

Nomenclature and Dimensions for Hydraulic Excavators — SAE J1193

SAE Recommended Practice
Approved April 1978

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Society of Automotive Engineers, Inc.
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NOMENCLATURE AND DIMENSIONS FOR HYDRAULIC EXCAVATORS—SAE J1193

SAE Recommended Practice

Report of Off-Road Machinery Technical Committee approved April 1978. Rationale statement available.

1. **Purpose**—The purpose of this recommended practice is to establish a uniform method of providing dimensional specifications and nomenclature for mobile hydraulic excavators.

2. **Scope**—This recommended practice applies to hydraulic excavators as defined in SAE J1057.

This recommended practice includes the nomenclature peculiar to and most commonly used to describe this type of equipment. The illustrations are not intended to be descriptive of any existing machine and are used only to clarify the meaning of this recommended practice.

The numbered terms are nomenclature and apply to Figs. 1–6 as applicable.

The single letter dimensions apply to Figs. 1, 2, and 3 and are primarily to define vehicle size.

The double letter dimensions apply to Figs. 4, 5, and 6 which illustrate the functional range of the common types of hydraulic excavators.

For dimensions relative to turning radius of rubber tired vehicles, refer to SAE J695.

All dimensions are based on machines setting on a groundline that provides firm level support. Rubber tired vehicles are on manufacturers specified tires inflated to specified pressure, crawler track shoes do not penetrate groundline.

NOMENCLATURE

1. WORKING EQUIPMENT
2. CAB
3. UPPERSTRUCTURE
4. COUNTERWEIGHT
5. SWING BEARING
6. CATWALK
7. UNDERCARRIAGE FRAME
8. TRACK FRAME
9. TRACK ASSEMBLY
10. FRONT AXLE
11. REAR AXLE OR AXLES
12. FRONT OUTRIGGER ASSEMBLY
13. REAR OUTRIGGER ASSEMBLY
14. OUTRIGGER PAD
15. CAB, TRANSPORT STATION
16. GROUNDLINE
17. AXIS OF ROTATION
18. BOOM PIVOT
19. ARM PIVOT
20. BUCKET PIVOT
21. BOOM CYLINDER
22. BOOM
23. ARM CYLINDER
24. ARM
25. BUCKET CYLINDER
26. BUCKET
27. BUCKET LINK
28. GUIDE LINK
29. BASE BOOM SECTION
30. TELESCOPING BOOM SECTION
31. TELESCOPING CYLINDER

DIMENSIONS

- A OVERALL LENGTH
B OVERALL HEIGHT

- C1 WIDTH OF UPPERSTRUCTURE
C2 WIDTH OF UPPERSTRUCTURE WITH CATWALKS
D MINIMUM CLEARANCE, UPPERSTRUCTURE TO UNDERCARRIAGE
E SWING CLEARANCE, REAR OF UPPERSTRUCTURE
F TOP OF CAB TO GROUNDLINE
G CLEARANCE, UPPERSTRUCTURE TO GROUNDLINE (OUTRIGGERS RETRACTED)
H TOP OF WHEEL MOUNTED UNDERCARRIAGE FRAME TO GROUNDLINE
J1 AXIS OF ROTATION TO CENTERLINE OF DRIVE SPROCKETS
J2 NOMINAL DISTANCE BETWEEN CENTERLINES OF DRIVE SPROCKETS AND IDLERS
J3 AXIS OF ROTATION TO END OF TRACK ASSEMBLY
J4 NOMINAL OVERALL LENGTH OF TRACK ASSEMBLY

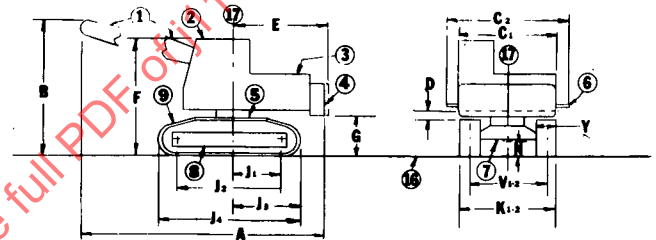


FIG. 1—CRAWLER MOUNTED

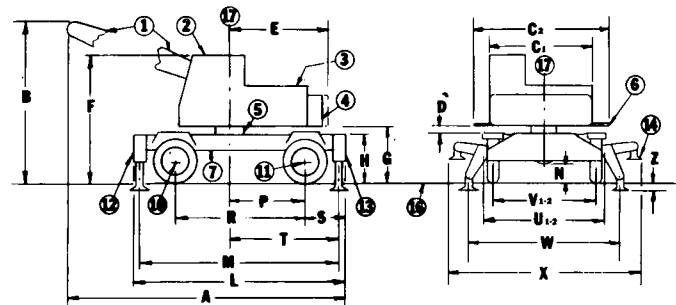


FIG. 2—WHEEL MOUNTED, SINGLE OPERATOR STATION

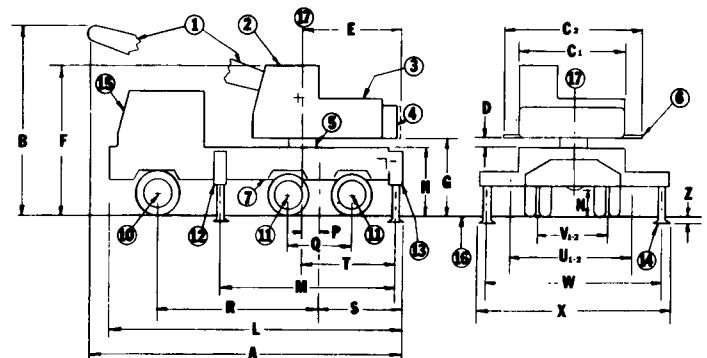


FIG. 3—WHEEL MOUNTED, SEPARATE OPERATOR AND TRANSPORT STATIONS

The ϕ symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.

- K1 OVERALL WIDTH OF CRAWLER (RETRACTED)
 K2 OVERALL WIDTH OF CRAWLER (EXTENDED)
 L OVERALL LENGTH OF UNDERCARRIAGE
 M DISTANCE BETWEEN FRONT AND REAR OUTRIGGERS
 N GROUND CLEARANCE (PER SAE J894)
 P CENTER OF REAR AXLE OR TANDEM TO AXIS OF ROTATION
 Q DISTANCE BETWEEN CENTERS OF TANDEM AXLES
 R WHEELBASE (FOR TANDEM AXLES IS MEASURED TO TANDEM PIVOT POINT)
 S CENTER OF REAR OR TANDEM AXLE TO REAR OF FRAME
 T AXIS OF ROTATION TO CENTERLINE OF REAR OUTRIGGERS

- U1 OVERALL WIDTH WITH RETRACTED OUTRIGGERS (PADS REMOVED)
 U2 OVERALL WIDTH WITH RETRACTED OUTRIGGERS (PADS ATTACHED)

CRAWLER MOUNTED

- V1 TRACK GAGE, ROLLER CENTERLINE TO ROLLER CENTERLINE (RETRACTED)
 V2 TRACK GAGE, ROLLER CENTERLINE TO ROLLER CENTERLINE (EXTENDED)

WHEEL MOUNTED

- V1 TREAD, REAR AXLE
 V2 TREAD, FRONT AXLE

- W EFFECTIVE SPREAD OF EXTENDED OUTRIGGERS
 X OVERALL WIDTH OVER PADS WITH OUTRIGGERS EXTENDED
 Y WIDTH OF CRAWLER TRACK ASSEMBLY
 Z MAXIMUM EXTENSION OF OUTRIGGERS BELOW GROUNDLINE

DIMENSIONS

- AA MAXIMUM RADIUS AT GROUNDLINE
 AB MAXIMUM DIGGING DEPTH
 AC MAXIMUM DEPTH FOR 8FT(2.5 m) LEVEL CUT
 AD MINIMUM RADIUS OF 8FT(2.5 m) LEVEL CUT AT DEPTH "AC"
 AE RADIUS OF MAXIMUM DIGGING DEPTH
 AF MAXIMUM DEPTH OF VERTICAL WALL WHICH CAN BE EXCAVATED
 AG MINIMUM LEVEL CUT RADIUS WITH BUCKET FLAT ON GROUNDLINE
 AH MINIMUM RADIUS AT GROUNDLINE
 AJ LEVEL CUT WITH BUCKET FLAT ON GROUNDLINE
 AK BOOM PIVOT TO GROUNDLINE
 AL BOOM PIVOT TO AXIS OF ROTATION
 AM BOOM LENGTH (BOOM PIVOT TO ARM PIVOT)
 AN ARM LENGTH (ARM PIVOT TO BUCKET PIVOT)
 AP BUCKET TOOTH RADIUS
 AO BOOM PIVOT ANGLE

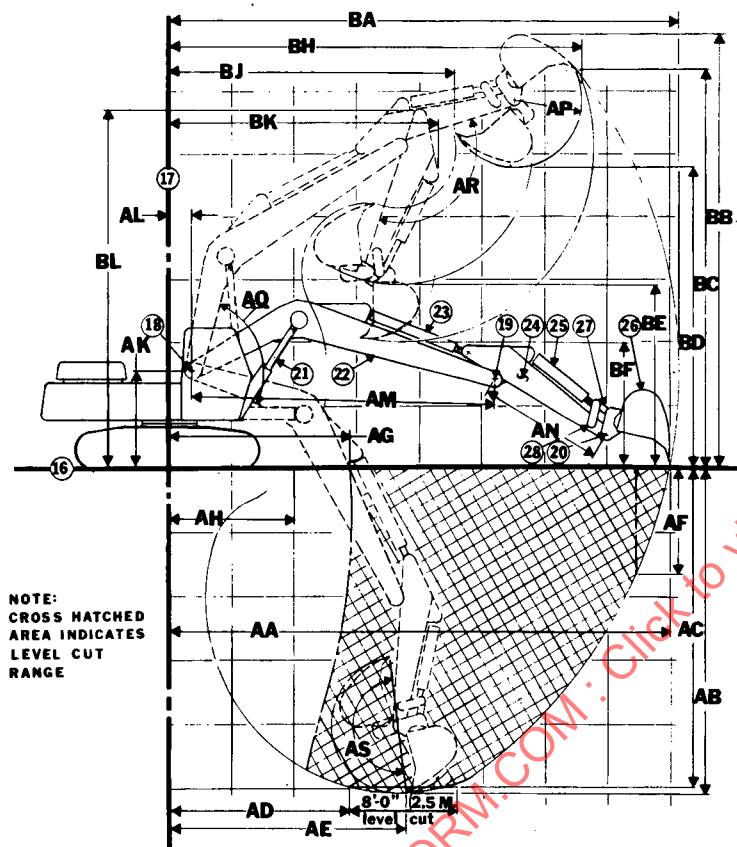


FIG. 4—HOE TYPE EXCAVATOR

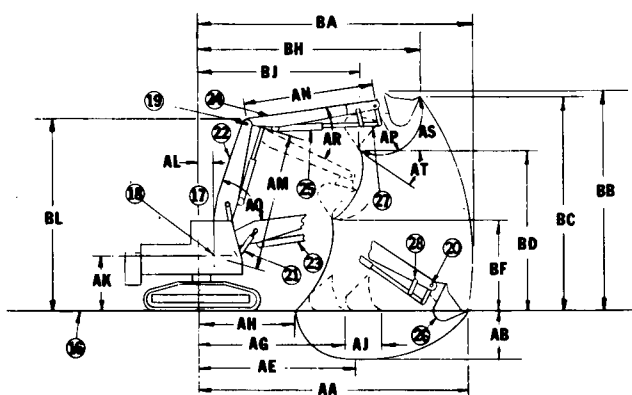


FIG. 5—SHOVEL TYPE EXCAVATOR

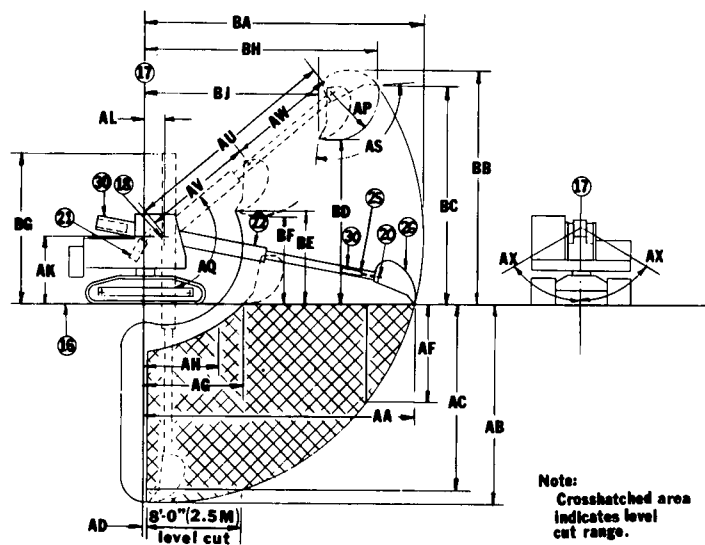


FIG. 6—TELESCOPING BOOM TYPE EXCAVATOR