Operation

Use of the HazardAvert® for forklifts system requires only that pedestrians and forklift operators wear hardhats with a Personal Alarm Device (PAD) installed. The PAD then warns them against impact by any forklift operating with a HazardAvert® for forklifts system installed.

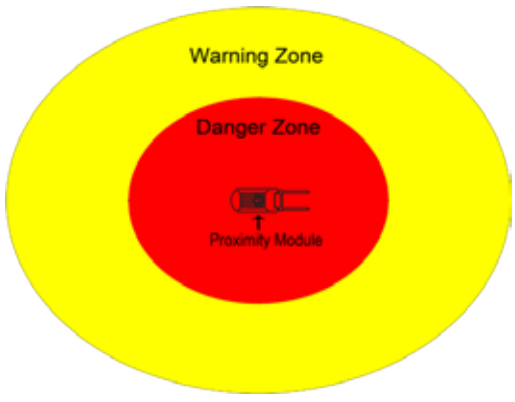
1. Warning Zone

When a pedestrian gets to within approximately 15 meters (50 feet) of the Proximity Module, both the pedestrian and the forklift operator are alerted to possible danger for the pedestrian. The alert is indicated by a series of five short LED flashes simultaneous with five beeps of the sounder, followed by a short pause and then five more flashes and beeps. The alert is given on both the forklift and hardhat Warning Modules. No additional alerts are given until the pedestrian enters the Danger Zone.

2. Danger Zone

When the pedestrian gets to within approximately 7.5 meters (25 feet) of the Proximity Module, both the pedestrian and the forklift operator are alerted that the pedestrian is in imminent danger. This alert is indicated by continuous lighting of the LED and activation of the sounder, on both the forklift and hardhat Warning Modules. The warning continues until the pedestrian is out the Danger Zone and returns to the Warning Zone or beyond. When the forklift and pedestrian are far enough apart that the pedestrian is no longer in the Danger nor Warning Zones, both the forklift and hardhat Warning Modules are reset to provide new alerts when a Warning Zone is again entered.

† Zone sizes cited for the Warning and Danger Zones are based on factory settings for the hardware.



There is no limit to the number of workers that can be outfitted with PADs. They all respond to to the Forklift's Proximity Module. The forklift operator is also protected once he steps out of the safety cage.

Multiple pedestrians in the Zones of a Single Forklift

When multiple pedestrians are in the Warning Zone of a forklift, the forklift operator will be alerted when the first pedestrian is detected, but will not receive a new alert for additional pedestrians. The additional pedestrians will individually receive alerts when they first enter a Warning Zone. If any of the multiple pedestrians enters the Danger Zone, both the pedestrian in the Danger Zone and the forklift operator will receive a Danger Zone alarm, which is continuous until the pedestrian departs from the Danger Zone.

Single pedestrian in the Zones of Multiple Forklifts

If a pedestrian is in the Warning Zone of a forklift and other forklifts approach and put the pedestrian in the Warning Zone of their forklifts, the other forklift operators will be alerted to presence of the pedestrian, but the pedestrian will not receive an additional alert. The pedestrian, however, will receive a Danger Zone alert if the Danger Zone of any of the forklifts is entered. Also the Warning Module on any forklift with a pedestrian in the Danger Zone will be activated with a Danger Zone alert.

Protection of Forklift Operator

The Silent Zone feature of the HazardAvert® system prevents the forklift operator from triggering alerts while the operator is inside the operator's cage. However, when the operator dismounts from the forklift, the operator's hardhat PAD Warning Module is activated and the operator is protected the same as any other pedestrian.

Distance Adjustment

The HazardAvert® for forklifts system provides two adjustable zones of safety alerts: (1) Warning Zone and (2) Danger Zone. With a 12 Vdc power source, the Warning Zone can be adjusted between approximately 8 meters (26 feet) and 23 meters (75 feet). Similarly, the Danger Zone can be adjusted between approximately 4 meters (13 feet) and 11.5 meters (38 feet). Zones are factory-adjusted to produce a Warning Zone field of approximately 15 meters (50 feet) and a Danger Zone field of approximately 7.5 meters (25 feet). With a 24 vdc power source, the Danger Zone cab be adjusted between approximately 5 meters (16 feet) and 15 meters (49 feet).

Zone sizes different from the factory setting can be implemented via two options: (1) A potentiometer inside the Proximity Module or (2) metallic Shunt on the outside of the Proximity Module.

Increasing a zone size from the factory setting must be performed using the potentiometer. Setting a distance less than the nominal factory setting can be performed using either the shunt or the potentiometer, but is more easily accomplished using the potentiometer. To adjust the potentiometer, remove the screw plug labeled "PWM Adj" in the side of the Proximity Module and insert a small Phillips-head screwdriver to engage the potentiometer. Turning the potentiometer clockwise increases zone distance, whereas counter-clockwise motion decreases zone distance. IMPORTANT: After potentiometer adjustment is complete, the screw plug must be replaced to keep moisture out of the Proximity Module.

To decrease field distance using the Shunt, loosen the four screws locking the shunt in-place and slide the shunt toward the center of the Proximity Module until the desired field distance is achieved. Re-tighten the four screws to lock the shunt in-place.

Use a PAD as the device for measuring or adjusting zone distance. With a PAD located at the desired distance from the forklift, adjust the zone until the PAD alarm signals that it is just inside the Danger Zone. The Warning Zone can then be measured as the location where the Warning Zone alarm first sounds.

Silent Zone Adjustment

An adjustment is available to set the range of the operator's Silent Zone. The Silent Zone is set to maximum at the factory. If he Silent Zone Field extends outside the operator's cage, it can be reduced by adjusting a potentiometer located under the "SZ Adj" screw plug on the Proximity Module. Removing the screw plug and turning the potentiometer inside the housing clockwise reduces the silent zone size. After the adjustment is complete, the screw plug must be replaced to keep moisture out of the Proximity Module. †

† Caution: The Silent Zone field should eliminate warnings only inside the operator's cage. Make sure than the Silent Zone field does not extend outside the operator's cage.

Warning: These Systems help to train personnel to stay safe, and provide warning, but cannot guarantee that all accidents will be prevented. Personnel must always follow company procedures in order to stay safe.