

**KOMATSU**

# SHOP MANUAL

## FORKLIFT TRUCK

# AE50/AM50 Series

|                                   |               |
|-----------------------------------|---------------|
| FB10/10F/14/14F/15/15F-12         | 830001 and up |
| FB18/18F/20A/20AF-12              | 830001 and up |
| FB15G/15GF/18G/18GF/20AG/20AGF-12 | 830001 and up |
| FB10M/10MF/13M/13MF-12            | 825001 and up |
| FB15M/15MF-12                     | 825001 and up |
| FB18M/18MF/20M/20MF-12            | 825001 and up |

### PRECAUTIONS WHEN PERFORMING THE SERVICE WORK

Always pay attention to “Safety” before starting any work — this is important.

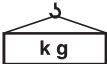
Never attempt any work where danger to yourself or to other persons.

Whenever work requiring safety precautions are described in this manual, a flag mark  inserted, always make double sure that safety measures are taken.

Other unmarked work, should always be performed after studying and using your common sense to prevent accidents.

## DESCRIPTION OF THE SYMBOLS

The symbols described below are used in this manual for convenience and better understanding.

| Symbol                                                                              | Item                     | Description                                                              |
|-------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------|
|   | <b>Safety</b>            | Special safety precautions are needed to perform the work.               |
|  | <b>Note</b>              | Special technical precautions are needed to perform the work             |
|  | <b>Tightening torque</b> | Fastening parts that require specified tightening force when assembling. |
|  | <b>Weight</b>            | Weight of parts or systems                                               |
|  | <b>Coat</b>              | Places to be coated with adhesives, etc. when assembling                 |

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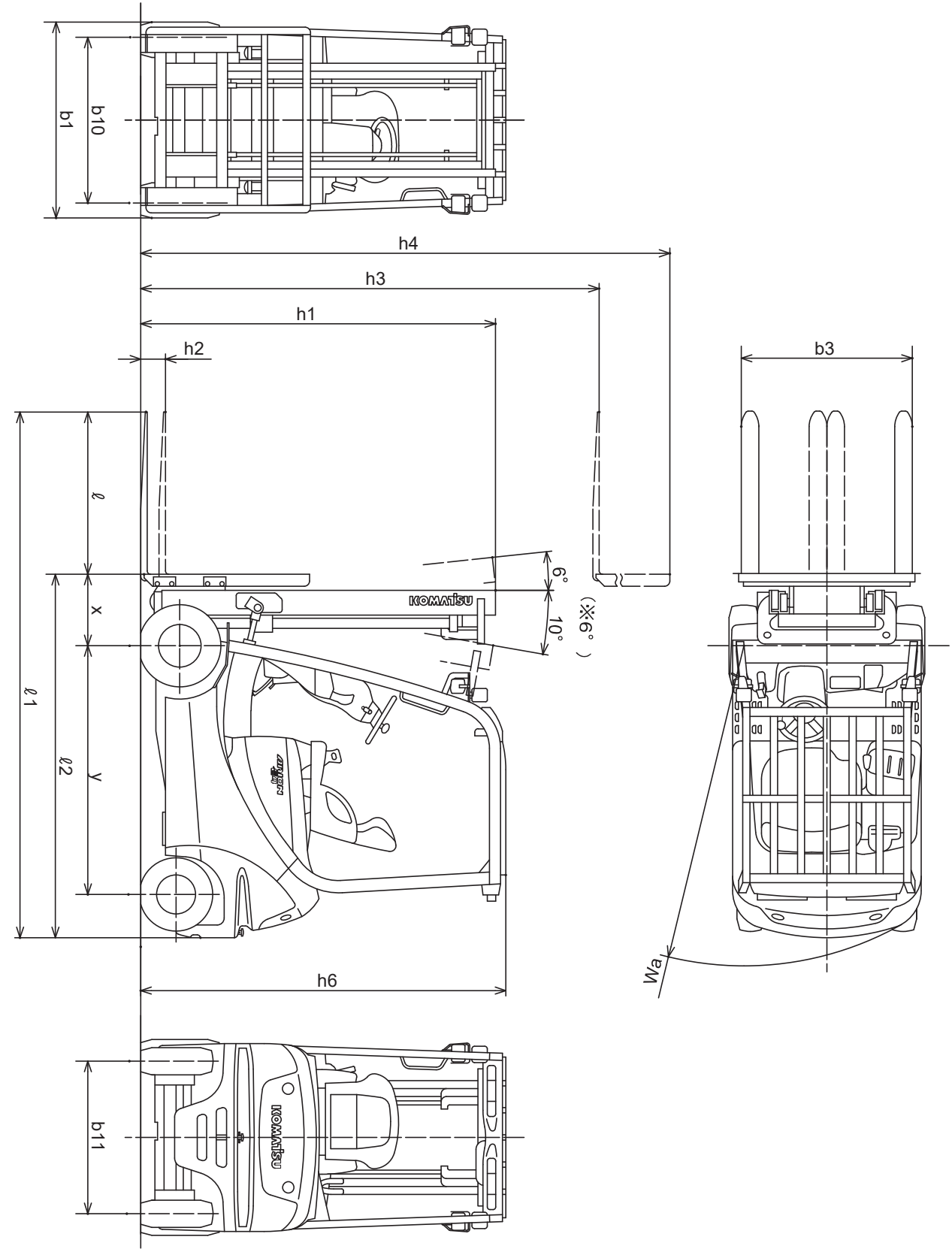


# 10. GENERAL AND SPECIFICATIONS

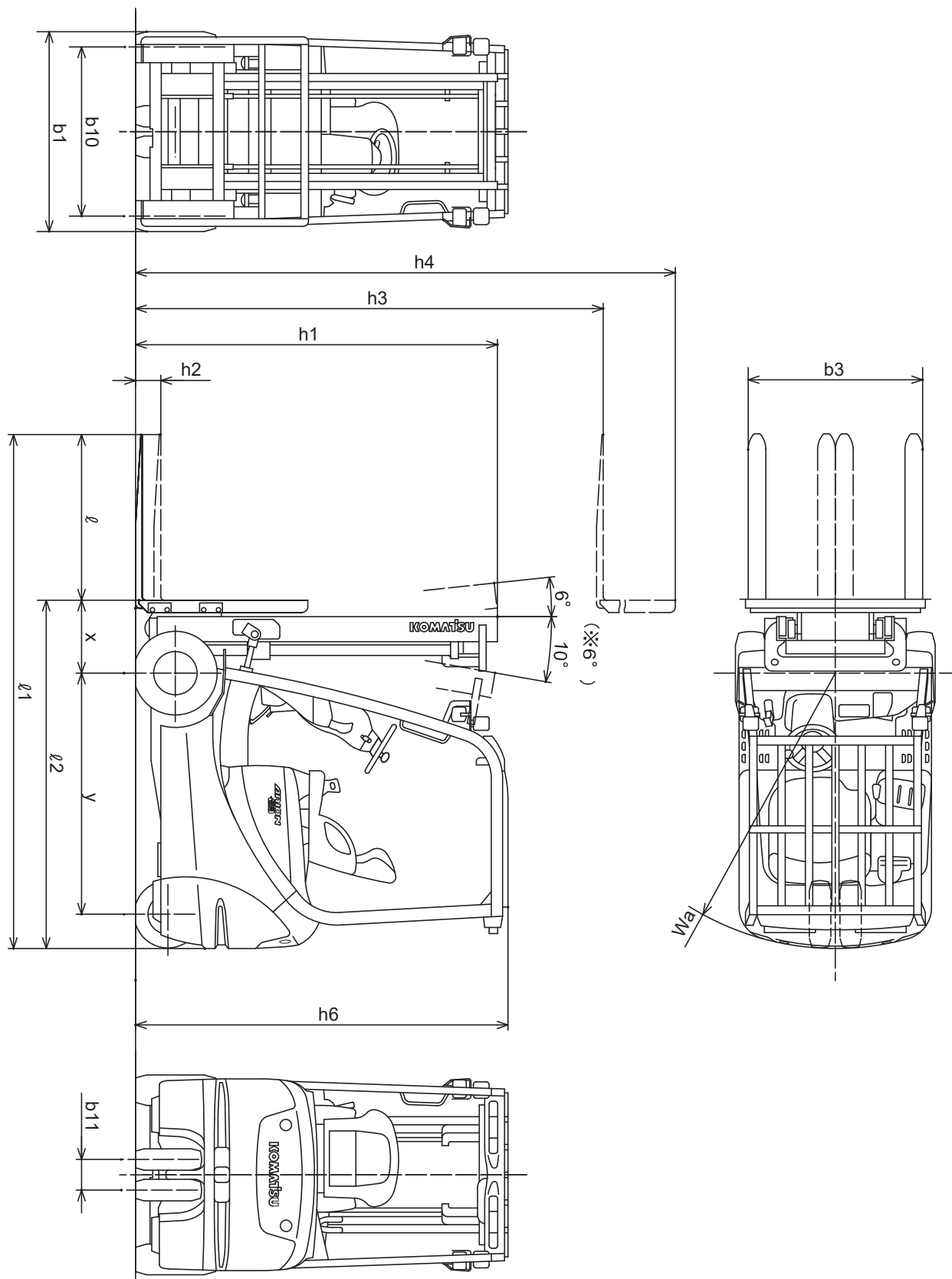
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OUTSIDE VIEW

4 wheel vehicle



## 3 wheel vehicle



## SPECIFICATIONS

### 4 wheel vehicle

|                 |        |                            |                                                   |                                |        |                 |                 |
|-----------------|--------|----------------------------|---------------------------------------------------|--------------------------------|--------|-----------------|-----------------|
| Characteristics | 1.2    | Model                      | Manufacturer's Designation                        |                                |        | FB10-12         | FB14-12         |
|                 | 1.3    | Power Type                 | Electric, Diesel, Gasoline, LPG, Cable            |                                |        | Electric        | Electric        |
|                 | 1.4    | Operation Type             |                                                   |                                |        | Sitting         | Sitting         |
|                 | 1.5    | Rated Capacity             | Q                                                 | Rated Capacity                 | kg     | 1000            | 1350            |
|                 | 1.6    | Load Center                | c                                                 | Rated Load Center              | mm     | 500             | 500             |
|                 | 1.6.1  | Alternative Capacity       | Q2                                                | Capacity@600mm Load Center     | kg     | 900             | 1210            |
|                 | 1.8    | Load Distance              | x                                                 | Front Axle Center to Fork Face | mm     | 400             | 405             |
|                 | 1.9    | Wheelbase                  | y                                                 |                                | mm     | 1410            | 1410            |
| Weight          | 2.1    | Service Weight             | Including Min. Capacity Battery, See line 6.5     |                                | kg     | 2770            | 2790            |
|                 | 2.2    | Axle Loading               | Loaded                                            | Front                          | kg     | 3080            | 3680            |
|                 | 2.2.1  |                            |                                                   | Rear                           | kg     | 690             | 460             |
|                 | 2.3    |                            | Unloaded                                          | Front                          | kg     | 1410            | 1440            |
|                 | 2.3.1  |                            |                                                   | Rear                           | kg     | 1360            | 1350            |
| Tires           | 3.1    | Tire Type                  | Cushion, Elastic Cushion, Pneumatic, Polyurethane |                                |        | Pneumatic       | Pneumatic       |
|                 | 3.2    | Tire Size                  | Front                                             |                                |        | 18x7-8-16PR(I)  | 18x7-8-16PR(I)  |
|                 | 3.3    |                            | Rear                                              |                                |        | 16x6-8-10PR(I)  | 16x6-8-10PR(I)  |
|                 | 3.5    | Number of Wheel            | Front/Rear (x=driven)                             |                                |        | 2*/2            | 2*/2            |
|                 | 3.6    | Tread, Front               | b10                                               |                                | mm     | 940             | 940             |
|                 | 3.7    | Tread, Rear                | b11                                               |                                | mm     | 865             | 865             |
| Dimensions      | 4.1    | Tilting Angle              | a/b                                               | Forward/Backward               | degree | 6/10            | 6/10            |
|                 | 4.2    | Mast Height, Lowered       | h1                                                | 2-stage Mast                   | mm     | 1995            | 1995            |
|                 | 4.3    | Std. Free Lift             | h2                                                | 2-stage Std. Mast, from Ground | mm     | 135             | 140             |
|                 | 4.4    | Std. Lift Height           | h3                                                | 2-stage Std. Mast, from Ground | mm     | 3000            | 3000            |
|                 | 4.5    | Mast Height, Extended      | h4                                                | 2-stage Std. Mast              | mm     | 3955            | 3955            |
|                 | 4.7    | Height, Overhead Guard     | h6                                                |                                | mm     | 2070            | 2070            |
|                 | 4.19   | Length, with Std. Forks    | l1                                                |                                | mm     | 2825            | 2980            |
|                 | 4.20   | Length, to Fork Face       | l2                                                |                                | mm     | 2055            | 2060            |
|                 | 4.21   | Width, at Tire             | b1                                                | Single                         | mm     | 1110            | 1110            |
|                 | 4.22   | Forks                      | s/e/l                                             | Thickness / Width / Length     | mm     | 31x100x770      | 35x100x920      |
|                 | 4.23   | Fork Carriage Class        | ISO 2328, Type A/B/no                             |                                |        | Class 2, Type A | Class 2, Type A |
|                 | 4.24   | Width, Fork Carriage       | b3                                                |                                | mm     | 970             | 970             |
|                 | 4.31   | Ground Clearance           | m1                                                | Under Mast                     | mm     | 95              | 95              |
|                 | 4.32   |                            | m2                                                | at Center of Wheelbase         | mm     | 125             | 125             |
|                 | 4.33   | Right Angle Stacking Aisle | Ast                                               | with L1000 x W1200 pallet      | mm     | 3150            | 3155            |
|                 | 4.34   |                            | Ast                                               | with L1200 x W800 pallet       | mm     | 3350            | 3355            |
|                 | 4.35   | Turning Radius             | Wa                                                |                                | mm     | 1750            | 1750            |
| Performance     | 5.1    | Travel Speed (FWD)         | Loaded / Unloaded                                 |                                | km/h   | 15.0/17.0       | 15.0/17.0       |
|                 | 5.2    | Lifting Speed              | Loaded / Unloaded                                 |                                | mm/s   | 340/600         | 340/600         |
|                 | 5.3    | Lowering Speed             | Loaded / Unloaded                                 |                                | mm/s   | 450/550         | 450/550         |
|                 | 5.6    | Max. Drawbar Pull          | Loaded, 3min. rating                              |                                | N      | 9560            | 9560            |
|                 | 5.8    | Max. Gradeability          | Loaded, 3min. rating/1.5/h                        |                                | %      | 19              | 19              |
|                 | 5.10   | Service Brake              | Operation/Control                                 |                                |        | Foot/Hydraulic  | Foot/Hydraulic  |
|                 | 5.10.1 | Parking Brake              | Operation/Control                                 |                                |        | Hand/Mechanical | Hand/Mechanical |
|                 | 5.10.2 | Steering                   | Type                                              |                                |        | FHPS            | FHPS            |
| Drive           | 6.1    | Drive Motor(AC)            | 60min.rating                                      |                                | kW     | 4.5             | 4.5             |
|                 | 6.2    | Pomp Motor(AC)             | 5 min.rating                                      |                                | kW     | 9.0             | 9.0             |
|                 | 6.4    | Battery Voltage            |                                                   |                                | V      | 48              | 48              |
|                 | 6.4.1  | Battery Capacity,Min       |                                                   |                                | Ah/5hr | 330             | 330             |
|                 | 6.4.2  | Battery Capacity,Max       |                                                   |                                | Ah/5hr | 565             | 565             |
|                 | 6.5    | Battery Weight             | Min.Capacity Battery,See line 6.4.1               |                                | kg     | 610             | 610             |
| Others          | 8.1    | Drive Motor Control        |                                                   |                                |        | Transistor      | Transistor      |
|                 | 8.2    | Relief Pressure Attachment |                                                   |                                | bar    | 176             | 176             |
|                 | 8.2.1  | Reservoir Capacity         |                                                   |                                | Ltr    | 23              | 23              |



| FB15-12         | FB18-12         | FB20A-12        | FB15G-12        | FB18G-12        | FB20AG-12       |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Electric        | Electric        | Electric        | Electric        | Electric        | Electric        |
| Sitting         | Sitting         | Sitting         | Sitting         | Sitting         | Sitting         |
| 1500            | 1750            | 2000            | 1500            | 1750            | 2000            |
| 500             | 500             | 500             | 500             | 500             | 500             |
| 1350            | 1570            | 1800            | 1350            | 1570            | 1800            |
| 405             | 405             | 425             | 405             | 405             | 425             |
| 1410            | 1410            | 1470            | 1540            | 1540            | 1540            |
| 2930            | 3170            | 3620            | 3270            | 3300            | 3660            |
| 3980            | 4400            | 5020            | 4040            | 4440            | 5030            |
| 450             | 520             | 600             | 730             | 610             | 630             |
| 1490            | 1490            | 1720            | 1630            | 1630            | 1790            |
| 1440            | 1680            | 1900            | 1640            | 1670            | 1870            |
| Pneumatic       | Pneumatic       | Elastic Cushion | Pneumatic       | Pneumatic       | Elastic Cushion |
| 18x7-8-16PR(I)  | 18x7-8-16PR(I)  | 200/50-10       | 18x7-8-16PR(I)  | 18x7-8-16PR(I)  | 200/50-10       |
| 16x6-8-10PR(I)  | 16x6-8-10PR(I)  | 16x6-8          | 16x6-8-10PR(I)  | 16x6-8-10PR(I)  | 16x6-8          |
| 2*/2            | 2*/2            | 2*/2            | 2*/2            | 2*/2            | 2*/2            |
| 940             | 940             | 950             | 940             | 940             | 950             |
| 865             | 865             | 865             | 865             | 865             | 865             |
| 6/10            | 6/10            | 6/10            | 6/10            | 6/10            | 6/10            |
| 1995            | 1995            | 2110            | 1995            | 1995            | 2110            |
| 140             | 140             | 150             | 140             | 140             | 150             |
| 3000            | 3000            | 3000            | 3000            | 3000            | 3000            |
| 3955            | 3955            | 3970            | 3955            | 3955            | 3970            |
| 2070            | 2070            | 2070            | 2070            | 2070            | 2070            |
| 2980            | 3015            | 3100            | 3115            | 3115            | 3170            |
| 2060            | 2095            | 2180            | 2195            | 2195            | 2250            |
| 1110            | 1110            | 1160            | 1110            | 1110            | 1160            |
| 35x100x920      | 35x100x920      | 36x122x920      | 35x100x920      | 35x100x920      | 36x122x920      |
| Class 2, Type A | Class 2, Type A | Class 2, Type A | Class 2, Type A | Class 2, Type A | Class 2, Type A |
| 970             | 970             | 970             | 970             | 970             | 970             |
| 95              | 95              | 95              | 95              | 95              | 95              |
| 125             | 125             | 125             | 125             | 125             | 125             |
| 3155            | 3190            | 3275            | 3335            | 3335            | 3395            |
| 3355            | 3390            | 3475            | 3535            | 3535            | 3595            |
| 1750            | 1785            | 1850            | 1930            | 1930            | 1970            |
| 15.0/17.0       | 15.0/17.0       | 14.0/16.0       | 15.0/17.0       | 15.0/17.0       | 14.0/16.0       |
| 340/600         | 320/600         | 280/500         | 340/600         | 320/600         | 280/500         |
| 450/550         | 450/550         | 370/440         | 450/550         | 450/550         | 370/440         |
| 9560            | 9560            | 9045            | 9560            | 9560            | 9045            |
| 19              | 16              | 14              | 16              | 16              | 14              |
| Foot/Hydraulic  | Foot/Hydraulic  | Foot/Hydraulic  | Foot/Hydraulic  | Foot/Hydraulic  | Foot/Hydraulic  |
| Hand/Mechanical | Hand/Mechanical | Hand/Mechanical | Hand/Mechanical | Hand/Mechanical | Hand/Mechanical |
| FHPS            | FHPS            | FHPS            | FHPS            | FHPS            | FHPS            |
| 4.5             | 4.5             | 4.5             | 4.5             | 4.5             | 4.5             |
| 9.0             | 9.0             | 9.0             | 9.0             | 9.0             | 9.0             |
| 48              | 48              | 48              | 48              | 48              | 48              |
| 402             | 402             | 468             | 645             | 645             | 645             |
| 565             | 565             | 565             | 725             | 725             | 725             |
| 720             | 720             | 760             | 1085            | 1085            | 1085            |
| Transistor      | Transistor      | Transistor      | Transistor      | Transistor      | Transistor      |
| 176             | 176             | 176             | 176             | 176             | 176             |
| 23              | 23              | 23              | 23              | 23              | 23              |

## 3 wheel vehicle

|                 |        |                            |                                                   |                                |        |                    |                    |
|-----------------|--------|----------------------------|---------------------------------------------------|--------------------------------|--------|--------------------|--------------------|
| Characteristics | 1.2    | Model                      | Manufacturer's Designation                        |                                |        | FB10M-12           | FB13M-12           |
|                 | 1.3    | Power Type                 | Electric, Diesel, Gasoline, LPG, Cable            |                                |        | Electric           | Electric           |
|                 | 1.4    | Operation Type             |                                                   |                                |        | Sitting            | Sitting            |
|                 | 1.5    | Rated Capacity             | Q                                                 | Rated Capacity                 | kg     | 1000               | 1250               |
|                 | 1.6    | Load Center                | c                                                 | Rated Load Center              | mm     | 500                | 500                |
|                 | 1.6.1  | Alternative Capacity       | Q2                                                | Capacity@600mm Load Center     | kg     | 900                | 1210               |
|                 | 1.8    | Load Distance              | x                                                 | Front Axle Center to Fork Face | mm     | 400                | 400                |
|                 | 1.9    | Wheelbase                  | y                                                 |                                | mm     | 1190               | 1190               |
| Weight          | 2.1    | Service Weight             | Including Min. Capacity Battery, See line 6.5     |                                | kg     | 2600               | 2710               |
|                 | 2.2    | Axle Loading               | Loaded                                            | Front                          | kg     | 3100               | 3540               |
|                 | 2.2.1  |                            |                                                   | Rear                           | kg     | 500                | 420                |
|                 | 2.3    |                            | Unloaded                                          | Front                          | kg     | 1310               | 1310               |
|                 | 2.3.1  |                            |                                                   | Rear                           | kg     | 1290               | 1400               |
| Tires           | 3.1    | Tire Type                  | Cushion, Elastic Cushion, Pneumatic, Polyurethane |                                |        | Pneumatic          | Pneumatic          |
|                 | 3.2    | Tire Size                  | Front                                             |                                |        | 18x7-8-16PR(I)     | 18x7-8-16PR(I)     |
|                 | 3.3    |                            | Rear                                              |                                |        | 15x4 1/2-8-12PR(I) | 15x4 1/2-8-12PR(I) |
|                 | 3.5    | Number of Wheel            | Front/Rear (x=driven)                             |                                |        | 2*/2               | 2*/2               |
|                 | 3.6    | Tread, Front               | b10                                               |                                | mm     | 940                | 940                |
|                 | 3.7    | Tread, Rear                | b11                                               |                                | mm     | 170                | 170                |
| Dimensions      | 4.1    | Tilting Angle              | a/b                                               | Forward/Backward               | degree | 6/10               | 6/10               |
|                 | 4.2    | Mast Height, Lowered       | h1                                                | 2-stage Mast                   | mm     | 1995               | 1995               |
|                 | 4.3    | Std. Free Lift             | h2                                                | 2-stage Std. Mast, from Ground | mm     | 135                | 135                |
|                 | 4.4    | Std. Lift Height           | h3                                                | 2-stage Std. Mast, from Ground | mm     | 3000               | 3000               |
|                 | 4.5    | Mast Height, Extended      | h4                                                | 2-stage Std. Mast              | mm     | 3955               | 3955               |
|                 | 4.7    | Height, Overhead Guard     | h6                                                |                                | mm     | 2070               | 2070               |
|                 | 4.19   | Length, with Std. Forks    | l1                                                |                                | mm     | 2560               | 2560               |
|                 | 4.20   | Length, to Fork Face       | l2                                                |                                | mm     | 1790               | 1790               |
|                 | 4.21   | Width, at Tire             | b1                                                | Single                         | mm     | 1110               | 1110               |
|                 | 4.22   | Forks                      | s/e/l                                             | Thickness / Width / Length     | mm     | 31x100x770         | 31x100x770         |
|                 | 4.23   | Fork Carriage Class        | ISO 2328, Type A/B/no                             |                                |        | Class 2, Type A    | Class 2, Type A    |
|                 | 4.24   | Width, Fork Carriage       | b3                                                |                                | mm     | 970                | 970                |
|                 | 4.31   | Ground Clearance           | m1                                                | Under Mast                     | mm     | 95                 | 95                 |
|                 | 4.32   |                            | m2                                                | at Center of Wheelbase         | mm     | 125                | 125                |
|                 | 4.33   | Right Angle Stacking Aisle | Ast                                               | with L1000 x W1200 pallet      | mm     | 2790               | 2790               |
|                 | 4.34   |                            | Ast                                               | with L1200 x W800 pallet       | mm     | 2990               | 2990               |
|                 | 4.35   | Turning Radius             | Wa                                                |                                | mm     | 1390               | 1390               |
| Performance     | 5.1    | Travel Speed (FWD)         | Loaded / Unloaded                                 |                                | km/h   | 15.0/17.0          | 15.0/17.0          |
|                 | 5.2    | Lifting Speed              | Loaded / Unloaded                                 |                                | mm/s   | 340/600            | 340/600            |
|                 | 5.3    | Lowering Speed             | Loaded / Unloaded                                 |                                | mm/s   | 450/550            | 450/550            |
|                 | 5.6    | Max. Drawbar Pull          | Loaded, 3min. rating                              |                                | N      | 9560               | 9560               |
|                 | 5.8    | Max. Gradeability          | Loaded, 3min. rating/1.5/h                        |                                | %      | 19                 | 19                 |
|                 | 5.10   | Service Brake              | Operation/Control                                 |                                |        | Foot/Hydraulic     | Foot/Hydraulic     |
|                 | 5.10.1 | Parking Brake              | Operation/Control                                 |                                |        | Hand/Mechanical    | Hand/Mechanical    |
|                 | 5.10.2 | Steering                   | Type                                              |                                |        | FHPS               | FHPS               |
| Drive           | 6.1    | Drive Motor(AC)            | 60min.rating                                      |                                | kW     | 4.5                | 4.5                |
|                 | 6.2    | Pomp Motor(AC)             | 5 min.rating                                      |                                | kW     | 9.0                | 9.0                |
|                 | 6.4    | Battery Voltage            |                                                   |                                | V      | 48                 | 48                 |
|                 | 6.4.1  | Battery Capacity,Min       |                                                   |                                | Ah/5hr | 280                | 280                |
|                 | 6.4.2  | Battery Capacity,Max       |                                                   |                                | Ah/5hr | 370                | 370                |
|                 | 6.5    | Battery Weight             | Min.Capacity Battery,See line 6.4.1               |                                | kg     | 610                | 610                |
| Others          | 8.1    | Drive Motor Control        |                                                   |                                |        | Transistor         | Transistor         |
|                 | 8.2    | Relief Pressure Attachment |                                                   |                                | bar    | 176                | 176                |
|                 | 8.2.1  | Reservoir Capacity         |                                                   |                                | Ltr    | 23                 | 23                 |