



# LOAD CHARTS

for Use With

## WRITTEN EXAMINATIONS



# IMT.<sup>®</sup>

## Telescoping Boom

Iowa Mold Tooling Co., Inc., by providing pages of one of its manuals, is not providing a substitute for training on an IMT crane.

These pages are reproduced for illustration only and not as a substitute for reviewing the entire manual for a particular crane.

Make sure that you are fully trained on, and review the entire manual for, every crane you operate.



*This load chart has been adapted from the original manufacturer's load chart for use in the NCCER Mobile Crane Certification Examination. It is not to be used for calculating loads, planning lifts, or for any other purpose.*

## Section 9. CAPACITY PLACARDS

### CRANE CAPACITY PLACARDS

Your IMT crane is designed for specific loads. Those loads are described on the capacity placard which is mounted near the normal operator's station. Exceeding the limits presented on the capacity placard will create severe safety hazards and will shorten the life of the crane. The operator and other concerned personnel must know the load capacities of the crane and the weight of the load being lifted!

#### WARNING

NEVER EXCEED THE CRANE'S RATED LOAD CAPACITIES. DOING SO WILL CAUSE STRUCTURAL DAMAGE AND DAMAGE TO WINCHES AND CABLES WHICH CAN LEAD TO SERIOUS INJURIES OR DEATH.

Capacity placards for telescoping and articulating cranes vary in their graphic representation of load limits while presenting load ranges (See Figures I-4 and I-5 for comparison). Any load handling equipment such as hooks, cables and attachments must be added to the weight of the load being lifted. As these attachments vary widely, it is the operator's responsibility to account for their added weight.

Other variables which must be accounted for and considered in the amount of weight being lifted are conditions of the surface supporting the outrigger and carrier vehicle, wind speed, out-of-level positioning of the vehicle or crane, and variations in operating speed.

### CAPACITY CONDITIONS

The capacity placard information is based on the crane, winch, cable and outriggers being structurally sound and a stability tipping factor of 85%.

Conditions which must be met to provide for stated capacity placard ratings are as follows:

1. Outriggers fully extended and outrigger pads firmly contacted with a solid, stable and level surface.
2. The crane has been installed on a factory approved vehicle and in a factory approved fashion.
3. The carrier vehicle's tires are properly inflated.
4. Any load handling devices have been added to the weight being lifted.
5. Extreme wind velocities are not present.
6. The crane is operated in a smooth and controlled manner.
7. Any required counterweights have been added.

### USING THE CAPACITY PLACARD (ARTICULATING CRANES)

Perform the following steps before a load is lifted (Refer to Figure I-4):

1. Determine the weight of the load.
2. Determine the weight of any load handling devices.
3. Add the weight of the load and the weight of the load handling devices. The sum will be the total weight of the load being lifted.
4. Determine the distance from the centerline of crane rotation to the centerline of the load being lifted.
5. Determine the distance from the centerline of crane rotation to the centerline of where the load is to be moved to.
6. The actual distance used should be figured as the larger of items 4 and 5 above.
7. Refer to the crane's capacity placard and determine within which range the lift will be accomplished.
8. Refer to the capacity of that range to be certain the load being lifted does not exceed the crane's capacity within that range.
9. If a winch is used for the lift, make certain the load does not exceed the winch or winch line capacity. See Figures I-1, I-2 and I-3.

## USING THE CAPACITY PLACARD (TELESCOPING CRANES)

Perform the following steps before a load is lifted:

1. Determine the weight of the load.
2. Determine the weight of any load handling devices.
3. Add the weight of the load and the weight of the load handling devices. The sum will be the total weight of the load being lifted.
4. Determine the distance from the centerline of crane rotation to the centerline of the load being lifted.
5. Determine the distance from the centerline of crane rotation to the centerline of where the load is to be moved to.
6. The actual distance used should be figured as the larger of items 4 and 5 above.
7. Determine at what angle the crane will be operated (for example 30°, 45°, etc.) by referencing the angle indicator on the lower boom.
8. Make certain that 2-part line is used for any lift which requires 2-part line. See Figures I-1 and I-2.

See Figure I-5 for reference.

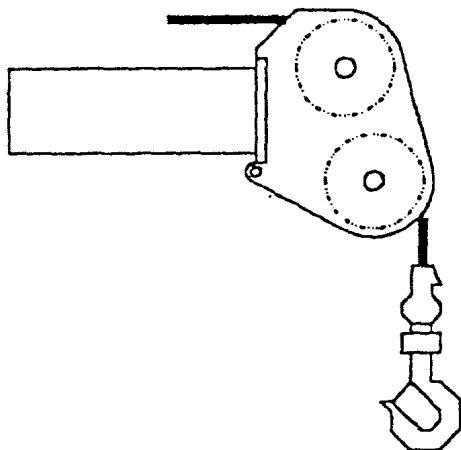


Figure I-1. One-Part Line Configuration

## WARNING

Winchs rigged with single or multi-part lines may have the ability to exceed crane capacities. Refer to the crane's capacity placard noting the angle required for the lift and the range of the lift at that angle. Make certain the total load being lifted does not exceed the crane's capacity at that angle and range.

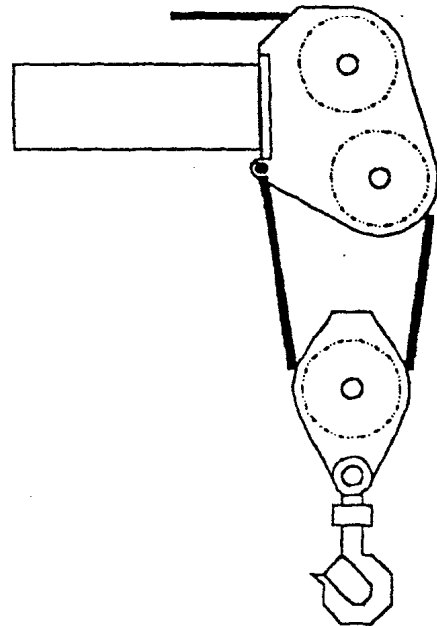


Figure I-2. Two-Part Line Configuration

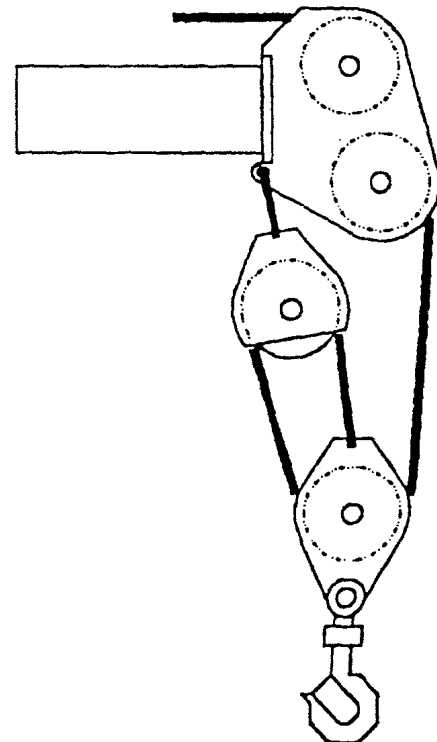
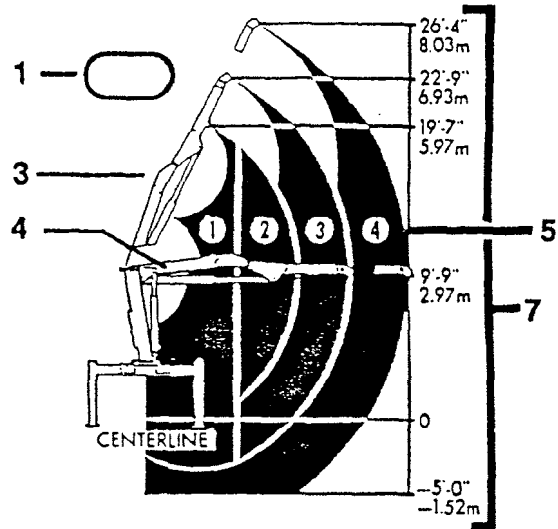


Figure I-3. Three-Part Line Configuration

**NOTE**

THE CAPACITY PLACARD SHOWN ON THIS PAGE IS AN EXAMPLE ONLY! THE CAPACITIES ARE NOT INTENDED FOR USE ON ANY PARTICULAR CRANE.



Working loads will be limited to those shown. Deduct the weight of load-handling devices.

RANGE	REACH	CAPACITY	RANGE	REACH	CAPACITY
1	6'-0" 1.83m	8,000 LBS. 3,629 KG.	3	13'-5" 4.09m	3,600 LBS. 1,633 KG.
2	10'-0" 3.05m	4,800 LBS. 2,177 KG.	4	17'-5" 5.31m	2,700 LBS. 1,225 KG.

1. Crane model number.
2. This note is a reminder that it is necessary to add the weight of load handling devices to the weight of the object being lifted in order to derive the actual total load being lifted.
3. Crane booms shown at their maximum elevation.
4. Crane booms shown at their maximum reach from centerline of rotation.
5. Range designation (1, 2, 3, 4) which are to be compared to the range capacity chart shown as item 6. Range 1 indicates a load attached to the outer boom hook and kept within a distance of 6'-0" (1.83 meters) from the centerline of rotation. Range 2 indicates a load attached to the outer boom hook but operated through its maximum range of 10'-0" (3.05 meters) from centerline of rotation. Range 3 indicates a load attached to the fully retracted extension boom at a maximum distance from centerline of rotation of 13'-5" (4.09 meters). Range 4 indicates a load attached to the fully extended extension boom at the cranes maximum range of 17'-5" (5.31 meters).

6. The load/range chart indicates the maximum total load allowable within specified ranges. For example: any lift within Range 3 will be limited to 3600 pounds (1633 kilograms) at 13'-5" from centerline of rotation. See Note 1, 2 and 3.
7. Lifting height reference dimensions from ground level. If your crane is mounted on other than a normal carrier vehicle, add or subtract variances to or from these dimensions. See Note 2.

Note 1. Capacities are normally shown in pounds first with their converted metric equivalent in kilograms also listed.

Note 2. Dimensions are normally shown in feet and inches first with their converted metric equivalent in meters also listed.

Note 3. Occasionally capacity placards may contain translations of the English language in French, Spanish, etc.

**Figure I-4. Articulating Crane Capacity Placard Description**

## FIGURE-FOUR FOLDING CRANES

The Figure-Four folding cranes can be considered as self-storing as the inner, outer and extension booms are stored within the mast structure. Although this feature provides convenience of storage it also requires special safety considerations during the act of folding and unfolding. Figures J-7, J-8 and J-9 illustrate the steps to be taken during these procedures.

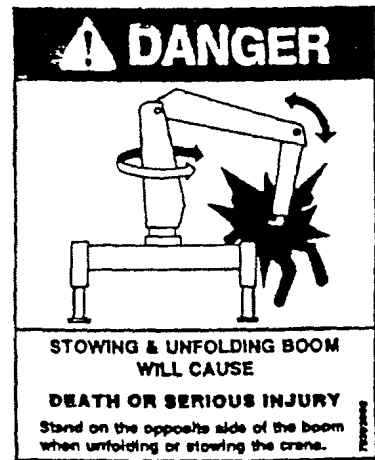


Figure J-7. Stow/Unfold Decal

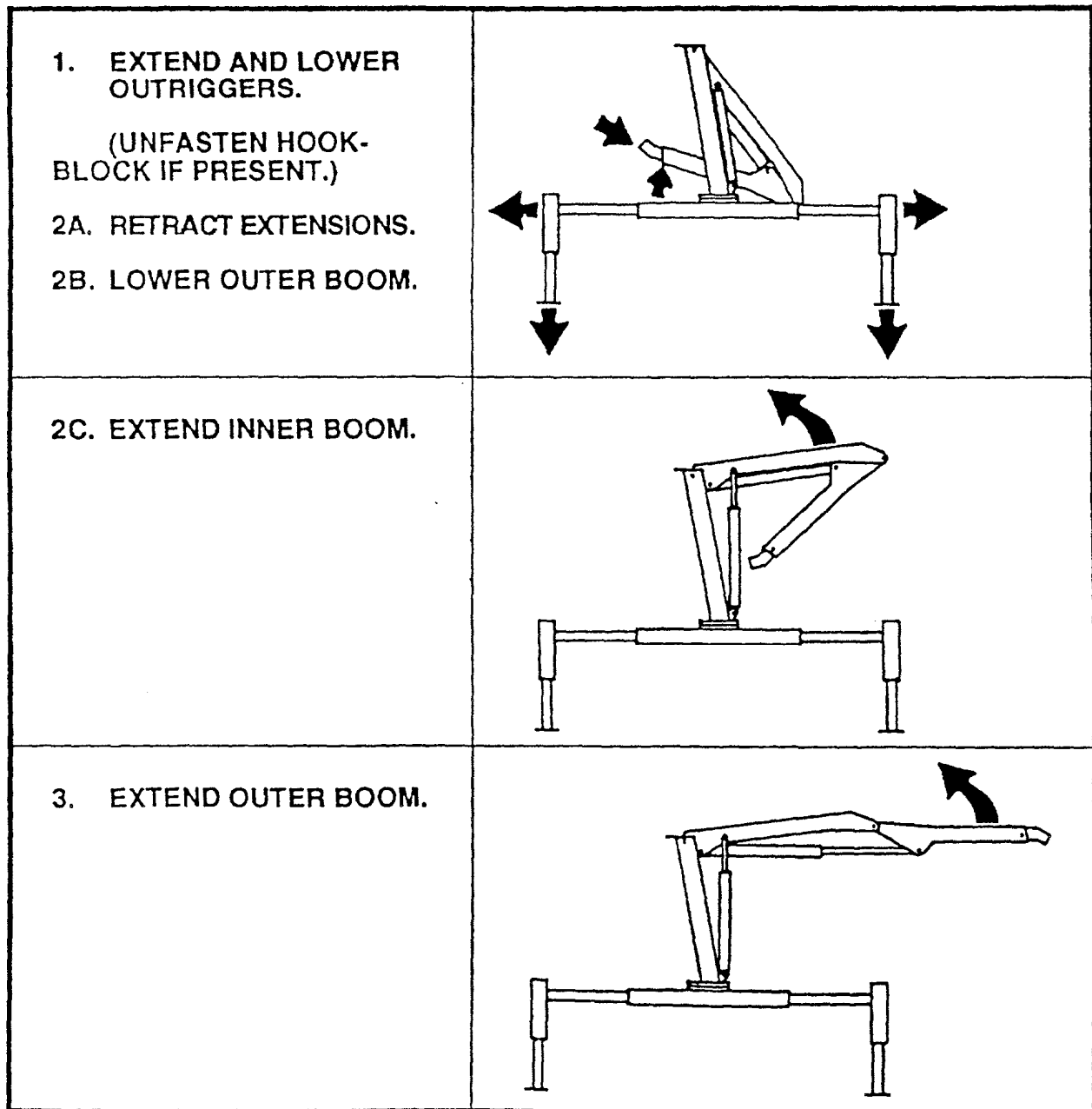


Figure J-8. Unfolding Sequence

## OUTRIGGER OPERATION

Of all of the hydraulically operated components on a crane, the outriggers can be the most hazardous. This is because of their close proximity to the operator and other personnel. They are the only component of the crane which normally contacts the ground. Three distinct hazards exist in their operation: first, the possibility of the outriggers contacting persons while moving

outward; secondly, the capability of the outriggers causing severe crushing injury when contacting the ground; and thirdly, the possibility of pinching injuries occurring when the outriggers are being retracted.

There are various outrigger designs available, but all require extreme caution in their use. Refer to Figures J-13, J-14, J-15 and J-16 for proper outrigger operation sequence and warnings.

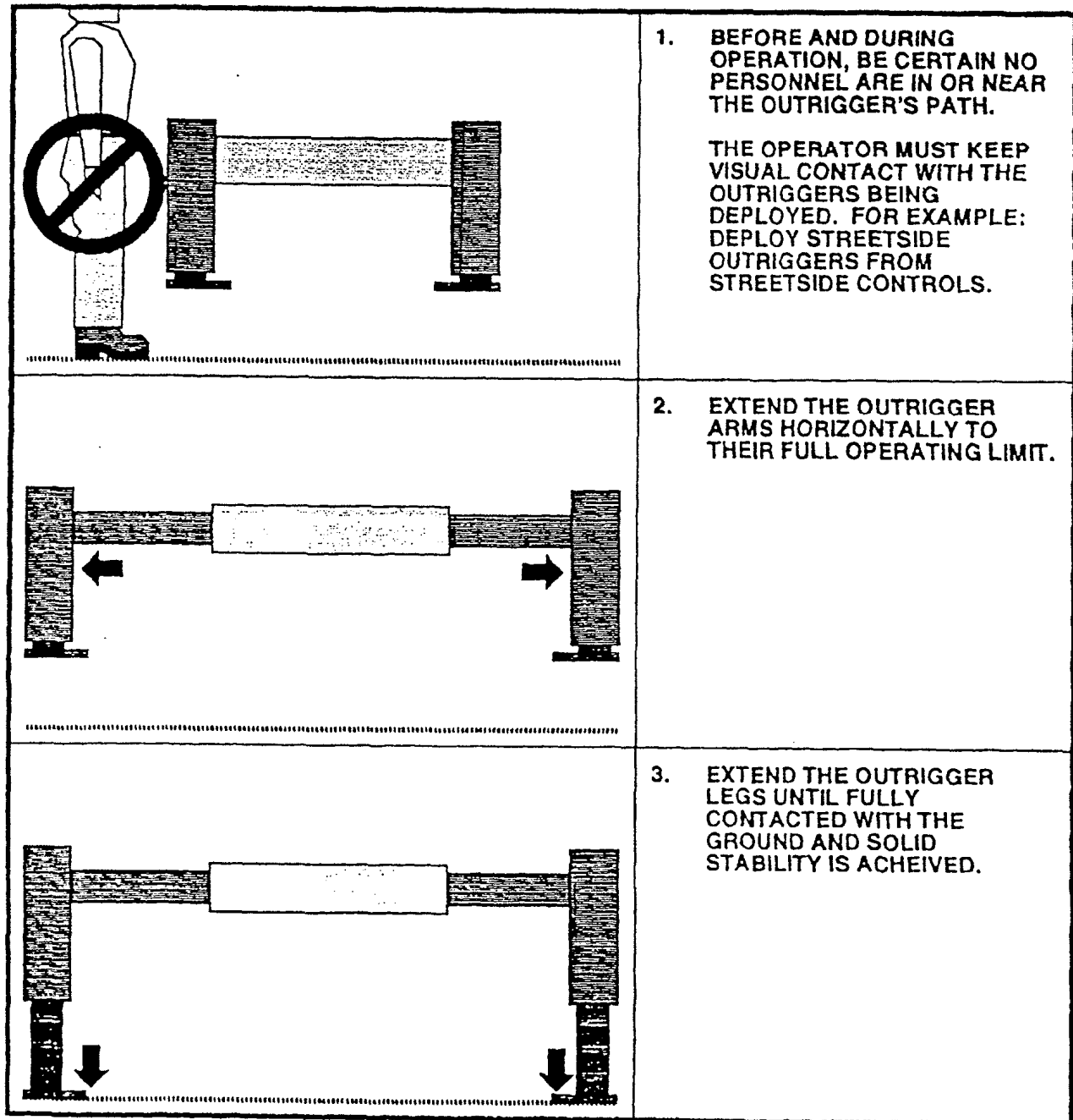


Figure J-13. Outrigger Deployment Sequence

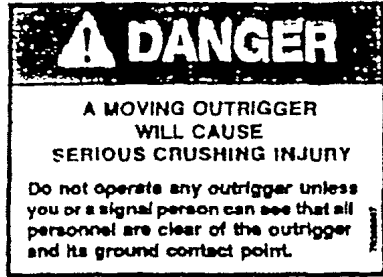


Figure J-14. Moving Outrigger Decal

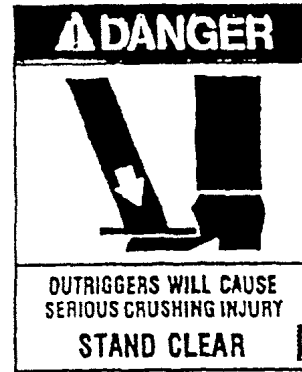


Figure J-15. Stand Clear Decal

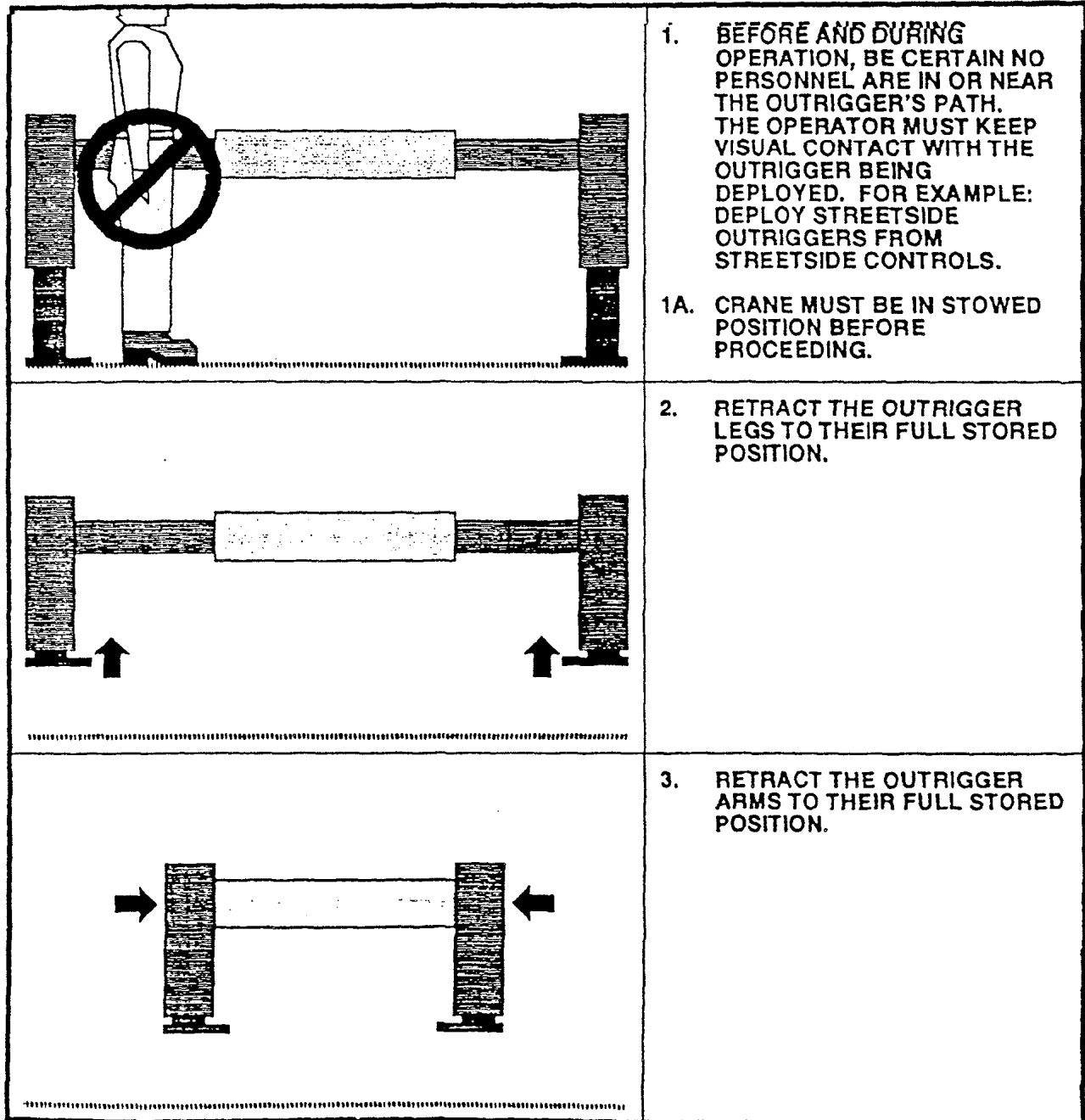


Figure J-16. Outrigger Storage Sequence

### DIRECTION TERMINOLOGY

Various terms may be used to describe directions associated with crane operation. Illustrated here are some of those terms and their variations.

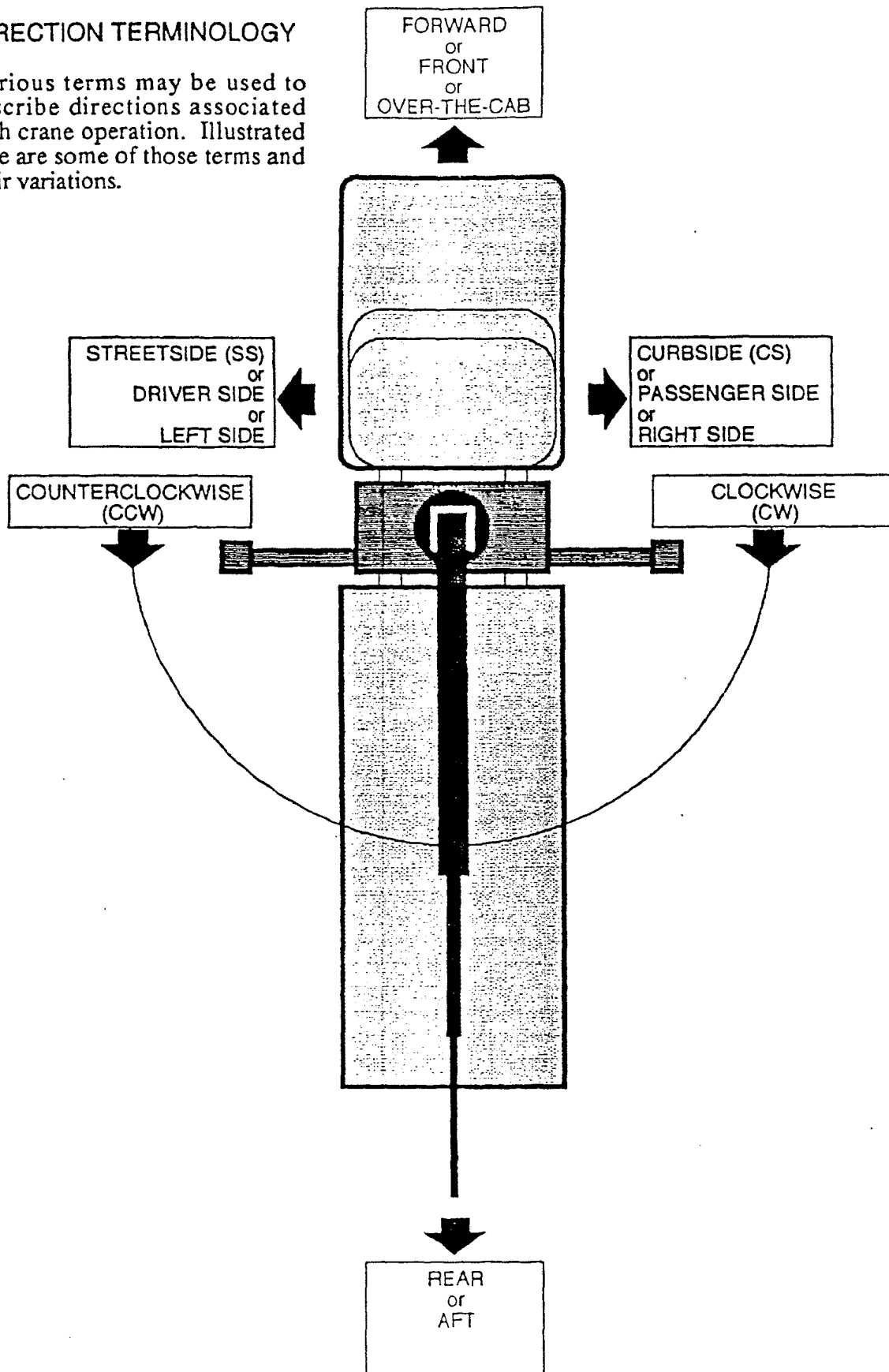


Figure J-17. Crane Operation Directional Terminology