WorkplaceNL
Health | Safety | Compensation

FALL CLEARANCE CALCULATIONS

Free fall distance (FFD) and minimum clearance required (MCR) are two important components of the hazard assessment and fall protection plan when performing work at height. FFD is the distance from the point where a person falls until the energy absorber begins to slow their fall. MCR is the minimum distance required to safely arrest a person's fall, preventing a fallen worker from coming into contact with obstructions below.
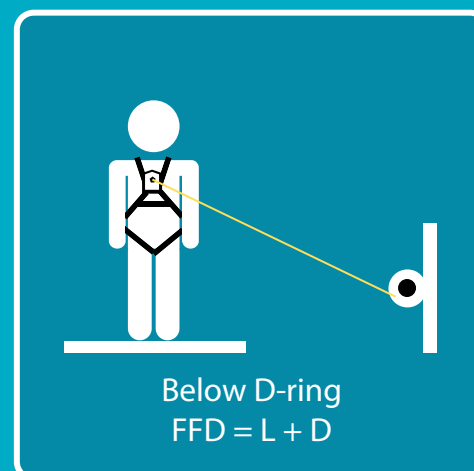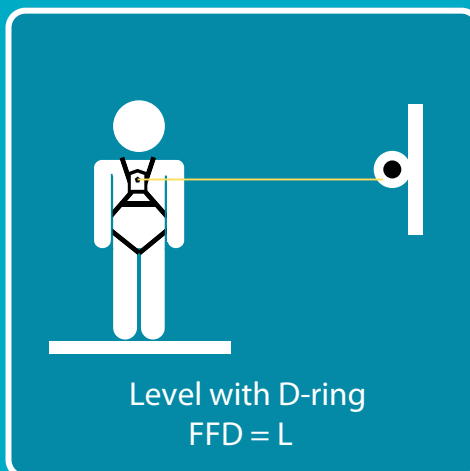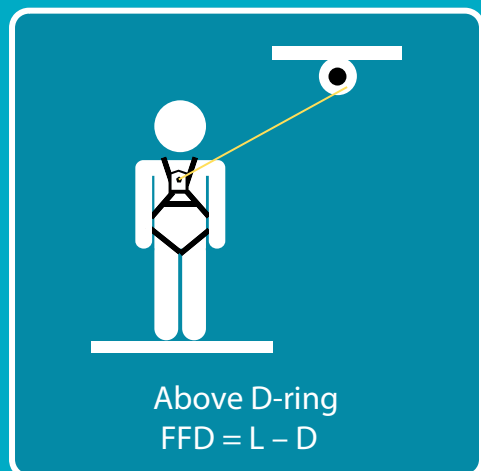
Calculating Free Fall Distance

FFD = Free fall distance   **L = Lanyard length**   **D = Distance from D-ring to anchor point**

When calculating FFD, the location of the anchor point is important whether above the D-ring, level with the D-ring, or below the D-ring.

Above D-ring
$FFD = L - D$

Level with D-ring
$FFD = L$

Below D-ring
$FFD = L + D$

Example: 6ft lanyard anchored 2ft above the D-ring, level with the D-ring, or 2ft below the D-ring.

$FFD = L - D$	$FFD = L$	$FFD = L + D$
$FFD = 6ft - 2ft$	$FFD = 6ft$	$FFD = 6ft + 2ft$
$FFD = 4ft$		$FFD = 8ft$

If the manufacturer's maximum FFD is exceeded, work must not proceed as the equipment is being used outside of its specifications and limitations. MCR should only be calculated if FFD is safe and within manufacturer's specifications.

Calculating Minimum Clearance Required

$$MCR = L + E + D + H + S$$

MCR = Minimum clearance required   L = Lanyard length   E = Energy absorber elongation
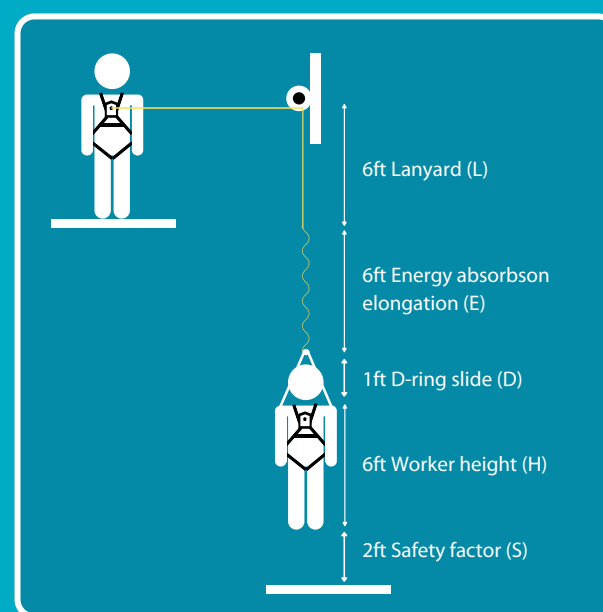D = D-ring slide   H = Height of worker   S = Safety factor

$MCR = L + E + D + H + S$
$MCR = 6ft + 6ft + 1ft + 6ft + 2ft$
$MCR = 21ft$

Note: While a 6ft energy absorber elongation is used in this example, when calculating MCR, use the maximum energy absorber elongation as specified by the manufacturer.

If there is insufficient minimum clearance, work must not proceed until adjustments are made to allow work to be completed safely. Without sufficient clearance, a fallen worker may come into contact with obstructions below and incur serious or fatal injuries.

6ft Lanyard (L)

6ft Energy absorbson elongation (E)

1ft D-ring slide (D)

6ft Worker height (H)

2ft Safety factor (S)