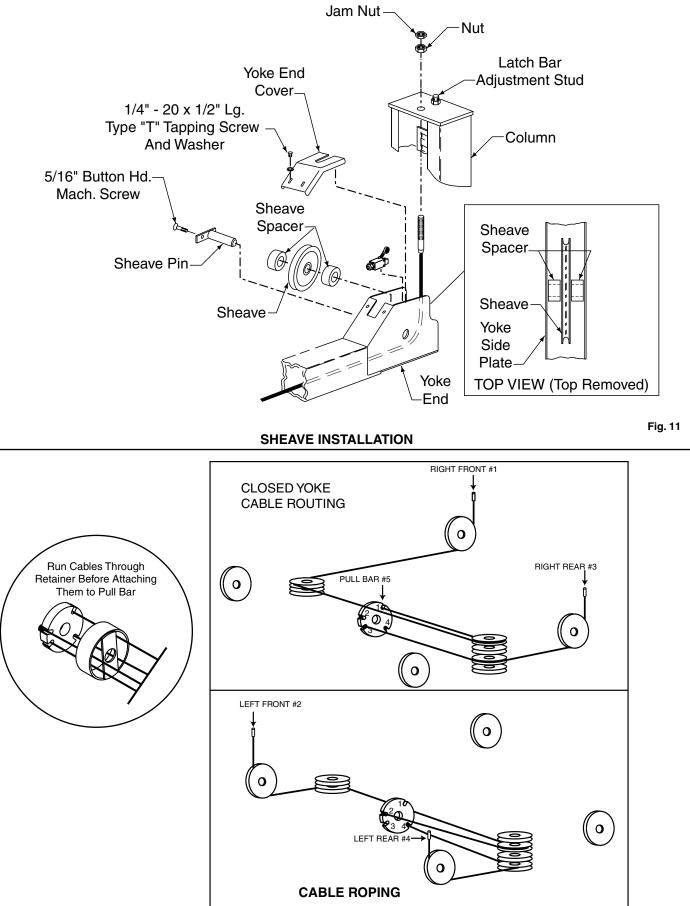


Fig. 12

- D. Place shims (estimated in Step 3) under each column. Drill four 5/8" or 16mm diameter holes through concrete floor using base holes as guide, Fig. 14. Repeat for other columns.
- E. Insert base anchors, Fig.'s 14 and 15.
- F. Tighten nuts, Fig. 14. Check columns for plumb and level. Re-shim if necessary. Torque anchor bolts to 90-95 Ft-Lbs. or 122-129 N-m., Fig. 14.
- G. If anchor bolts do not hold when torgued to required amount, concrete must be replaced. Saw cut and remove 610mm x 610mm or 24" x 24" square area under each column base. Repour with reinforced 32.17 N/mm² or 4600 psi. minimum concrete to depth of 152mm or 6", keying new concrete under existing floor.
- H. Column mounted control box has Harting box on it. Mount above power unit on front side of column using 8/32' x 1/2" button head bolt. (Be careful not to affect the slider blocks).

10. Runway Leveling: (NOT FINAL LEVELING)

- A. Use an engineer's automatic level (transit). Locate the level at a convenient location in the shop that allows an unobstructed view of all four corners of the lift's runways. Follow the level manufacturer's instructions for proper setup. Be sure it is adjusted level in all directions. Readjust if tripod or level is bumped or disturbed.
- B. Make sure yokes rest on column base plates.
- C. First place the target scale at the highest corner the lift. Place it on the runway center line of is located over highest point. This will be referred

to as target "A" position. Beginning with target "A" position, Fig. 16, sight the level to the target and mark the number or the graduation on the scale of the target that aligns to the crosshairs of the level, Fig. 17.

Note: Use a pencil, marking pen or attach a paper clip onto the target scale at the crosshair reference.

D. Next, move the target and place it on the runway at point "B", Fig. 17. Rotate the level and focus on the target scale. Adjust the column at "B" using shims under base plate, Fig. 15, until the crosshairs of level align to reference mark on the target scale. Repeat for points C and D.

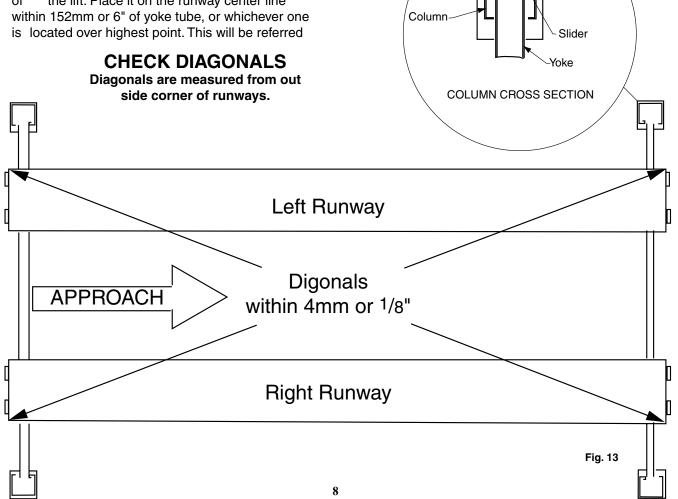
11. Cable Adjustment:

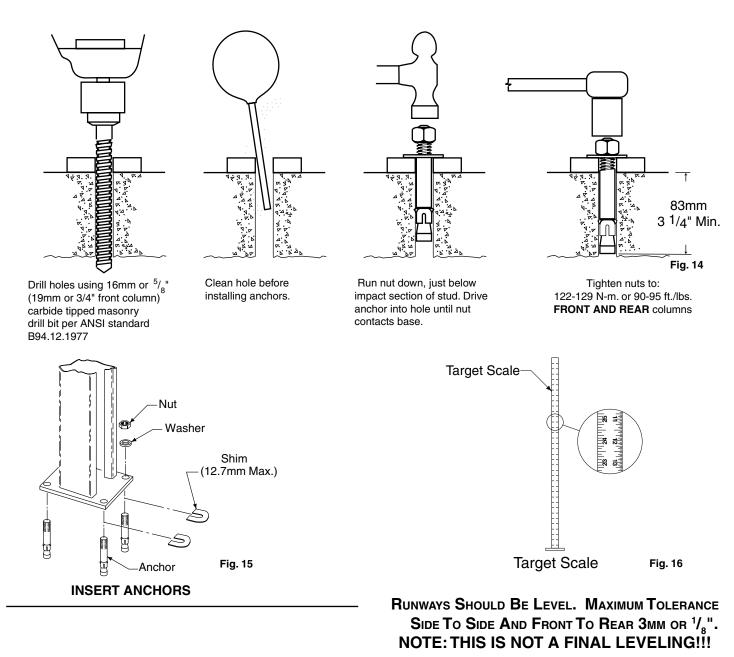
Adjust cable with lift fully lowered. Loosen jam nut and tighten nut on cable stud on top of column until yoke end raises 6mm or 1/4". Back off nut one turn. Retighten jam nut. Repeat for all four cables. Refer to Fig. 11, page 7.

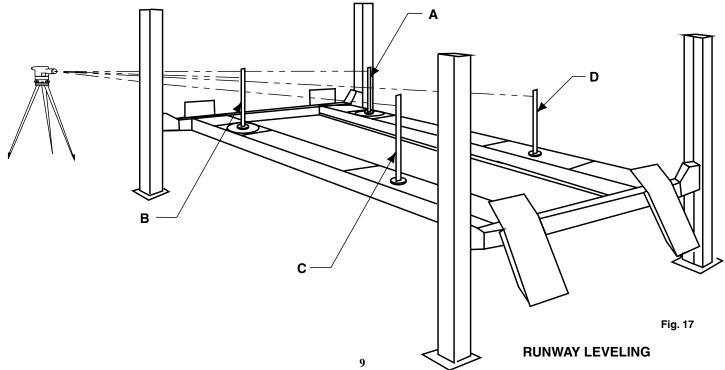
IMPORTANT

Cables must fit in slack cable arm rollers, Fig. 18.

Latch Bar

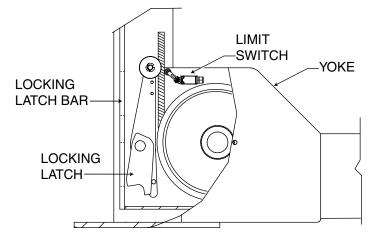






12. Power Unit:

A. Mount power unit, with motor up, to column bracket and install lock nuts. Run hydraulic hose, air lines, limit switch wires and hose covering from runway slot to power unit output port, Fig. 16. DO NOT use Teflon tape on hydraulic hose connections. Install and hand tighten elbow to pump until O-ring is seated and elbow should be oriented downward. Tighten locknut to 47-54N.M. (35-40 FT-LB.). Install, enclosed, capacity label on power unit, Fig. 16.



CABLE IN SLACK CABLE ARM

- C. Position control box on the power unit column, Fig. 19 on adapter plate, with enclosed hardware. Connect limit switch wires to the corresponding location in the control box terminal strip (terminal block 3-TB3). Attach the DIN connector to the 24 VDC lowering valve on the power unit. Run toe guard switch cord up column and attach to the control box (TB4). Connect power unit cord from contactor in control box to leads on the motor.
- 13. Electrical:

Have a certified electrician run 230-480 volt, 3 phase 50Hz or 60Hz power supply to control box, Fig. 19 and 20. Size wire for 15 amp. circuit. See Motor Operating Data Table. See wire diagram Fig. 20 and 21, page 12, for control hookup.

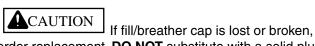
IMPORTANT

Use separate circuit for each power unit. Wiring **MUST** comply with all local electrical codes.

14. Fluid Filling & Bleeding:

Use Dexron III or equivalent ATF. Remove fill / breather cap, Fig. 19. Pour in 10.4 liters (11 guarts) of fluid. Start unit. Raise lift to full rise. Replace fill/breather cap.

Fully lower lift. Add more fluid until fluid reaches minimum fill line. Raise lift to full rise, then lower onto latches in preparation for Step 14.



order replacement. **DO NOT** substitute with a solid plug, that could cause pressure to build up in reservoir.

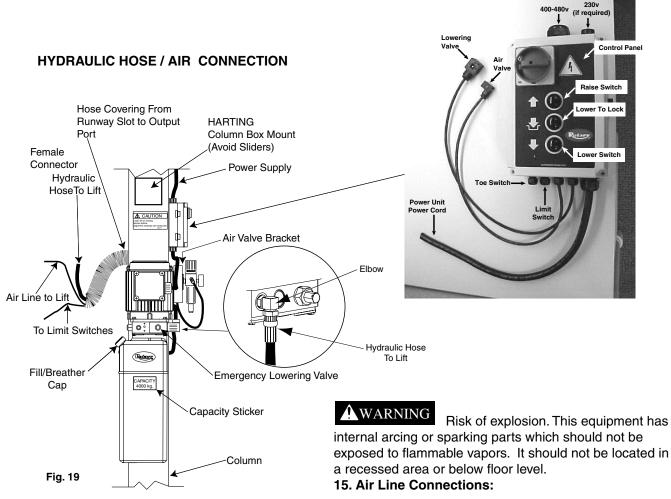
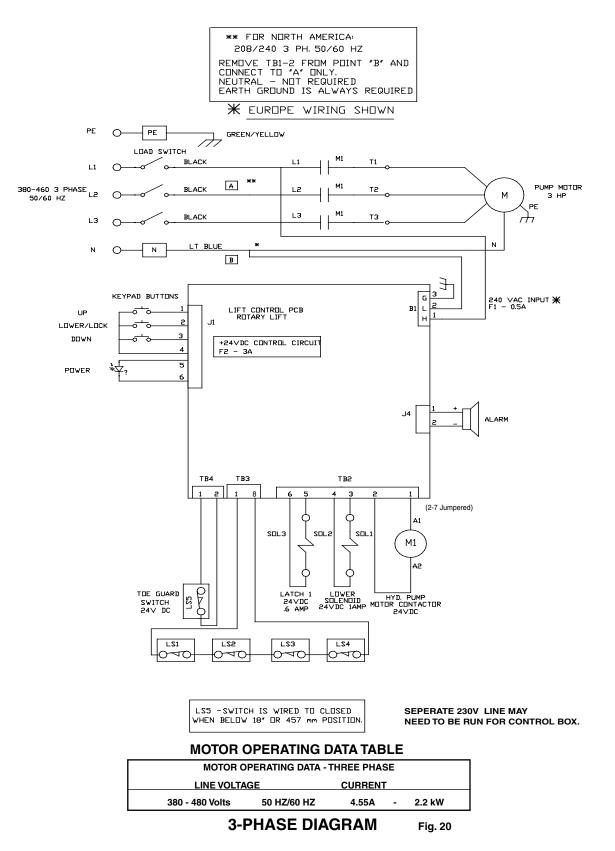


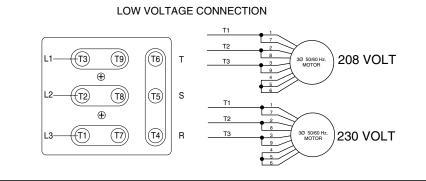
Fig. 18

Note: Locking latches require 6.2 Bar min. to 8.3 Bar max. (90 PSI min. to 120 PSI max.) air pressure.

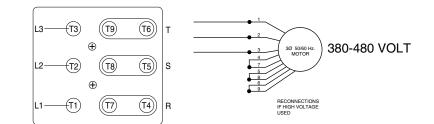
- A. Attach air valve and FRL as shown in Fig. 24a.
- B. Lift should be at full height and lowered on latches.
- C. Connect air valve to Reducing Tee, Fig. 19. Cut provided 1/4 air line tubing with sharp blade to length as required. Tubing must be cut square with no burrs.
- **Note:** To assemble air line tubing into fitting, use firm, manual pressure to push tubing into fitting until it bottoms, Fig. 22. If removal of the air line tubing from the fitting is ever required, hold Push Sleeve in (against fitting) and, at the same time, pull out on tubing.



3-PHASE WIRING OPTIONS



HIGH VOLTAGE CONNECTION



	T1	BED	T6	BLACK "T"
Ē	T2	BLUE	T7	BROWN
	Т3	WHITE	Т8	YELLOW
E N	T4	BLACK "R"	Т9	GREEN
D	T5	BLACK "S"		

L	T1	WHITE	T6	BLACK
E	T2	RED	T7	WHITE
E G E	Т3	BROWN	T8	RED
Ň	T4	WHITE	T9	BLUE
D	T5	RED		

Two different wiring colors were used. Determine appropriate LEGEND.

Fig. 21

- D. Run 1/4 air line from air value to the hole in the fixed runway. Cut airline and attach a Tee, Fig. 23.
- E. Run ¹/₄" air line: from the Tee of the runway hole through the guide tubes on the inside wall of the runway, to the yoke end next to the power unit column, attach air line to the latch air cylinder, Fig. 23.
- F. Run $1/4^{"}$ air line from the Tee at the runway hole to the union fitting at the front yoke.

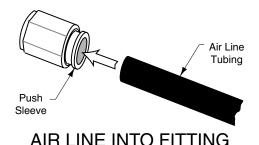
Note: Some test fluid may be spilled from the cylinder breather vent during bleeding of the system. To pressure test, run lift to full rise and run motor for approximately 5 seconds. Stop and check all hose con nections. Tighten or reseal if required. Lower lift.

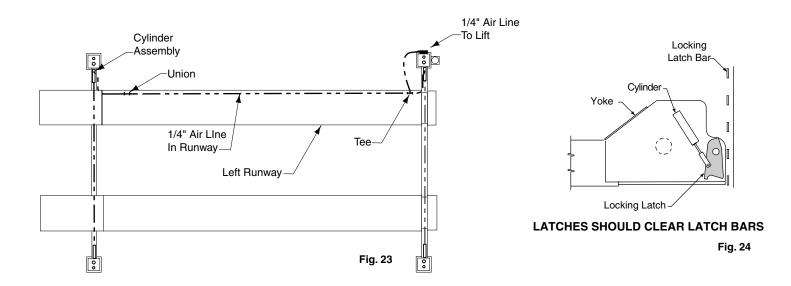
- G. Connect reducing Tee to female connector, Fig. 19, using ³/₈" air line tubing. Attach filter to female connector and connect into existing facility air supply, Fig. 19. Make sure plastic plug is in bottom opening of reducing Tee.
- H. Check for air leaks by depressing air valve. Repair as required.
- I. Use provided cable ties to tie air line to hydraulic hose between power unit and lift.
- J. Actuate air valve and check latch operation on all four corners. The locking latches should pull in beyond yoke ends to clear the latch bars located in all four columns, Fig. 24.

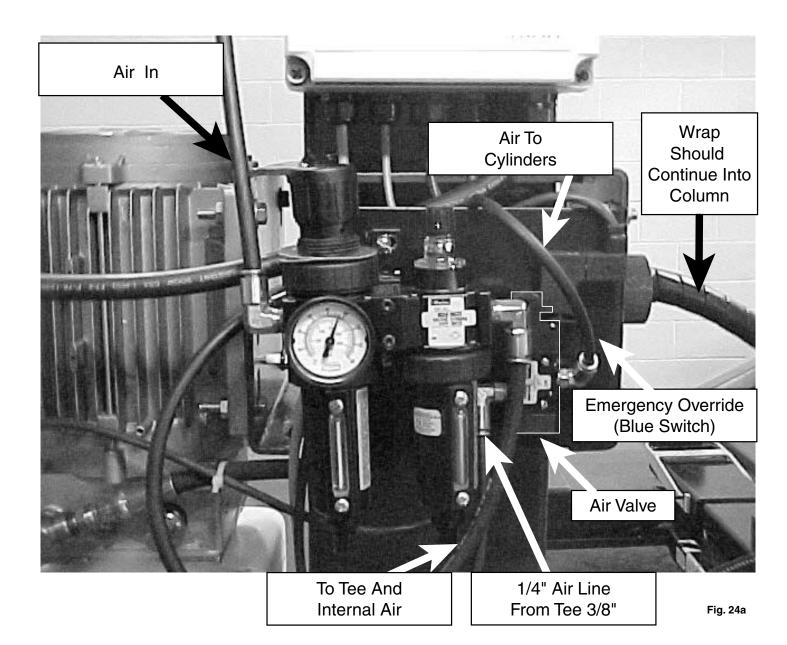
- K. Use cable ties provided to tie $\frac{3}{8}$ " air supply to electrical supply conduit at approximately 610mm or 24" intervals.
- 16. Bleeding:

Raise and lower lift six times. The cylinder is self-bleeding. After bleeding system, fluid level in power unit reservoir may be down. Add more ATF, if necessary, following instructions in Step 12. Lift must be fully lowered before changing or adding hydraulic fluid.

- 17. Assemble ramp/chocks and wheel stops to runways using hinge pins, cotter pins, and runway bolts. Ramp/ chocks go on rear, Fig. 26, and wheel stops go on front of runway, Fig. 25.
- 18. MKS Bracket Installation:
 - A. Attach brackets as shown, Fig. 29. using button head bolts and nuts.







B. Attach MKS adapter to bracket using plastic knob. (External lock washer might be required to tighten fully.)

19.Final Adjustments:

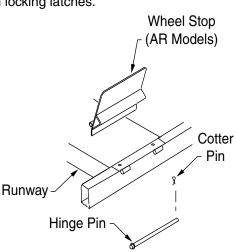
- A. Install safety tape at each yoke Fig. 5a, page 4. Load vehicle such as a ${}^{3/4}_{4}$ ton pickup or van onto lift.
- B. Cable Adjustment
- 1. Slowly jog the power unit, allowing two seconds between jogs, until a latch or latches are heard engaging. Check all corners to see which latch(es) have engaged. The corner(s) that are engaged will not be adjusted. Proceed to one of the corners that has not engaged and loosen the cable jam nut. Turn the cable adjustment nut clockwise, holding the cable with the square end of the threaded portion under the top plate, Fig. 28, until you hear the latch engage, then stop. Lock down the adjustment nut with the jam nut.
- 2. Proceed to the other corners until all latches have clicked into locking position.
- 3. Raise and lower lift to check for lock engaging sequence. The sound of lock engagement should sound simultaneously, the front cables may click slightly before the rear to com pensate for the loaded con dition. If you run out of the square holding area on the cable under the top plate, grip the top threaded portion with Channel Locks™ to tighten. If the nut bottoms out or is close to bottoming out on the cable adjustment thread, then all the cables, sheaves and pins should be replaced. See page 2 and check for broken cable strands if a Channel Lock is required. If a broken cable is detected, ALL the cables, sheaves, and pins should be replaced before lift is put into operation.

When making changes to adjustment nuts on cable end always leave at least two threads showing between nut and end.

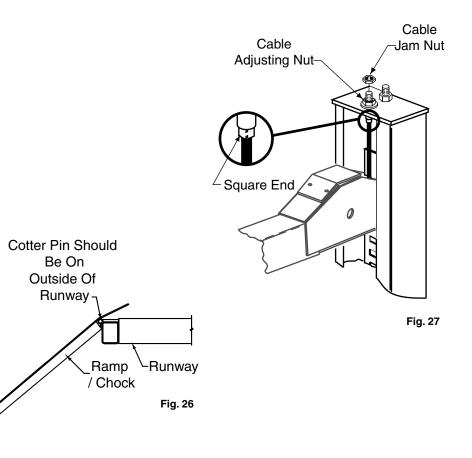
Note: Latches may not click in at the same time when vehicle is being raised. They should be close. Be sure all four corners have passed the locking latch bar slot before lowering lift on locking latches.

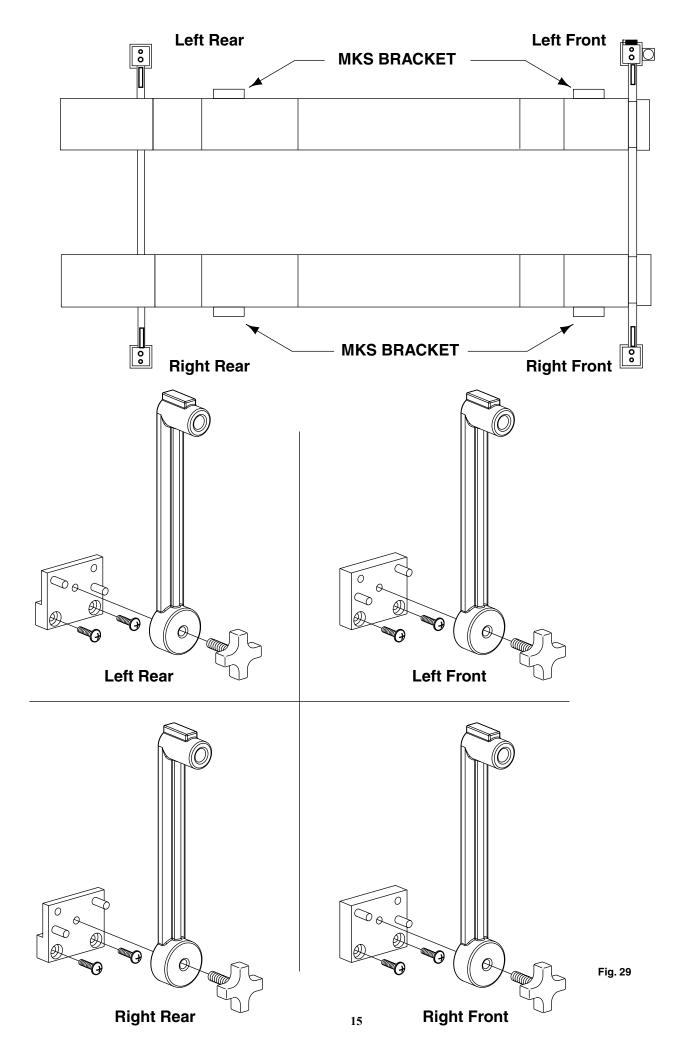
Note: All bolts and nuts mentioned in this booklet are grade 5 unless otherwise stated. Cotter pins are usually good for one time use only. Replace any cotter pin, if removed, with a new cotter pin.

C. Ensure that toe guard limit switch is installed and functioning properly. Trigger bar should strike switch during lowering. See Fig. 5a.









FINAL LEVELING FOR MKS SYSTEM DO NOT PERFORM FINAL LEVELING UNTIL MKS SYSTEM IS ON SITE, RUNNING AND TECHNICAN IS TRAINED

1. Install leveling screws and pads. Drill holes in floor prior to driving hammer pins.

2. Runway Leveling Adjustments:

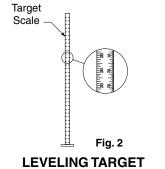
Engineer's automatic level (transit):

- 1. Locate the level, at a convenient location in the shop that allows an unobstructed view of all four corners of the Lift's runways.
- 2. Follow the level manufacturer's instructions for proper setup. Be sure it is adjusted level in all directions.
- 3. Readjust if tripod or level is bumped or disturbed.
- B. Raise lift approximately 71cm-81cm or 28" Then lower lift until all locking latches are
- engaged in each column and the runways are in full down position on locks.
- C. Place the level target on the right/front wheel turning radius gauge.
- D. Beginning with "A" position, Fig. 1, sight the level to the target and mark the number or the graduation on the scale of the target that aligns to the crosshairs of the level, Fig. 2.

Note: Use a pencil, marking pen or attach a paperclip onto the target scale at the crosshair reference.

E. Next, move the target and place it on the

- turning radius gauge at point "B", Fig. 1.
- F. Rotate the level and focus on the target scale.
- G. Adjust the adjustment nut on the locking latch plate adjustment stud at the top of the column at "B", Fig. 1, by loosening the jam nut and turning adjustment nut until the crosshairs of level align to reference mark on the target scale.
- H. Repeat steps E., F. and G., locating the target at points "C" and "D" and adjusting locking latch bar adjustment stud at each



1/32" or 1/2"mm Increments is Required

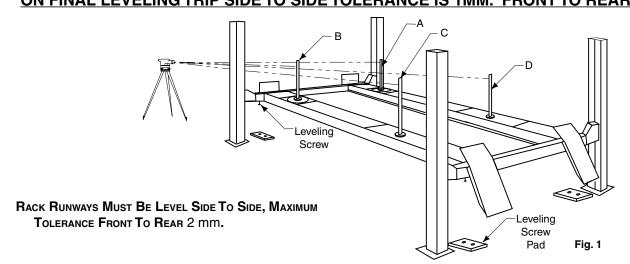
corresponding column until the reference mark on the target scale is on the crosshairs of the level.

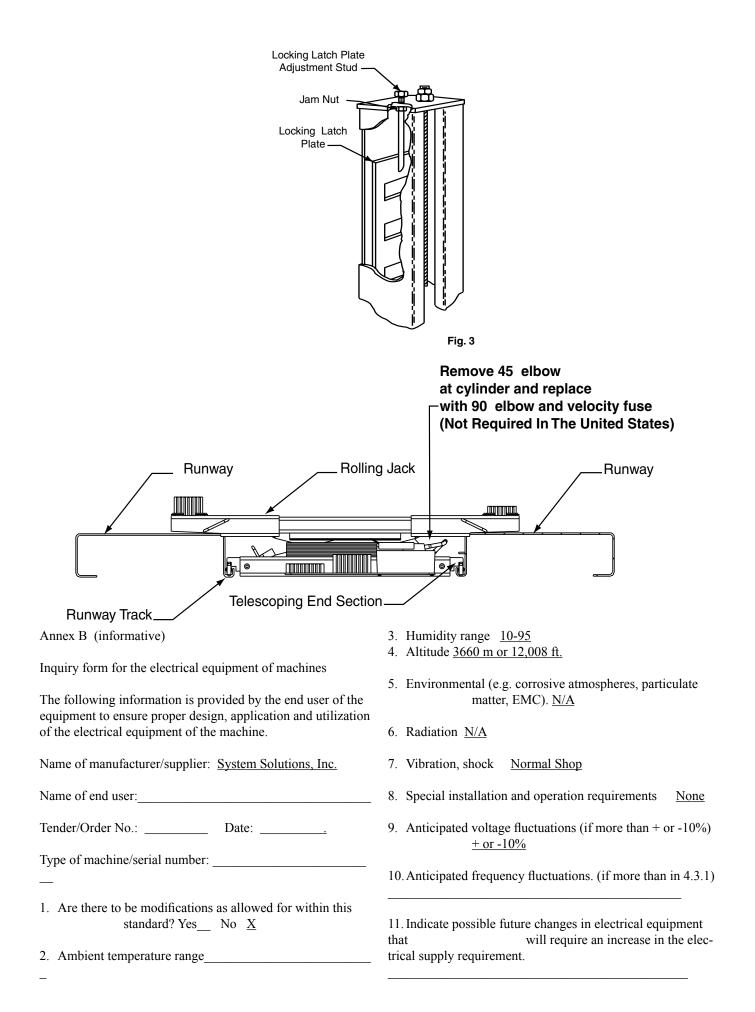
 Recheck the level of the runways to be sure all four locking latch bar are adjusted correctly. Start at point "A" and recheck level at points "B", "C" and "D", Fig. 1. Readjust, if needed.

The runways are now level at all four points.

- J. To complete the leveling procedures, lock each locking latch bar jam nut tightly against the adjusting nut. Be sure the adjusting nut is not turned out of adjustment when tightening the jam nut, Fig. 3.
- K. Lower lift so that leveling screws are about 1/4" or 5mm above pads.
- L. Adjust screws to touch pads.
- M. Perform leveling procedure with lift in this position.
- N. When level, lock screws into place using locknut. (Insure screw is set using inspection putty or "green" lock-tite.)
 - O. Leave site clean and ready to use.

ON FINAL LEVELING TRIP SIDE TO SIDE TOLERANCE IS 1MM. FRONT TO REAR IS 2MM.





12. Indicate for each source of electrical supply required: Nominal voltage (v) <u>380/415</u> a.c. <u>d.c.</u>

If a.c., number of phases <u>3</u>, frequency <u>50</u> Hz

13. Type of power supply earthing:

-TN (System with one point directly earthed, with a protec tive conductor (PE) not connected to that earth point of the system)

-IT (System which is not directly earthed) PE and Neutral are not connected on cabinet

- 14. Is the electrical equipment to be connected to a neutral (N) supply conductor? (See 5.1)Yes X No
- 15. Does the user or the supplier provide the overcurrent protection of the supply conductors? (See 7.2.1) <u>No</u>

16. Supply disconnecting device -Is the disconnection of the neutral (N) conductor re quired?

Yes No X

17. Type of disconnecting device to be provided_ <u>CB or Fuse @ 10A</u>

18. Limit of power up to which 3-phase motors may be started directly across the incoming supply lines <u>2.2</u> <u>kW.</u>

19. May the number of motor overload devices on 3-phase motors be reduced to 2? (See 7.3)

Yes X No ____

- 20. Where the machine is equipped with local lighting: - highest permissible voltage V.
- if lighting circuit voltage is not obtained directly from the power supply state preferred voltage V.

Other Considerations......

21.Functional identification (See 18.3)

22. Inscriptions/Special markings_____

23. Mark of certification? Yes _____ No _____ If Yes , which one? _____ On electrical equipment? _____ In which language?

24. Technical documentation (see 19.1) On what media? <u>paper</u> In which language? <u>English.</u>

25. Size, location and purpose of ducts, open cable trays or cable supports to be provided by the user (see 19.5) (additional sheets to be provided where necessary).

26. For which of the following classes of persons is access to the interior of enclosures required during normal operation of the equipment? -Skilled person none_.

-Instructed persons <u>none</u>.

27. Are locks with removable keys to be provided for fastening doors or covers? <u>No</u>

28. If "two hand control" is to be provided, state the Type:

29. Indicate if special limitations on the size or weight may affect the transport of a particular machine or control gear assemblies to the installation site:

-Maximum dimensions ______

- 30. In the case of machines with frequent repetitive cycles of operation dependent on manual, how often is it expected that cycles of operation will be repeated? <u>6 per hour</u>
- 31. For what length of time is it expected that this maximum rate of repetition will be repeated without subsequent pause? <u>240 minutes.</u>
- 32. In the case of specially built machines, is a certificate of operating type tests with the loaded machine to be sup plied?

Yes____No____

33. In the case of other machines, is a certificate of operating type tests on a loaded prototype machine to be supplied?

Yes____No____

NOTES

Installer: Please return this booklet to literature package, and give to lift owner/operator.

Thank You

Trained Operators and Regular Maintenance Ensures Satisfactory Performance of Your Rotary Lift.

Contact Your Nearest Authorized Rotary Parts Distributor for Genuine Rotary Replacement Parts. See Literature Package for Parts Breakdown.

REV. CHANGE MADE

- В Changing order of part installation for boxes, etc. Added bolt sizes, clarified wiring.
- С Issue new AR43-5 for Europe.
- D Issue new 4-Post literature packing list.
- E Updated limit switch graphic.

Botary World headquarters

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