

INS design principles

The forklift weighing systems TC2000, TC3000 and TC5000 builds on three technologies - Dynamic Mass Determination (DMD) and Balanced Mass Determination (BMD), which both are hydraulically based weighing methods, as well as Laser Volume Determination (LVD), which is a method for volumetric measurement of freight goods. Especially the combination of BMD+LVD offers a completely new method of weighing and dimensioning of palletized cargo.

Work smart, rather than hard



Technology



DMD

DMD is a hydraulic based weighing technology, developed for forklift trucks and stackers. By measuring the forklift hydraulic pressure, which indirectly reflects the weight of the lifted load, a robust and effective method for weighing of goods is achieved. The affordable and overload protected pressure sensor makes the method suitable for harsh industrial environments, while exposed electrical wiring and damage to precious load-cells are eliminated.

DMD reduces the influence of mechanical frictions in the forklift mast and hydraulic cylinders by automatically lowering the forks during weighing operations.

INS TC2000



- TC2000 is based on the DMD technology, which typically reduces weighing tolerances to $\pm 0.2 - 0.5\%$, corresponding to $\pm 4 - 10$ kg for a forklift with a lifting capacity of 2000 kg.
- The weighing process is initiated by the keyboard and takes approximately 5-10 seconds.



BMD

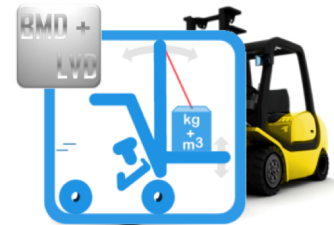
BMD is a patented and accurate hydraulic based weighing technology. In addition to advantages mentioned for DMD, hydraulic pressure, height, velocity and acceleration of the forks are recorded during upwards and downwards manoeuvring, which significantly improves the weighing accuracy and long term stability.

BMD almost eliminates the influence of mechanical friction, non-linearity and weighing tolerances caused by load positioned on fork tips. Furthermore the dual tilt compensation ensures an accurate weighing result regardless of inclination of forklift mast and floor.

INS TC3000



- TC3000 is based on the BMD technology, which typically reduces weighing tolerances to $\pm 0.1\%$, corresponding to ± 2 kg for a forklift with a lifting capacity of 2000 kg.
- The weighing process is initiated automatically or manually by the keyboard and takes approximately 5-10 seconds.



BMD+LVD

BMD+LVD is a combined technology enabling determination of weight, volume and volume weight including data recording of palletized cargo in just 10 seconds.

LVD is a dimensioning technology for volume measurement of palletized cargo. The pallet height is measured by a laser sensor and together with user defined pallet sizes it provides fast determination of volume and volume weight. The laser sensor, which automatically captures the pallet height, is mounted on the forklift mast and compensates for the mast inclination, ensuring exact dimensioning of the freight goods.

INS TC5000



- TC5000 is based on the BMD+LVD technology, which provides measuring tolerances of ± 1 cm for pallet height and typical $\pm 0.1\%$ for weighing, corresponding to ± 2 kg for a forklift with a lifting capacity of 2000 kg.
- The weighing and dimensioning process is initiated automatically or manually by the keyboard and takes approximately 10 seconds.



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