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# Section B

# Body & Framework

**Service Manual - JS200-JS260 - Tier III Auto**




Publication No.
**9803/6580-6**

Sample manual. Download All pages at:
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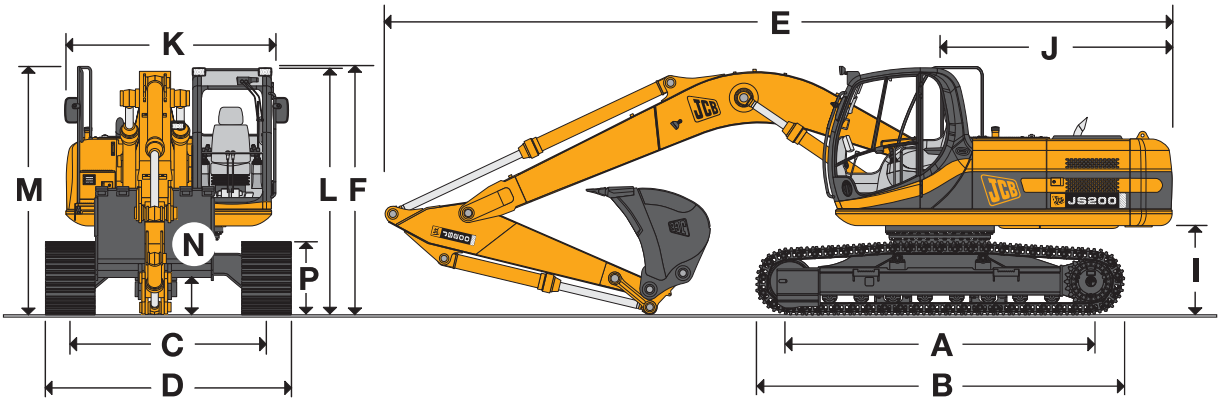
# Technical Data

## Static Dimensions

### JS200/210/220 - Monoboom

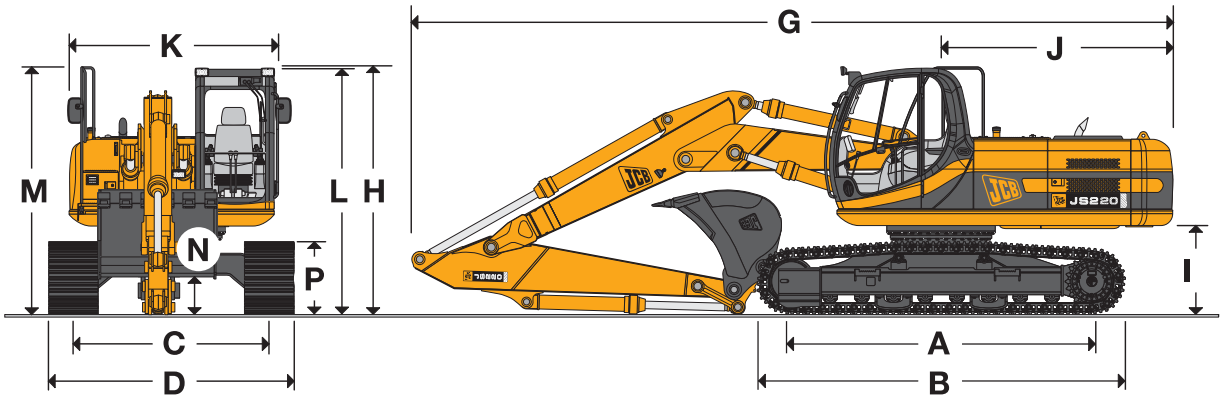



| Dimensions in millimetres (ft. in) | SC | NC | LC |
|---|---|---|---|
| **A** Track length on ground | 3370 (11 ft 1 in) | 3370 (11 ft 1 in) | 3660 (12 ft 0 in) |
| **B** Undercarriage overall length | 4170 (13 ft 8 in) | 4170 (13 ft 8 in) | 4460 (14 ft 8 in) |
| **B** Undercarriage overall length - JS210 Only | - | - | 4460 (14 ft 8 in) |
| **C** Track gauge | 2200 (7 ft 3 in) | 1990 (6 ft 6 in) | 2390 (7 ft 10 in) |
| **C** Track gauge - JS210 Only | 2170 (7 ft 11 in) | - | - |
| **D** Width over tracks (500 shoes) | 2700 (8 ft 10 in) | 2490 (8 ft 2 in) | - |
| **D** Width over tracks (600 shoes) | 2800 (9 ft 2 in) | 2590 (8 ft 6 in) | 2990 (9 ft 10 in) |
| **D** Width over tracks (700 shoes) | 2900 (9 ft 6 in) | 2690 (8 ft 10 in) | 3090 (10 ft 2 in) |
| **D** Width over tracks (800 shoes) | - | - | 3190 (10 ft 6 in) |
| **D** Width over tracks (900 shoes) | - | - | 3290 (10 ft 10 in) |

| Dipper lengths | 1.9m | 2.4m | 3.0m |
|---|---|---|---|
| **E** Transport length | 9570 (31 ft 5 in) | 9560 (31 ft 4 in) | 9440 (31 ft 0 in) |
| **F** Transport height | 3055 (10 ft 0 in) | 3060 (10 ft 0 in) | 3025 (9 ft 11 in) |

| Dimensions in millimetres (ft. in) | SC/NC/LC |
|---|---|
| **I** Counterweight clearance | 1066 (3 ft 6 in) |
| **J** Tailswing radius | 2825 (9 ft 3 in) |
| **K** Width of superstructure | 2549 (8 ft 4 in) |
| **L** Height over cab | 2946 (9 ft 8 in) |
| **M** Height over grab rail | 3025 (9 ft 11 in) |
| **N** Ground clearance | 486 (1 ft 7 in) |
| **P** Track height | 885 (2 ft 11 in) |

## JS200/210/220 - Triple Articulated Boom

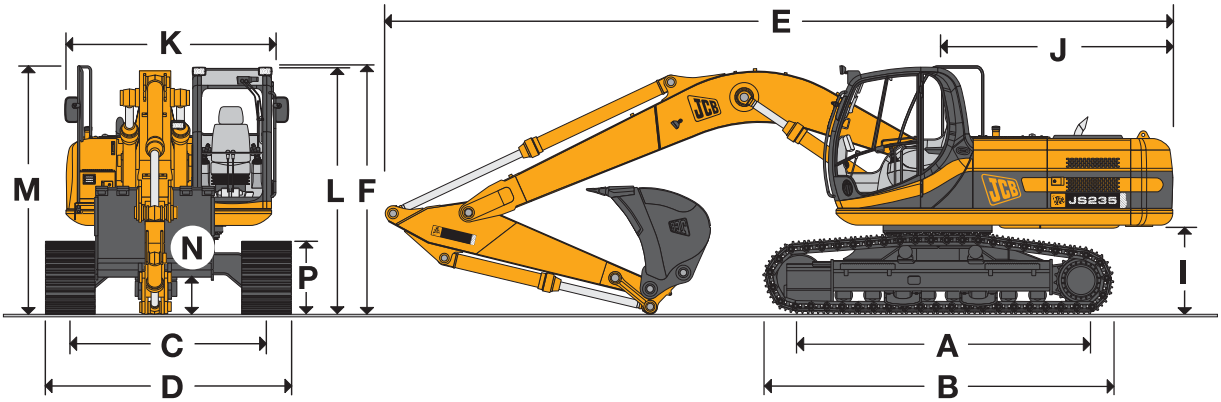



| Dimensions in millimetres (ft. in) | SC | NC | LC |
|---|---|---|---|
| **A** Track length on ground | 3370 (11 ft 1 in) | 3370 (11 ft 1 in) | 3660 (12 ft 0 in) |
| **B** Undercarriage overall length | 4170 (13 ft 8 in) | 4170 (13 ft 8 in) | 4460 (14 ft 8 in) |
| **B** Undercarriage overall length - JS210 Only | - | - | 4460 (14 ft 8 in) |
| **C** Track gauge | 2200 (7 ft 3 in) | 1990 (6 ft 6 in) | 2390 (7 ft 10 in) |
| **C** Track gauge - JS210 Only | 2170 (7 ft 11 in) | - | - |
| **D** Width over tracks (500 shoes) | 2700 (8 ft 10 in) | 2490 (8 ft 2 in) | - |
| **D** Width over tracks (600 shoes) | 2800 (9 ft 2 in) | 2590 (8 ft 6 in) | 2990 (9 ft 10 in) |
| **D** Width over tracks (700 shoes) | 2900 (9 ft 6 in) | 2690 (8 ft 10 in) | 3090 (10 ft 2 in) |
| **D** Width over tracks (800 shoes) | - | - | 3190 (10 ft 6 in) |
| **D** Width over tracks (900 shoes) | - | - | 3290 (10 ft 10 in) |

| Dipper lengths | 1.9m | 2.4m | 3.0m |
|---|---|---|---|
| **G** Transport length | 9598 (31 ft 6 in) | 9573 (31 ft 5 in) | 9499 (31 ft 2 in) |
| **H** Transport height | 3128 (10 ft 3 in) | 3065 (10 ft 1 in) | 2913 (9 ft 7 in) |

| Dimensions in millimetres (ft. in) | SC/NC/LC |
|---|---|
| **I** Counterweight clearance | 1066 (3 ft 6 in) |
| **J** Tailswing radius | 2825 (9 ft 3 in) |
| **K** Width of superstructure | 2549 (8 ft 4 in) |
| **L** Height over cab | 2946 (9 ft 8 in) |
| **M** Height over grab rail | 3025 (9 ft 11 in) |
| **N** Ground clearance | 486 (1 ft 7 in) |
| **P** Track height | 885 (2 ft 11 in) |

## JS235 - Monoboom

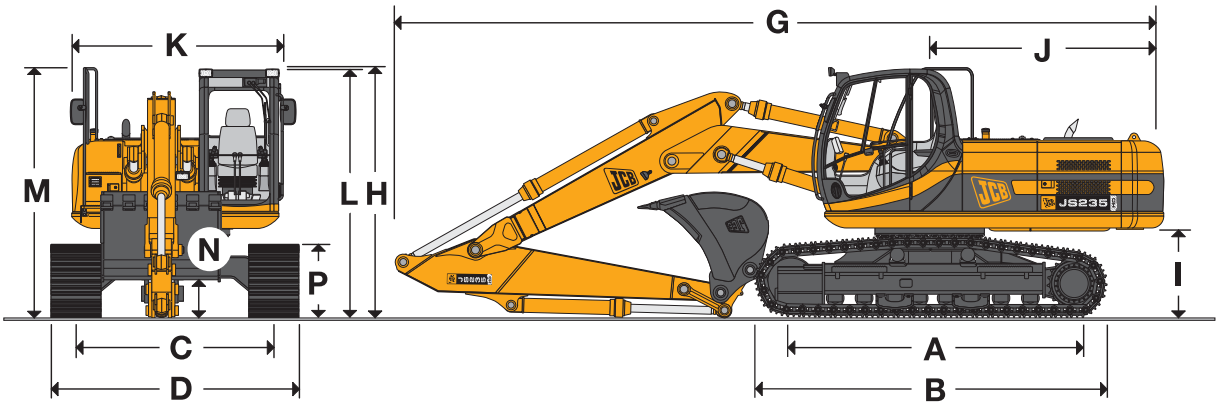



| Dimensions in millimetres (ft. in) | HD |
|---|---|
| **A** Track length on ground | 3420 (11 ft 1 in) |
| **B** Undercarriage overall length | 4220 (13 ft 8 in) |
| **C** Track gauge | 2000 (6 ft 6 in) |
| **D** Width over tracks (550 shoes) | 2550 (8 ft 4 in) |

| Dipper lengths | 1.91m | 2.4m | 3.0m |
|---|---|---|---|
| **E** Transport length | 9570 (31 ft 4 in) | 9560 (31 ft 3 in) | 9440 (31 ft 0 in) |
| **F** Transport height | 3154 (10 ft 4 in) | 3162 (10 ft 3 in) | 2290 (7 ft 6 in) |

| Dimensions in millimetres (ft. in) | HD |
|---|---|
| **I** Counterweight clearance | 1170 (3 ft 8 in) |
| **J** Tailswing radius | 2825 (9 ft 3 in) |
| **K** Width of superstructure | 2550 (8 ft 4 in) |
| **L** Height over cab | 3050 (10 ft 0 in) |
| **M** Height over grab rail | 3129 (10 ft 3 in) |
| **N** Ground clearance | 565 (1 ft 8 in) |
| **P** Track height | 995 (3 ft 3in) |

## JS235 - Triple Articulated Boom

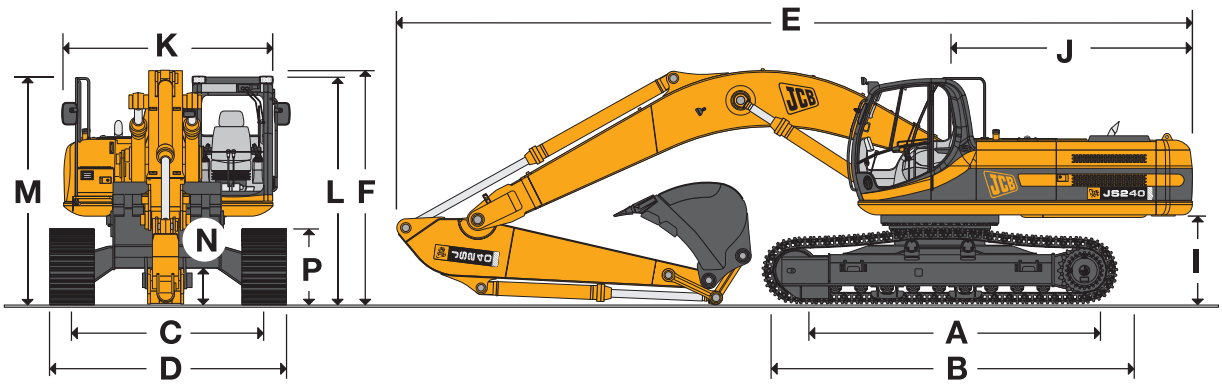



| Dimensions in millimetres (ft. in) | HD |
|---|---|
| **A** Track length on ground | 3420 (11 ft 1 in) |
| **B** Undercarriage overall length | 4220 (13 ft 8 in) |
| **C** Track gauge | 2000 (6 ft 6 in) |
| **D** Width over tracks (550 shoes) | 2550 (8 ft 4 in) |

| Dipper lengths | 1.91m | 2.4m | 3.0m |
|---|---|---|---|
| **G** Transport length | 9583 (31 ft 6 in) | 9576 (31 ft 5 in) | 9467 (31 ft 1 in) |
| **H** Transport height | 3154 (10 ft 4 in) | 3162 (10 ft 3 in) | 2290 (7 ft 6 in) |

| Dimensions in millimetres (ft. in) | HD |
|---|---|
| **I** Counterweight clearance | 1170 (3 ft 8 in) |
| **J** Tailswing radius | 2825 (9 ft 3 in) |
| **K** Width of superstructure | 2550 (8 ft 4 in) |
| **L** Height over cab | 3050 (10 ft 0 in) |
| **M** Height over grab rail | 3129 (10 ft 3 in) |
| **N** Ground clearance | 565 (1 ft 8 in) |
| **P** Track height | 995 (3 ft 3 in) |

## JS240/260 - Monoboom

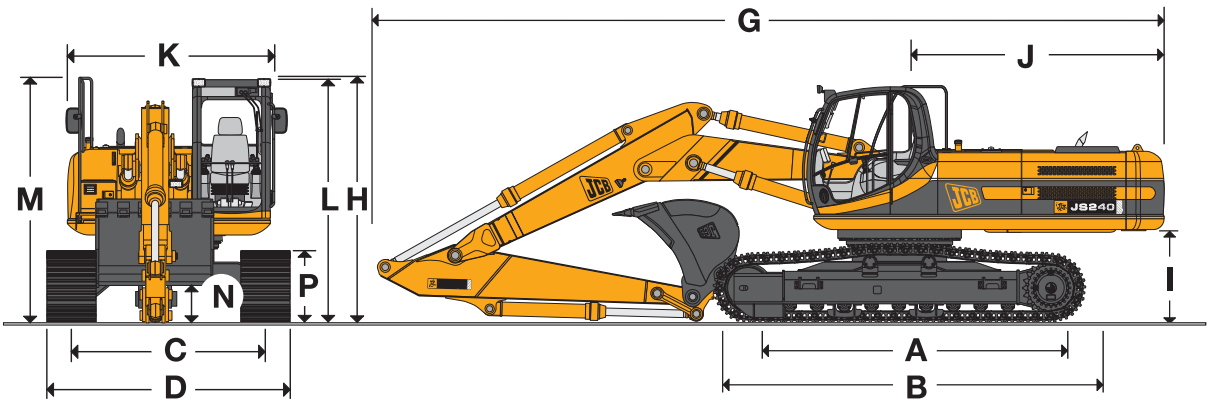



| Dimensions in millimetres (ft. in) | SC | NC | LC |
|---|---|---|---|
| **A** Track length on ground | 3460 (11 ft 4 in) | 3840 (12 ft 7 in) | 3840 (12 ft 7 in) |
| **B** Undercarriage overall length | 4260 (14 ft 0 in) | 4640 (15 ft 3 in) | 4640 (15 ft 3 in) |
| **C** Track gauge | 2390 (7 ft 10 in) | 2390 (7 ft 10 in) | 2590 (8 ft 6 in) |
| **D** Width over tracks (600 shoes) | 2990 (9 ft 10 in) | 2990 (9 ft 10 in) | 3190 (10 ft 6 in) |
| **D** Width over tracks (700 shoes) | 3090 (10 ft 2 in) | 3090 (10 ft 2 in) | 3290 (10 ft 10 in) |
| **D** Width over tracks (800 shoes) | 3190 (10 ft 6 in) | 3190 (10 ft 6 in) | 3390 (11 ft 1 in) |
| **D** Width over tracks (900 shoes) | 3290 (10 ft 10 in) | 3290 (10 ft 10 in) | 3490 (11 ft 5 in) |

| Dipper lengths | 2.0m | 2.44m | 3.09m | 3.53m |
|---|---|---|---|---|
| **E** Transport length | 10083 (33 ft 0 in) | 10060 (33 ft 0 in) | 9960 (32 ft 8 in) | 10010 (32 ft 10 in) |
| **F** Transport height | 3173 (10 ft 5 in) | 3230 (10 ft 7 in) | 3050 (10 ft 0 in) | 3220 (10 ft 7 in) |

| Dimensions in millimetres (ft. in) | SC/NC/LC |
|---|---|
| **I** Counterweight clearance | 1125 (3 ft 8 in) |
| **J** Tailswing radius | 3000 (9 ft 10 in) |
| **K** Width of superstructure | 2500 (8 ft 2 in) |
| **L** Height over cab | 2980 (9 ft 10 in) |
| **M** Height over grab rail | 3059 (10 ft 0 in) |
| **N** Ground clearance | 486 (1 ft 7 in) |
| **P** Track height | 940 (3 ft 1 in) |

## JS240/260 - Triple Articulated Boom




| Dimensions in millimetres (ft. in) | SC | NC | LC |
|---|---|---|---|
| **A** Track length on ground | 3460 (11 ft 4 in) | 3840 (12 ft 7 in) | 3840 (12 ft 7 in) |
| **B** Undercarriage overall length | 4260 (14 ft 0 in) | 4640 (15 ft 3 in) | 4640 (15 ft 3 in) |
| **C** Track gauge | 2390 (7 ft 10 in) | 2390 (7 ft 10 in) | 2590 (8 ft 6 in) |
| **D** Width over tracks (600 shoes) | 2990 (9 ft 10 in) | 2990 (9 ft 10 in) | 3190 (10 ft 6 in) |
| **D** Width over tracks (700 shoes) | 3090 (10 ft 2 in) | 3090 (10 ft 2 in) | 3290 (10 ft 10 in) |
| **D** Width over tracks (800 shoes) | 3190 (10 ft 6 in) | 3190 (10 ft 6 in) | 3390 (11 ft 1 in) |
| **D** Width over tracks (900 shoes) | 3290 (10 ft 10 in) | 3290 (10 ft 10 in) | 3490 (11 ft 5 in) |

| Dipper lengths | 2.0m | 2.44m | 3.09m | 3.53m |
|---|---|---|---|---|
| **G** Transport length | 10090 (33 ft 1 in) | 10210 (33 ft 6 in) | 10170 (33 ft 4in) | 10170 (33 ft 4 in) |
| **H** Transport height | 3785 (12 ft 5 in) | 3270 (10 ft 9 in) | 3140 (10 ft 4 in) | 3290 (10 ft 10 in) |

| Dimensions in millimetres (ft. in) | SC/NC/LC |
|---|---|
| **I** Counterweight clearance | 1125 (3 ft 8 in) |
| **J** Tailswing radius | 3000 (9 ft 10 in) |
| **K** Width of superstructure | 2500 (8 ft 2 in) |
| **L** Height over cab | 2980 (9 ft 10 in) |
| **M** Height over grab rail | 3059 (10 ft 0 in) |
| **N** Ground clearance | 486 (1 ft 7 in) |
| **P** Track height | 940 (3 ft 1 in) |

# Shipping Weight

Approximate weight when equipped with monoboom, medium length dipper, bucket, operator and full fuel tank except where indicated otherwise.

| Model | Track shoe width | Weight |
|---|---|---|
| JS200NC | 500mm | 19845 kg |
| JS200NC | 600mm | 20095 kg |
| JS200NC | 700mm | 20350 kg |
| JS200SC | 500mm | 19925 kg |
| JS200SC | 600mm | 20180 kg |
| JS200SC | 700mm | 20430 kg |
| JS200LC | 600mm | 20605 kg |
| JS200LC | 700mm | 20870 kg |
| JS200LC | 800mm | 21140 kg |
| JS200LC | 900mm | 21190 kg |

| Model | Track shoe width | Weight |
|---|---|---|
| JS210LC | 600mm | 21090 kg |
| JS210LC | 700mm | 21355 kg |
| JS210LC | 800mm | 21625 kg |
| JS210LC | 900mm | 21675 kg |

| Model | Track shoe width | Weight |
|---|---|---|
| JS220NC | 500mm | 21144 kg |
| JS220NC | 600mm | 21396 kg |
| JS220NC | 700mm | 21648 kg |
| JS220SC | 500mm | 21227 kg |
| JS220SC | 600mm | 21479 kg |
| JS220SC | 700mm | 21731 kg |
| JS220LC | 600mm | 21904 kg |
| JS220LC | 700mm | 22172 kg |
| JS220LC | 800mm | 22440 kg |
| JS220LC | 900mm | 22490 kg |

| Model | Track shoe width | Weight |
|---|---|---|
| JS220NC TAB | 500mm | 22194 kg |
| JS220NC TAB | 600mm | 22446 kg |

| Model | Track shoe width | Weight |
|---|---|---|
| JS220NC TAB | 700mm | 22698 kg |
| JS220SC TAB | 500mm | 22277 kg |
| JS220SC TAB | 600mm | 22529 kg |
| JS220SC TAB | 700mm | 22781 kg |
| JS220LC TAB | 600mm | 22954 kg |
| JS220LC TAB | 700mm | 23222 kg |
| JS220LC TAB | 800mm | 23490 kg |
| JS220LC TAB | 900mm | 23540 kg |

| Model | Track shoe width | Weight |
|---|---|---|
| JS235HD | 550mm | 22920 kg |

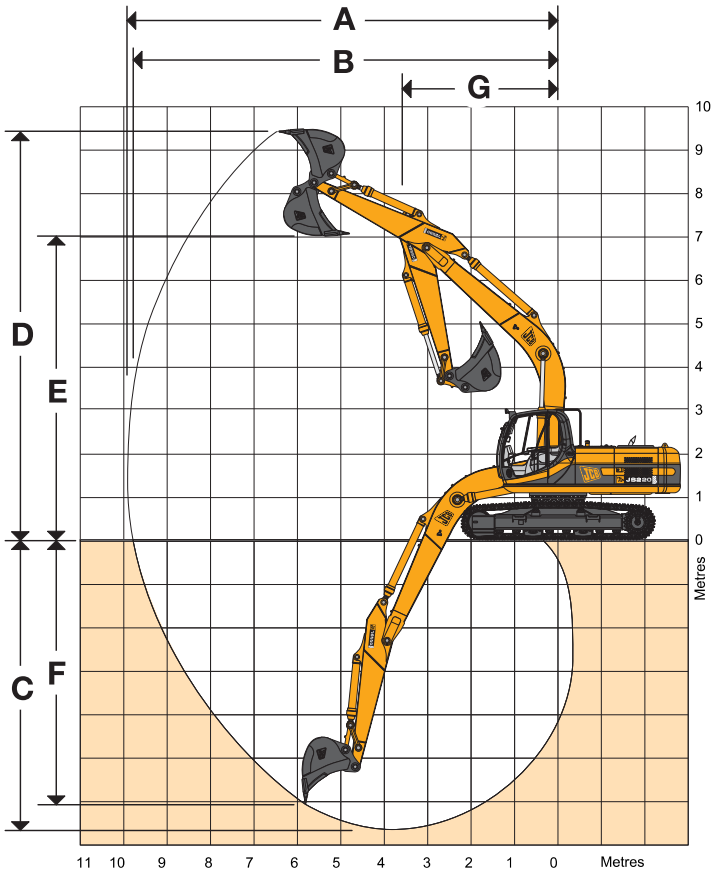
| Model | Track shoe width | Weight |
|---|---|---|
| JS240SC | 600mm | 23750 kg |
| JS240NC | 600mm | 24270 kg |
| JS240LC | 700mm | 24620 kg |

| Model | Track shoe width | Weight |
|---|---|---|
| JS260SC | 600mm | 24920 kg |
| JS260NC | 600mm | 25440 kg |
| JS260LC | 700mm | 25790 kg |

| Model | Track shoe width | Weight |
|---|---|---|
| JS260SC TAB | 600mm | 26320 kg |
| JS260NC TAB | 600mm | 26840 kg |
| JS260LC TAB | 700mm | 27190 kg |

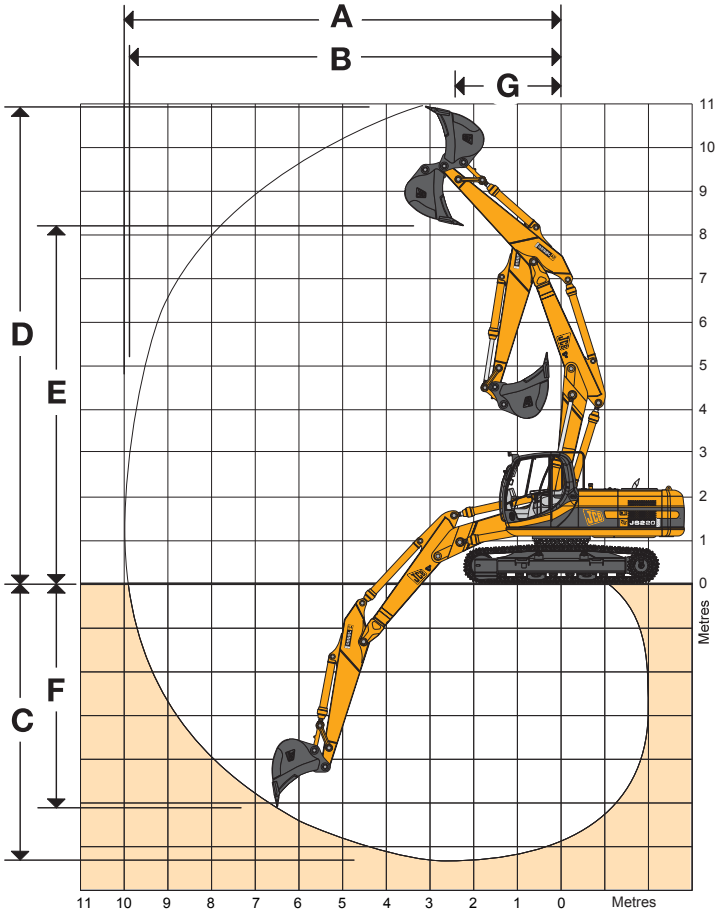
# Dig Depth Chart

## JS200/210/220 - Monoboom



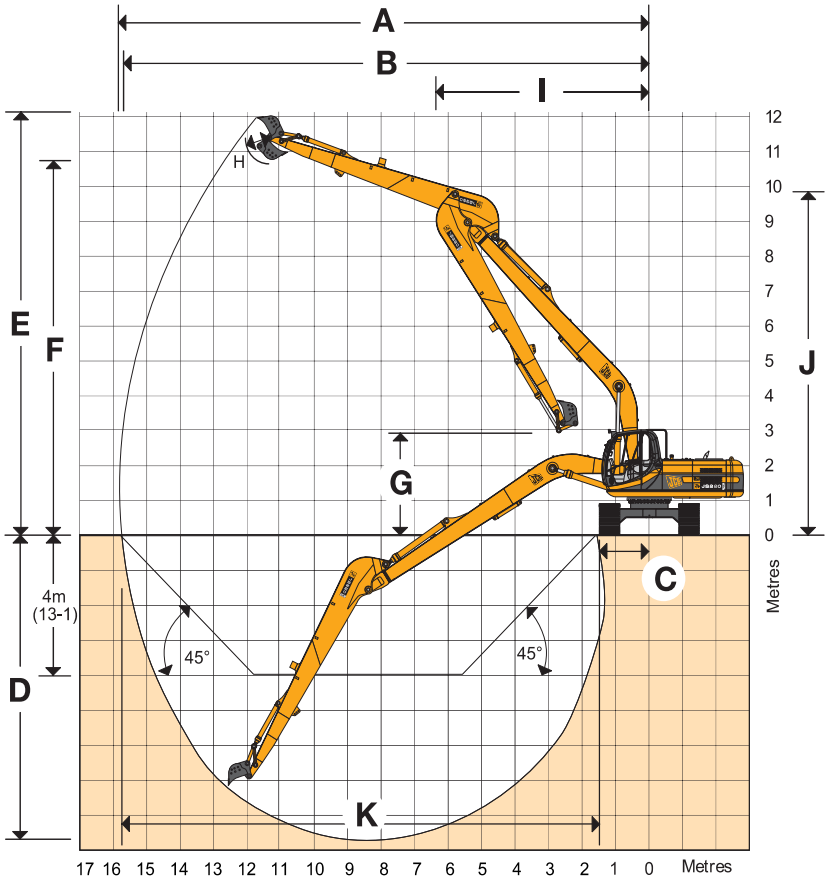

| | 5.7 m | | |
|---|---|---|---|
| **Dipper** | **1.91** | **2.4** | **3.0** |
| | m (ft in) | m (ft in) | m (ft in) |
| **A** Maximum digging reach | 8.89 (29 2) | 9.34 (30 8) | 9.87 (32 5) |
| **B** Maximum digging reach (on ground) | 8.70 (28 7) | 9.16 (30 1) | 9.70 (31 10) |
| **C** Maximum digging depth | 5.53 (18 2) | 6.02 (19 9) | 6.60 (21 8) |
| **D** Maximum digging height | 8.95 (29 4) | 9.20 (30 2) | 9.40 (30 10) |
| **E** Maximum dumping height | 6.31 (20 8) | 6.53 (21 5) | 6.75 (22 2) |
| **F** Maximum vertical wall cut depth | 4.9 (16 1) | 5.47 (17 11) | 6.07 (19 11) |
| **G** Maximum swing radius | 3.76 (12 4) | 3.71 (12 2) | 3.60 (1110) |

## JS200/210/220 - Triple Articulated Boom



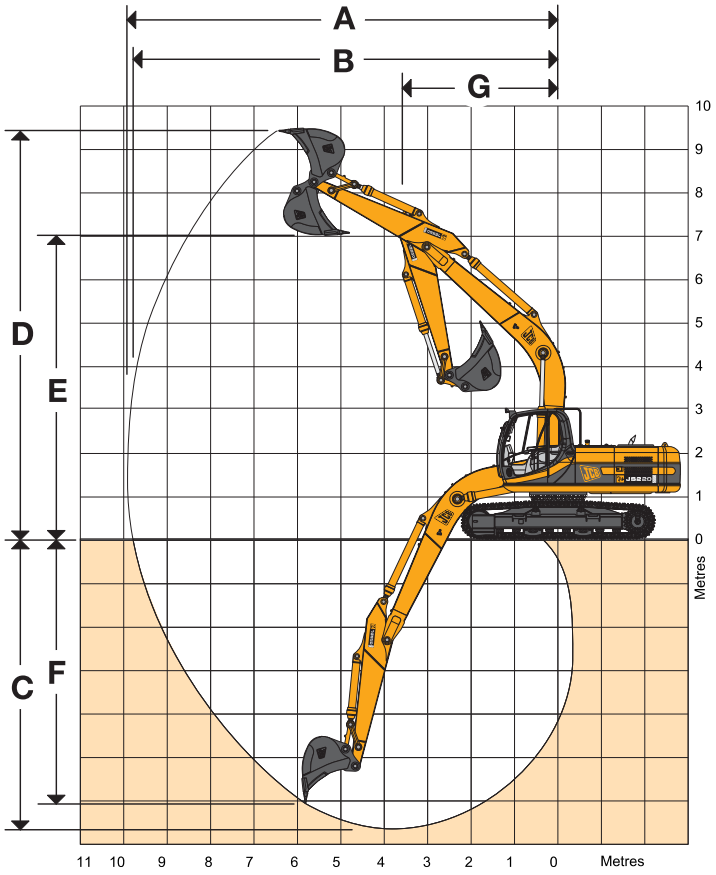

| | 5.7 m | | |
|---|---|---|---|
| **Dipper** | **1.91** | **2.4** | **3.0** |
| | m (ft in) | m (ft in) | m (ft in) |
| **A** Maximum digging reach | 9.00 (29 6) | 9.44 (31 0) | 9.98 (32 9) |
| **B** Maximum digging reach (on ground) | 8.81 (28 11) | 9.26 (30 5) | 9.81 (32 2) |
| **C** Maximum digging depth | 5.29 (17 4) | 5.77 (18 11) | 6.35 (20 10) |
| **D** Maximum digging height | 10.20 (33 6) | 10.54 (34 7) | 10.91 (35 10) |
| **E** Maximum dumping height | 7.31 (24 0) | 7.65 (25 1) | 8.01 (26 3) |
| **F** Maximum vertical wall cut depth | 4.04 (13 3) | 4.54 (14 11) | 5.12 (16 10) |
| **G** Maximum swing radius | 2.50 (8 2) | 2.55 (8 4) | 2.29 (7 6) |

## JS220/260LR - Long Reach



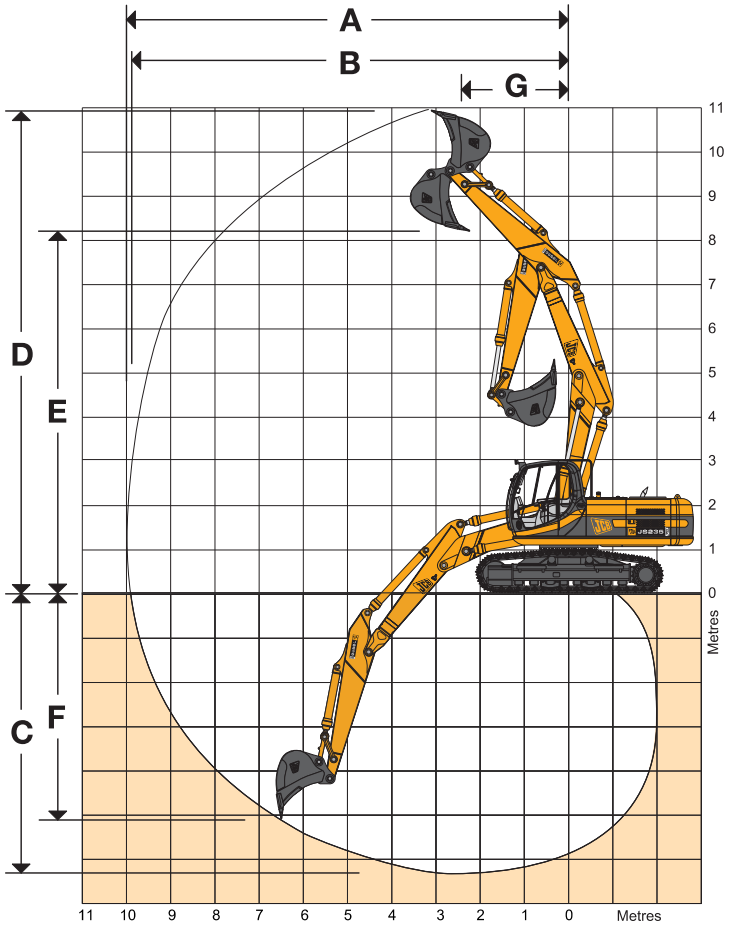

| | 220LR | 260LR |
|---|---|---|
| **Boom** | **8.7 m** | **10.27 m** |
| **Dipper** | **6.4m** | **7.95m** |
| | m (ft in) | m (ft in) |
| **A** Maximum reach | 15.60 (51 2) | 18.76 (61 7) |
| **B** Maximum reach (on ground) | 15.49 (50 10) | 18.67 (61 2) |
| **C** Minimum reach (on ground) | 1.49 (4 11) | 0.09 (0.4) |
| **D** Maximum depth | 11.99 (39 4) | 15.41 (50 7) |
| **E** Maximum height | 12.66 (41 6) | 12.88 (42 3) |
| **F** Maximum dumping height | 10.45 (34 3) | 10.78 (35 5) |
| **G** Minimum dumping height | 1.91 (6 3) | 1.95 (6 5) |
| **H** Bucket struck radius | 1.20 (3 11) | 1.20 (3 11) |
| **I** Minimum swing radius | 5.45 (17 11) | 7.36 (24 2) |
| **J** Minimum swing radius height | 10.27 (33 8) | 11.03 (36 2) |
| **K** Maximum ground level span | 13.99 (45 11) | 17.07 (56 0) |

## JS235HD - Monoboom



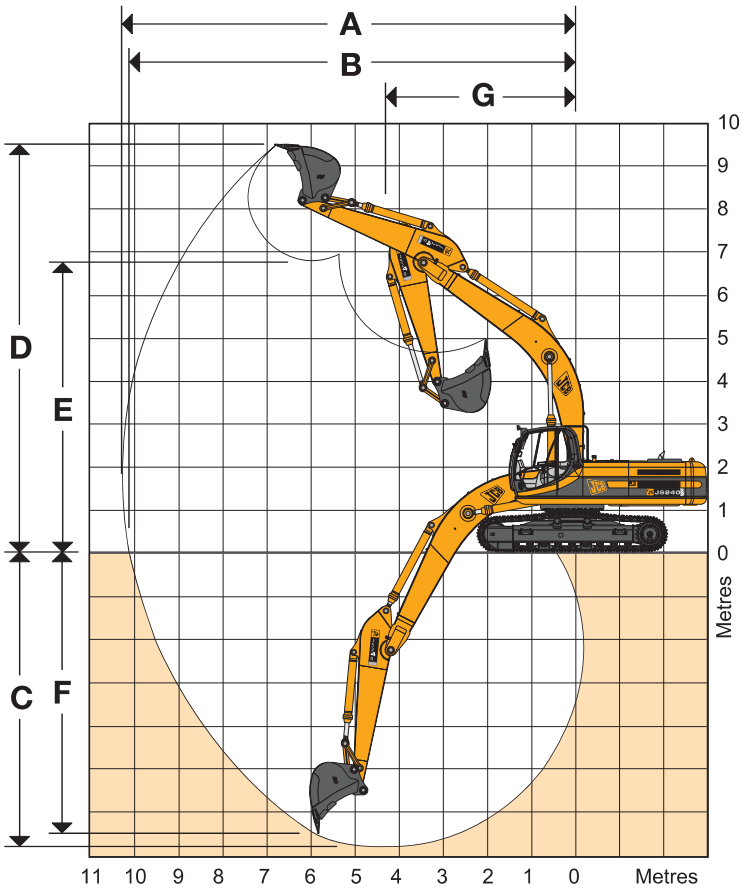

| | 5.7 m | | |
|---|---|---|---|
| **Dipper** | **1.91** | **2.4** | **3.0** |
| | m (ft in) | m (ft in) | m (ft in) |
| **A** Maximum digging reach | 8.89 (29 2) | 9.34 (30 8) | 9.87 (32 5) |
| **B** Maximum digging reach (on ground) | 8.70 (28 7) | 9.16 (30 1) | 9.70 (31 10) |
| **C** Maximum digging depth | 5.43 (18 2) | 5.92 (19 9) | 6.50 (21 8) |
| **D** Maximum digging height | 9.05 (29 4) | 9.30 (30 2) | 9.50 (30 10) |
| **E** Maximum dumping height | 6.41 (20 8) | 6.63 (21 5) | 6.85 (22 2) |
| **F** Maximum vertical wall cut depth | 4.8 (16 1) | 5.37 (17 11) | 5.97 (19 11) |
| **G** Maximum swing radius | 3.76 (12 4) | 3.71 (12 2) | 3.60 (11 10) |

## JS235HD - Triple Articulated Boom



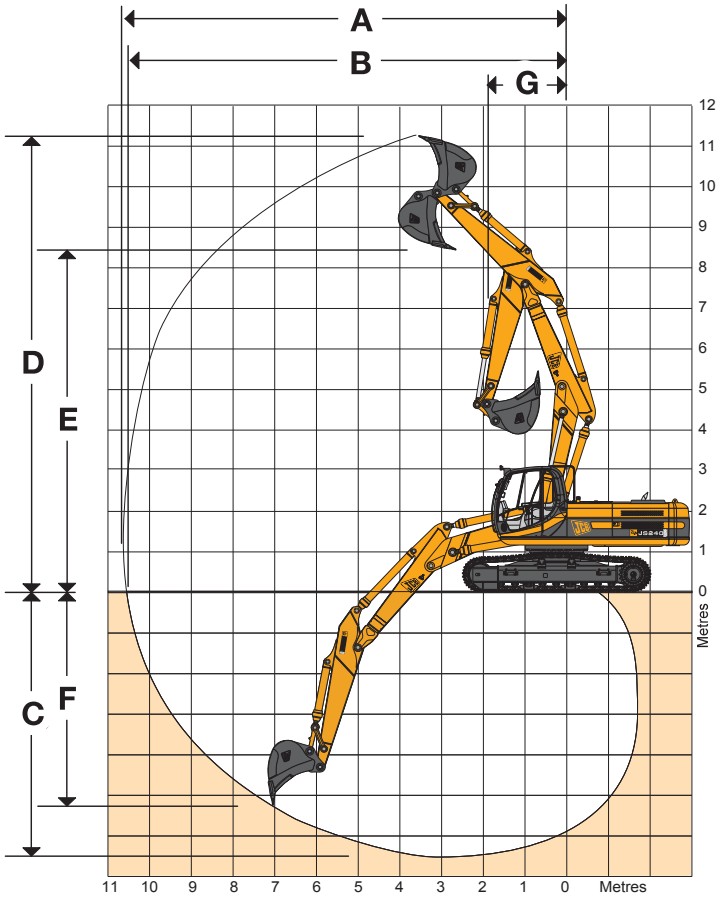

| | 5.71 m | | |
|---|---|---|---|
| **Dipper** | **1.91** | **2.4** | **3.0** |
| | m (ft in) | m (ft in) | m (ft in) |
| **A** Maximum digging reach | 9.00 (29 6) | 9.44 (31 0) | 9.98 (32 9) |
| **B** Maximum digging reach (on ground) | 8.81 (28 11) | 9.26 (30 5) | 9.81 (32 2) |
| **C** Maximum digging depth | 5.19 (17 5) | 5.67 (19 0) | 6.25 (20 10) |
| **D** Maximum digging height | 10.30 (33 6) | 10.64 (34 6) | 11.01 (35 8) |
| **E** Maximum dumping height | 7.41 (23 11) | 7.75 (25 0) | 8.11 (26 3) |
| **F** Maximum vertical wall cut depth | 3.94 (15 0) | 4.44 (16 8) | 5.02 (18 7) |
| **G** Maximum swing radius | 2.50 (8 6) | 2.55 (8 4) | 2.29 (7 8) |

## JS240/260 - Monoboom




| | 5.85 m | | | |
|---|---|---|---|---|
| **Dipper** | **2.0** | **2.44** | **3.09** | **3.53** |
| | m (ft in) | m (ft in) | m (ft in) | m (ft in) |
| **A** Maximum digging reach | 9.19 (30 2) | 9.64 (31 7) | 10.27 (33 8) | 10.69 (35 1) |
| **B** Maximum digging reach (on ground) | 8.99 (29 6) | 9.45 (31 0) | 10.01 (32 10) | 10.52 (34 6) |
| **C** Maximum digging depth | 5.72 (18 9) | 6.14 (20 2) | 6.79 (22 3) | 7.23 (23 8) |
| **D** Maximum digging height | 8.84 (29 0) | 9.23 (30 4) | 9.62 (30 7) | 9.85 (32 4) |
| **E** Maximum dumping height | 6.15 (20 2) | 6.47 (21 3) | 6.83 (22 5) | 7.05 (23 2) |
| **F** Maximum vertical wall cut depth | 4.51 (14 10) | 5.35 (17 7) | 6.21(20 4) | 6.67 (21 10) |
| **G** Maximum swing radius | 4.02 (13 2) | 3.99 (13 1) | 3.87 (12 8) | 3.88 (12 9) |

## JS240/260 - Triple Articulated Boom




| | 6.24 m | | | |
|---|---|---|---|---|
| **Dipper** | **1.91** | **2.44** | **3.09** | **3.53** |
| | m (ft in) | m (ft in) | m (ft in) | m (ft in) |
| **A** Maximum digging reach | 9.68 (31 9) | 10.13 (33 3) | 10.77 (35 4) | 11.12 (36 6) |
| **B** Maximum digging reach (on ground) | 9.50 (31 2) | 9.96 (32 8) | 10.61 (34 6) | 11.04 (36 2) |
| **C** Maximum digging depth | 5.80 (19 0) | 6.25 (20 6) | 6.90 (22 8) | 7.34 (24 1) |
| **D** Maximum digging height | 10.66 (35 0) | 11.10 (36 5) | 11.68 (38 2) | 11.97 (39 3) |
| **E** Maximum dumping height | 7.70 (25 3) | 8.11 (26 7) | 8.64 (28 4) | 8.97 (29 5) |
| **F** Maximum vertical wall cut depth | 3.80 (12 6) | 4.37 (14 4) | 5.10 (16 9) | 5.53 (18 2) |
| **G** Maximum swing radius | 3.12 (10 3) | 3.14 (10 4) | 2.71 (12 8) | 2.88 (9 5) |

# Air Conditioning (option)

TB-012

## Automatic Temperature Control (ATC) System

**Table 1.**

| Pressure Switch Setting | Bar | lbf/in² |
|---|---|---|
| Low Pressure Cut In | 1.4 (+/- 0.1) | 20 (+/- 1.5) |
| Low Pressure Cut Out | 0.3 (+/- 0.1) | 4 (+/- 1.5) |
| High Pressure Cut In | 17.2 (+/- 0.7) | 250 (+/- 10) |
| High Pressure Cut Out | 27.6 (+/- 0.7) | 400 (+/- 10) |

**Table 2.**

| Refrigerant Gas Charge Weight | |
|---|---|
| R-134a | 1400g +/- 10g |

**Table 3.**

| Oil Quantity | |
|---|---|
| Full System | 150g +/- 5g PAG (PolyAlkylene Gycol) oil to ISO 100 |
| Evacuation/Charge | If the system is being evacuated, add 57g (59ml) of lubrication oil to the system before or during the charge. |

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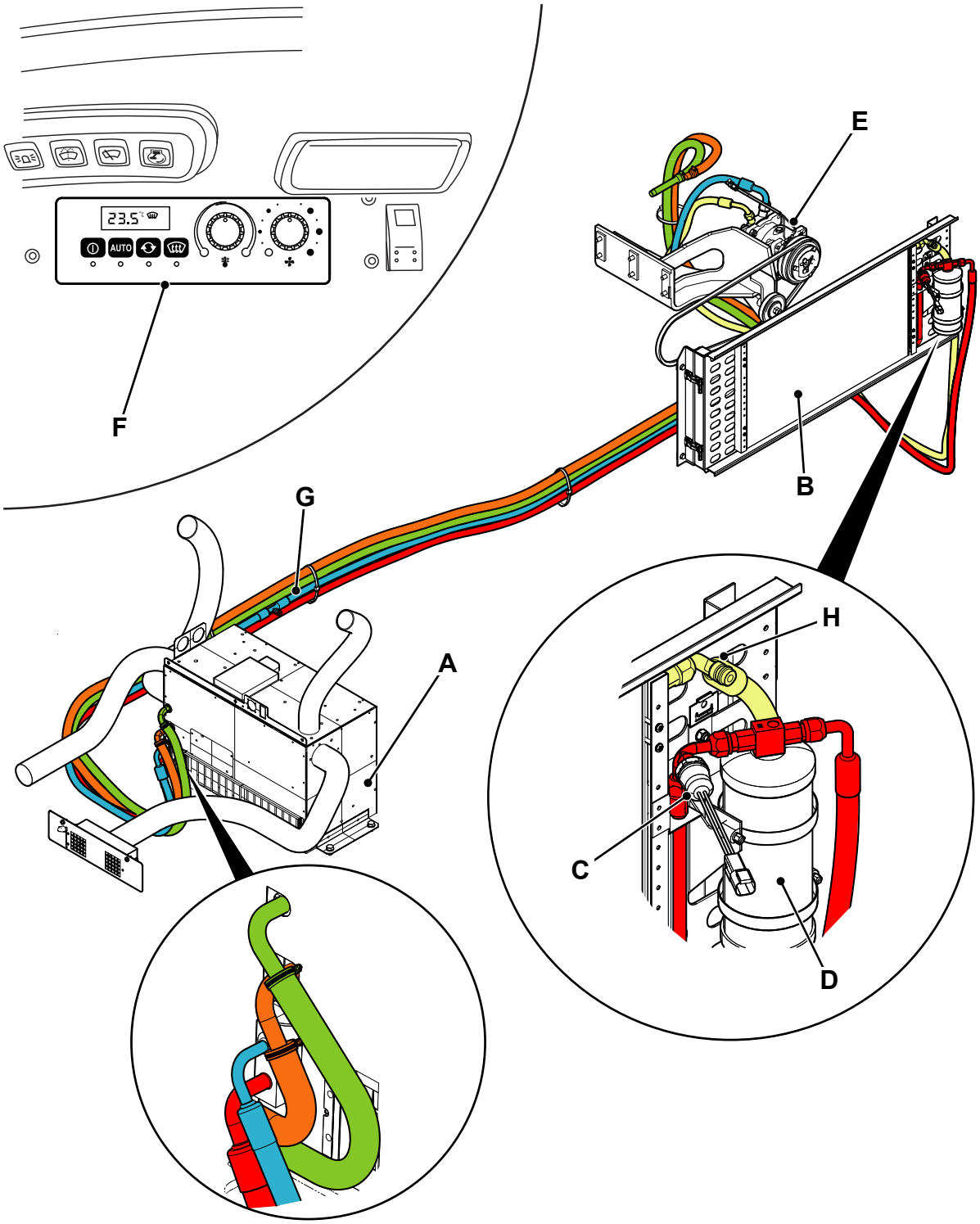
# Basic Operation

## Automatic Temperature Control (ATC) System

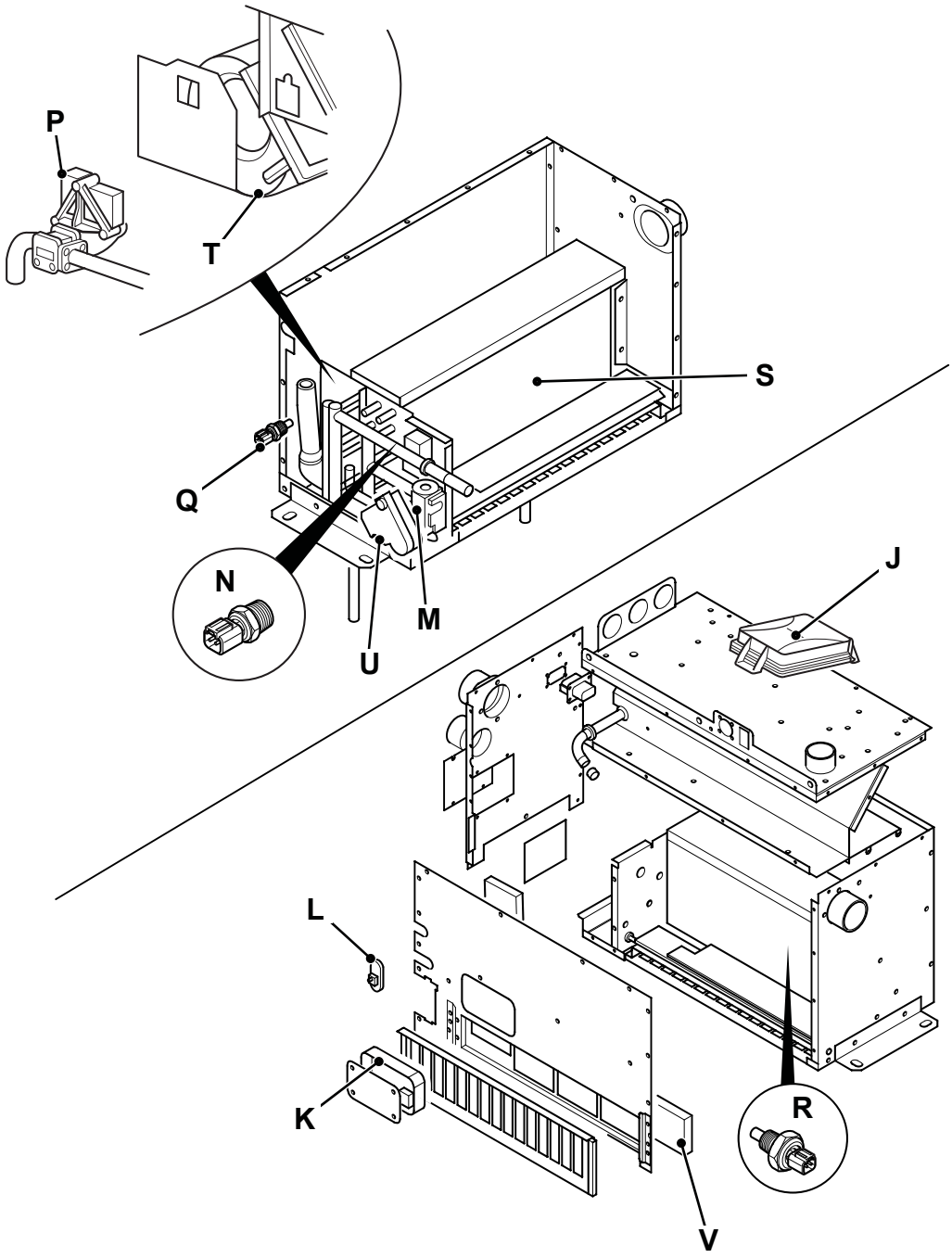
TB-011




716480-C3

**Fig 1.**

| Item | Description |
|---|---|
| **A** | Evaporator Matrix ⇨ *Fig 2. (B-19)* |
| **B** | Condenser |
| **C** | Binary Switch |
| **D** | Receiver/Drier |
| **E** | Compressor |
| **F** | Control Panel |
| **G** | Low Pressure Recharge Point |
| **H** | High Pressure Recharge Point |
| **J** | ATC Electronic Control Module |
| **K** | Pulse Width Modulation (PWM) Module |
| **L** | Cab Air Sensor |
| **M** | Thermal Expansion Valve (TXV) |
| **N** | Pressure Sensor |
| **P** | Water Valve |
| **Q** | Air-off Sensor |
| **R** | Evaporator Sensor |
| **S** | Evaporator Core |
| **T** | Blower Motor |
| **U** | Actuator |
| **V** | Air Filter |




T014090-1

**Fig 2. Evaporator Matrix (A)**

## Heater/Air Conditioning Controls (ATC)

The heater/air conditioning can be set for automatic temperature control (ATC).

Located on the right console, the heater system is controlled by the following switches:

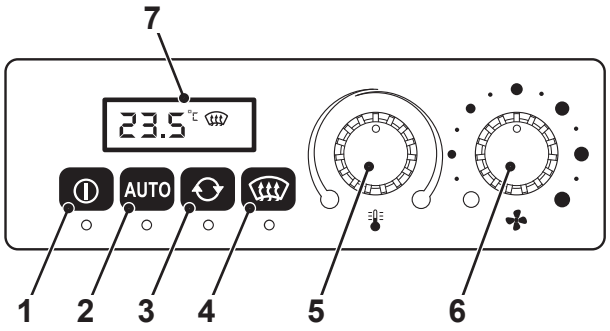



**Fig 3.**

**1** On/Off switch.

**2** Auto mode switch.

**3** Re-circulation switch.

**4** Defrost/Demist switch.

**5** Temperature control switch.

**6** Fan speed switch.

**7** Display.

### Heater Controls

Hot air can be directed to the front window (for demisting) and/or the cab floor by adjusting the air vents.

To activate controls press switch **1**, the switch LED and panel **7** will illuminate.

#### Auto Mode

The heater can be set to a selected temperature. The fan speed and temperature control will then be automatically controlled to maintain the set temperature.

**1** Auto mode is activated by switch **2**, the LED will illuminate and an `**A**' will appear on the display **7**.

**2** Rotate control **5** to set the desired temperature.

**3** The set temperature will be displayed on panel **7**.

**4** The fan speed will be automatically set to reach and then maintain the set temperature.

***Note:*** *If control **6** is moved, Auto mode will have to be reset. Press switch **2** to reactivate.*

**5** In hot weather or dusty environments, re-circulation mode should be used. Select switch **3**.

#### Defrost/Demist Mode

To activate press switch **4**, the LED will illuminate and switch symbol will be displayed on **7**.

**1** In hot weather to produce comfortable working conditions.

- **a** Close the door and windows.
- **b** Select re-circulation switch **3**.
- **c** Rotate control **6** clockwise and direct air into the body of the cab.
- **d** Rotate control **5** fully counter-clockwise for maximum defrost. If the in cab temperature drops to low turn control clockwise.

**2** In cold/damp weather, to minimise misting.

- **a** Close the door and windows.
- **b** Select re-circulation switch **3**.
- **c** Set control **6** fully clockwise and direct air onto the front window.
- **d** Set control **5** fully clockwise to heat the de-humidified conditioned air, de-mist the screen and generally de-humidify the cab air.

## Air Conditioning System Operation

To maintain optimum operator comfort in warm climates or during seasons of high ambient temperature, the air conditioning system re-circulates, clean, dehumidified air into the cab. Cooling is provided by passing the re-circulated air, over an evaporator coil in the air conditioning unit.

The air conditioning system is a closed circuit through which the refrigerant is circulated, its state changing from gas to liquid and back to gas again, as it is forced through the system.

The major components of the system are the compressor **E**, condenser **B**, receiver drier **D**, expansion valve **L** and evaporator matrix **A**.⇨ *Fig 1. (B-17)*.

Air conditioning system power is generated from the engine, via an electromagnetic clutch to the compressor. Three switches, connected in series, are included in the clutch supply line, all must be closed for the clutch and therefore the air conditioning system to operate.

The compressor **E**, draws in low pressure refrigerant gas from the suction line (evaporator to compressor) and increases refrigerant pressure through compression. This process also increases the refrigerant temperature. ⇨ *Fig 1. (B-17)*.

High pressure refrigerant is forced from the compressor to the condenser **B**, which is mounted on the radiator on the side of the engine. Ambient air is drawn across the condenser by the engine-driven cooling fan. In the condenser, the refrigerant changes state to a high pressure, high temperature liquid but with a lower heat content. ⇨ *Fig 1. (B-17)*.

The refrigerant passes through the receiver drier **D,** which contains a desiccant to remove moisture from the system. ⇨ *Fig 1. (B-17)*.The receiver drier serves as a reservoir for refrigerant and also includes a filter to remove foreign particles from the system.

The high temperature, high pressure refrigerant is forced by compressor action into the expansion valve **L**, which meters the amount of refrigerant entering the evaporator. In the expansion valve the refrigerant instantaneously expands to become a low pressure, low temperature liquid. ⇨ *Fig 1. (B-17)*.

The refrigerant is drawn through the evaporator matrix **A**, by the suction of the compressor. The temperature of refrigerant is now considerably below that of the air being drawn across the evaporator matrix by the blowers. Heat is transferred from the ambient and re-circulated air to the refrigerant, causing the low pressure liquid to vaporise and become a low pressure gas. Moisture in the air condenses on the evaporator matrix and is drained away via condensate. ⇨ *Fig 1. (B-17)*.

Cool de-humidified air is emitted through air vents into the cab.

The low temperature, low pressure, high heat content refrigerant gas, is now drawn by suction back to the compressor, where the cycle is completed.

## ATC Control Panel


T013670

**Fig 4.**

The ATC system includes an electronic control system that protects the system components if a problem occurs. The electronic control system also lets the operator control the cab temperature, fan speed and air flow direction at the ATC control panel. The ATC control panel (user Interface) on the right hand side console in the cab is connected to an electronic control module (ECM). The ECM is attached to the top of the ATC unit. The ECM monitors the inputs and controls the outputs in the system as selected by the operator and as the temperature conditions change. If a system problem occurs, the LCD display shows an error code.

### Inputs

#### High Pressure Switch

The high pressure switch is on the receiver drier. The switch is an input used to monitor the fluid pressure in the high pressure side of the system. The switch tells the ATC control panel when the high pressure is abnormal.

#### Low Pressure Switch

The low pressure switch is in the ATC unit. The switch is used to monitor the low pressure gas on the low pressure side of the system. The switch tells the ATC control panel when the low pressure is abnormal.

#### Evaporator Temperature Sensor

The evaporator temperature sensor is in between the evaporator cores in the ATC unit in the cab. The sensor tells the ATC control panel the evaporator temperature. This temperature is for control of the compressor clutch and output to stop the evaporator cores freezing

#### Cab Temperature Sensor

The cab temperature sensor is on the inlet vent in the ATC unit in the cab. The sensor operates with the outlet temperature sensor to let the ATC control panel know when the cab temperature is correct.

#### Outlet Temperature Sensor (Air Off)

The outlet temperature sensor is on the outlet vent in the ATC unit in the cab. The outlet temperature sensor operates with the cab temperature sensor to let the ATC control panel know when the cab temperature is correct.

### Outputs

#### PWM Module (Pulse Width Modulation)

The PMW module is in the ATC unit above the filter panel, access is through a removable plate. The PMW module controls the output signals from the ECU through actuators and a fan motor.

The components controlled by the PWM module are as follows:

- **Blower Motor**. The PWM module changes the signal to the blower motor as requested on the fan speed dial on the ATC control panel to increase or decrease the motor speed.
- **Re-circulation Motor (Actuator)**. The PWM module changes the signal to the re-circulation motor (Actuator) as requested on the ATC control panel to

change where the inlet air is drawn in from by moving a control flap.

– **Water valve (Actuator)**. The PWM module changes the signal to the Water valve as requested on the temperature dial on the ATC control panel. This adjusts the quantity of heater coolant into the heater core to obtain the correct cab temperature.

– **Compressor Drive Clutch**. The compressor drive clutch is in the compressor mounted on the engine. The compressor drive clutch receives an output signal from the ATC control panel to control when the clutch must be engaged or disengaged. This depends upon what temperature is selected on the ATC control panel. When the clutch is engaged, a snowflake symbol is shown in the top right hand corner of the LCD display. The drive clutch can automatically disengage if an error occurs in the system and an error code shows on the LCD display. This is to prevent the system from more damage.

## Safety Procedures

The air conditioning system includes a pressurised closed circuit containing a non-CFC, environmentally friendly refrigerant, Type R-134a. Any service procedure which breaks into the closed circuit and therefore requires discharging of the system, must only be carried out by service personnel with specialist knowledge of air conditioning systems. The following guidelines should be adhered to by all personnel servicing the air conditioning system.

### ⚠ WARNING

**The air conditioning system is a closed loop system and contains pressurised refrigerant. No part of the system should be disconnected until the system has been discharged by a refrigeration engineer or a suitably trained person. You can be severely frostbitten or injured by escaping refrigerant.**

4-3-4-1_2

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4-3-4-1_2

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4-3-4-1_2

### ⚠ CAUTION

**Do not operate the air conditioning system when there is no refrigerant in the system, otherwise the compressor will be damaged.**

4-3-4-4

1 It is critical that the correct refrigerant (R-134a) is used and that charging is done only by qualified personnel. As a precaution, in case of accidental leakage, discharging and charging of the vehicle refrigerant system must be conducted in a well ventilated area.

2 Containers of refrigerant should be stored in a cool environment away from direct sunlight.

### ⚠ WARNING

**Do not carry out welding operations close to the air conditioning refrigerant circuit. A poisonous gas is produced when refrigerant comes into contact with naked flames. Do not smoke or allow naked flames close to the refrigerant circuit.**

BF-1-9

3 **Do Not** perform welding operations close to refrigerant hoses (maintain a distance of at least 0.5m from hoses).

4 **Do Not** steam clean refrigerant system components.

5 When charging or discharging the refrigerant system refrain from smoking. Naked flames must not be allowed in the immediate vicinity. The refrigerant does not give off a poisonous odour, however, when it comes into contact with a naked flame, a poisonous gas is produced.

6 When handling refrigerant, rubber gloves and goggles should be worn. Operators should ensure that no refrigerant comes into contact with the skin. Particular care should be taken when connecting or disconnecting charging hoses or pressure switches. When these components are connected to the system, a short release of refrigerant occurs. This results in a high velocity, very cold gas being emitted from the connection point.

# Fault Finding

## Air Conditioning

TB-010_2

### Preliminary Checks

Before any checks are carried out on the refrigerant circuit the following checks should be made:

**1** Check the compressor drive belt is serviceable and correctly tensioned.

**2** Check the condenser and engine radiator are not blocked by debris, clean with compressed air or water if necessary.

**3** Check that the condenser fins are not flattened or damaged, the fins must allow air to pass freely.

**4** Check the cab fresh air inlet filter for blockage.

**5** Check that, with the ignition switch on (engine not running), the blower operates over whole speed range.

**6** Check that, with the ignition switch on (engine not running), the blower and air conditioning switched on, the compressor clutch engages.

Charge level:

***Note:*** *It is not possible to check refrigerant charge level with R134a systems using the receiver drier sightglass. Any bubbles seen at the sight glass on the receiver drier may be bubbles of oil and are perfectly normal.*

- Gas -1400g R134A +/- 10g
- Oil - 150g +/- 5g PAG (PolyAlkylene Gycol) oil to ISO 100

Fault finding:

***Important:*** *Refer to appropriate remove and replace procedures before working on any system component*

Product: JCB JS200-JS260 - Tier III Auto Tracked Excavators Service Repair Manual
Full Download: https://www.arepairmanual.com/downloads/jcb-js200-js260-tier-iii-auto-tracked-excavators-service-repair-manual/



## Error Codes / Error Diagnosis (Automatic Temperature Control (ATC) System)

**Table 1. Error Code 1 - High Pressure Lock Out**

| Effect | Description | Causes | Remedy |
|---|---|---|---|
| The unit cannot cool the cab The compressor disengages. | The high pressure switch operates twice In 1 minute. | The system is overcharged. | Check the continuity of switch (usually open switch). |
| | | | Check the gas in system and recharge, refer to table. |
| | | There is no power to the high pressure switch. | Check for 24V at the switch. |
| | | | Check the continuity between ATC control module pin 33 and switch. |
| | | There is a bad earth on the high pressure switch. | Check the earth wire between ATC control module pin 34 and switch. |
| | | There is a defective switch. | Replace the switch. |

***Note:*** *If, an Error code shows after one minute this can show a system Error.*

***Note:*** *If, an Error code shows instantly this can show a wiring Error.*

**Table 2. Error Code 2 - Low Pressure Lock Out**

| Effect | Description | Causes | Remedy |
|---|---|---|---|
| The unit cannot cool the cab The compressor disengages. | The low pressure switch opens for longer than 1 minute. | The system is undercharged. | Check the continuity of switch (usually closed switch). |
| | | | Check the gas in system and recharge, refer to table. |
| | | There is no power to the low pressure switch. | Check for 24V at the switch. |
| | | | Check the continuity between ATC control module pin 35 and switch. |
| | | There is a bad earth on the low pressure switch. | Check the earth wire between ATC control module pin 36 and switch. |
| | | There is a defective switch. | Replace the switch. |

***Note:*** *If an Error code shows after one minute this can show a system error.*

***Note:*** *If an Error code shows instantly this can show a wiring error.*

***Note:*** *Battery reset may be required to remove the error after repair.*

Sample manual. Download All pages at:
https://www.arepairmanual.com/downloads/jcb-js200-js260-tier-iii-auto-tracked-excavators-service-repair-manual/