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**Identification Terminology of
Earthmoving Machines
— SAE J1057b**

**SAE STANDARD
LAST REVISED JUNE 1975**

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Report of Construction and Industrial Machinery Technical
Committee approved July 1973 and last revised June 1975.

1. PURPOSE AND SCOPE

1.1 PURPOSE - This standard sets forth accepted terminology to name and identify properly and uniformly types of earthmoving machines, and is based upon existing commercial earthmoving machines. Illustrations are used to identify functional characteristics.

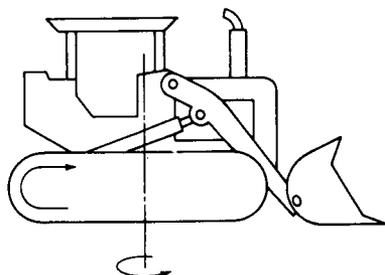
The parts of the standard are: loaders, dumpers, tractor-scrappers,, graders, tractors and roller/compactors. Additional parts on excavators, continuous diggers and augers are under development.

This terminology strives to establish a name for a basic work machine such that a basic machine is not renamed when it is equipped with an optional attachment. For example, a "tractor" as the basic machine may have a bulldozer available as normal dealer-installed optional equipment. In

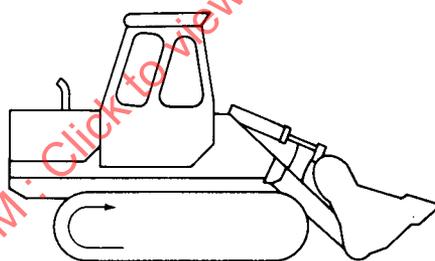
this case, the basic machine still carries the name "tractor", and the equipped work machine can be referred to as "tractor with bulldozer" or "tractor equipped with bulldozer".

The ultimate development of this standard will provide, under each basic machine, a list of the most common optional working implements.

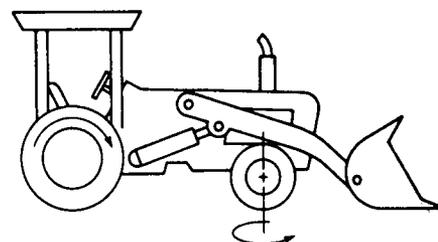
1.2 SCOPE- This standard identifies earthmoving machines which are intended for use on unimproved surfaces. The machines are used for moving earth and other materials on projects such as road building, dams, open pit excavation, trenching, and buildings. Excluded are machines intended for use on improved surfaces such as "in-plant" material handling, highways, water, air transport, and for agricultural purposes.



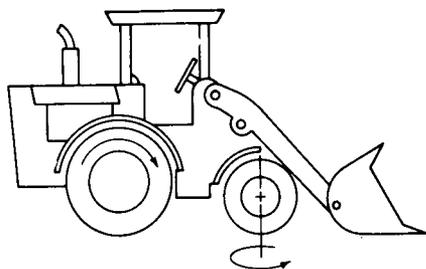
3.1.1 FRONT ENGINE



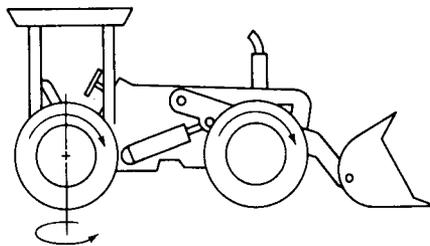
3.1.2 REAR ENGINE



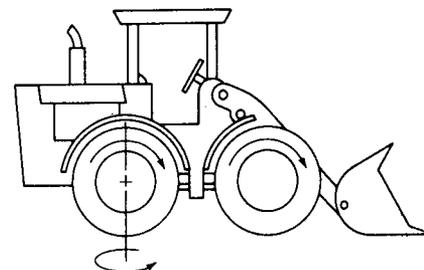
3.2.1.1 FOUR WHEEL, FRONT-WHEEL
STEER, REAR-WHEEL DRIVE,
FRONT ENGINE



3.2.1.2 FOUR WHEEL, FRONT WHEEL
STEER, REAR-WHEEL DRIVE,
REAR ENGINE



3.2.1.3 FOUR WHEEL, REAR-WHEEL
STEER, FOUR-WHEEL DRIVE,
FRONT ENGINE



3.2.1.4 FOUR WHEEL, REAR-WHEEL
STEER, FOUR-WHEEL DRIVE,
REAR ENGINE

2. FIELD OF APPLICATION-This standard identifies earthmoving machines which are intended for use on unimproved surfaces. The machines are used for moving earth and other materials on projects such as road building, dams, open pit excavation, trenching, and buildings. Excluded are machines intended for use on improved surfaces such as "in-plant" material handling, highways, water, air transport, and for agricultural purposes.

3. LOADER DEFINITION-A self-propelled machine with an integral front-mounted bucket supporting structure and linkage that loads material into the bucket

through forward motion of the machine and lifts, transports, and discharges material. Not included are tractors with front-end loader attachment.

3.1 CRAWLER LOADERS

3.1.1 Front engine.

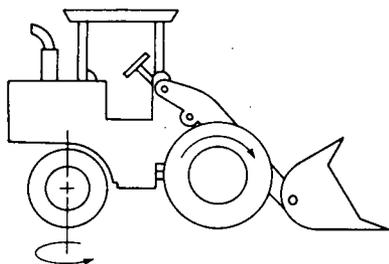
3.1.2 Rear engine.

3.2 WHEEL LOADERS

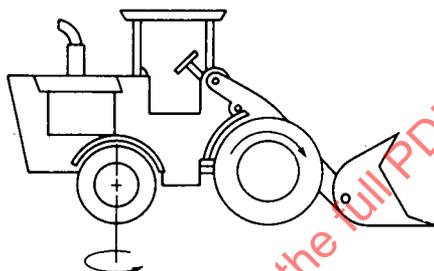
3.2.1 Rigid frame, with means of steering and propulsion as follows:

3.2.1.1 Four wheel, front-wheel steer, rear-wheel drive, front engine.

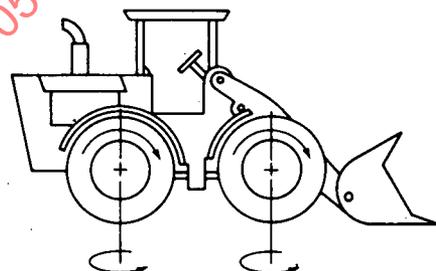
3.2.1.2 Four wheel, front-wheel steer, rear-wheel drive, rear engine.



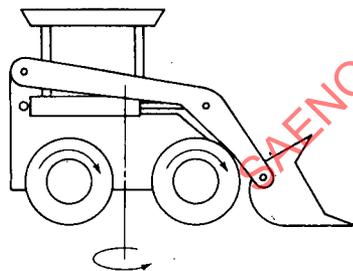
3.2.1.5 THREE WHEEL, REAR-WHEEL STEER, FRONT-WHEEL DRIVE



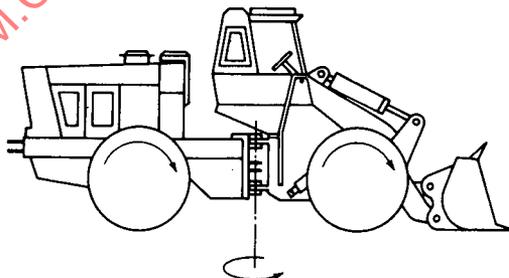
3.2.1.6 - FOUR WHEEL, REAR-WHEEL STEER, FRONT-WHEEL DRIVE



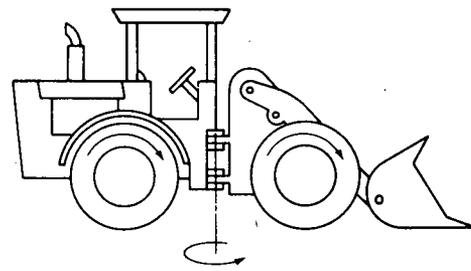
3.2.1.7 - FOUR WHEEL, FRONT AND REAR-WHEEL STEER, FOUR-WHEEL DRIVE



3.2.1.8 - FOUR WHEEL, SKID STEER, FOUR-WHEEL DRIVE

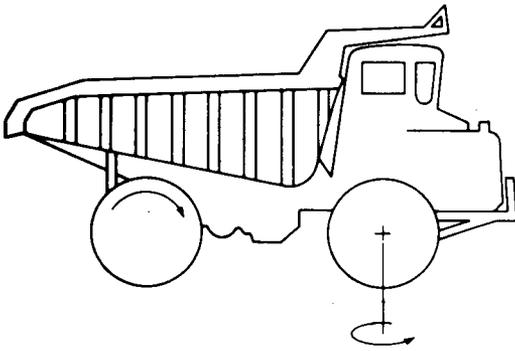


3.2.2.1 - FOUR WHEEL, ARTICULATED STEER, FOUR-WHEEL DRIVE, OPERATOR FRONT

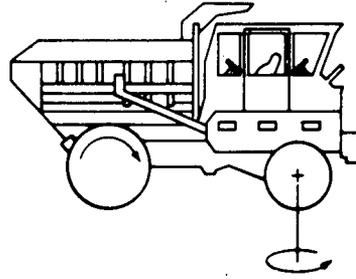


3.2.2.2 - FOUR WHEEL, ARTICULATED STEER, FOUR-WHEEL DRIVE, OPERATOR REAR

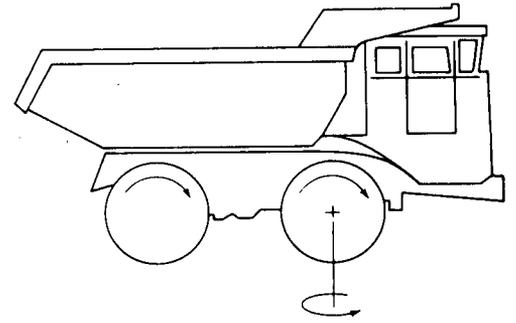
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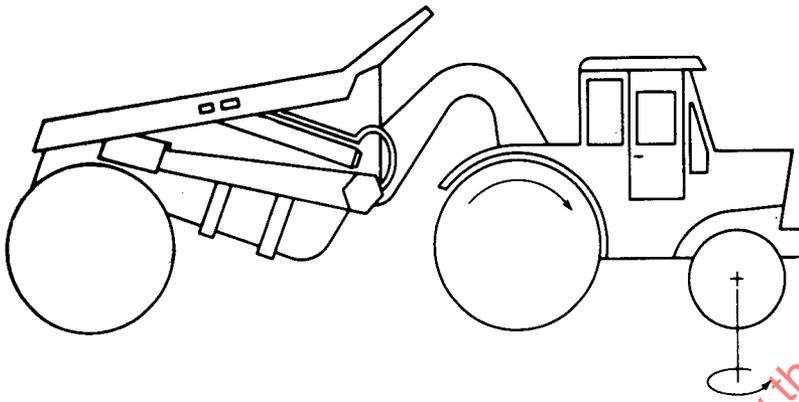
4.1.1.1 TWO AXLES, REAR-AXLE DRIVE



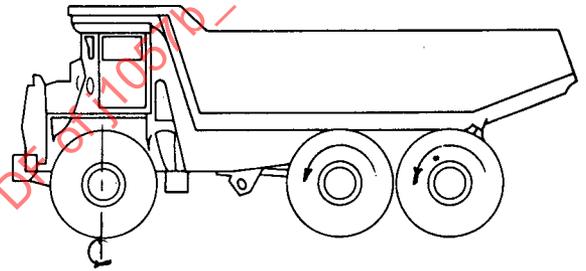
4.1.1.2 TWO AXLES, REAR-AXLE DRIVE, TWO-WAY SEAT AND CONTROLS



4.1.1.3 TWO AXLES, TWO-AXLE DRIVE



4.1.1.4 THREE AXLES, CENTER-AXLE DRIVE



4.1.1.5 THREE AXLES, CENTER- AND REAR-AXLE DRIVE

3.2.1.3 Four wheel, rear-wheel steer, four-wheel drive, front engine.

3.2.1.4 Four wheel, rear-wheel steer, four-wheel drive, rear engine.

3.2.1.5 Three wheel, rear-wheel steer, front-wheel drive.

3.2.1.6 Four wheel, rear-wheel steer, front-wheel drive.

3.2.1.7 Four wheel, front and rear-wheel drive.

3.2.1.8 Four wheel, skid steer, four wheel drive.

3.2.2 Articulated frame, with means of steering and propulsion as follows:

3.2.2.1 Four wheel, articulated steer, four-wheel drive, operator front.

3.2.2.2 Four wheel, articulated steer, four-wheel drive, operator rear.

4. DUMPER DEFINITION—A self-propelled vehicle, having an open cargo body, designed to transport and dump or spread material. Dumpers include the following types:

4.1 REAR DUMP

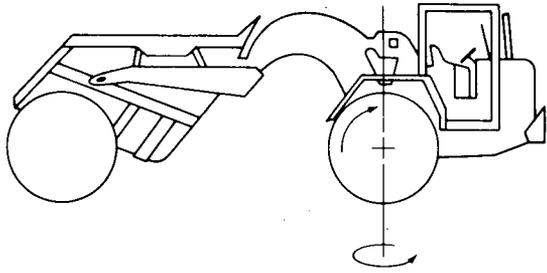
4.1.1 *Front-wheel steer*

4.1.1.1 Two axles, rear-axle drive.

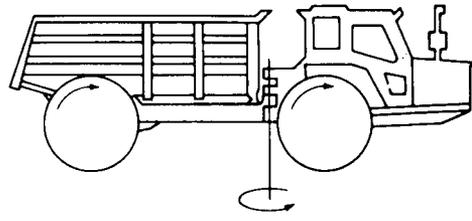
4.1.1.2 Two axles, rear-axle drive, two-way seat and controls.

4.1.1.3 Two axles, two-axle drive.

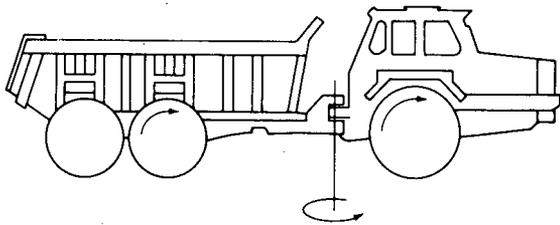
4.1.1.4 Three axles, center-axle drive.



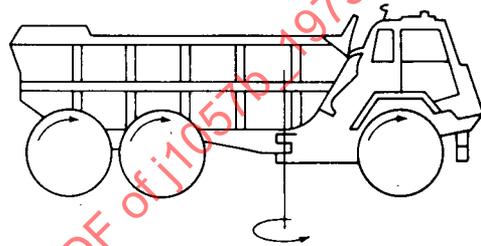
4.1.2.1 TWO AXLES, FRONT-AXLE DRIVE



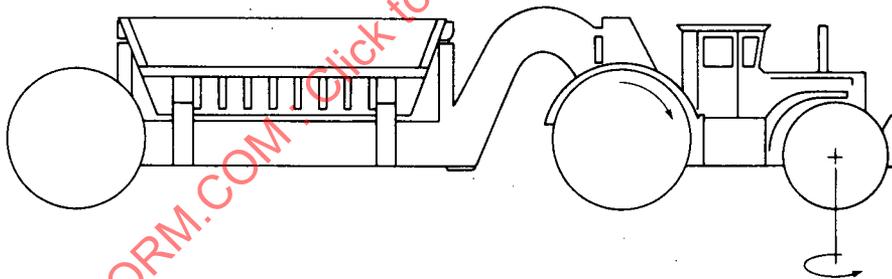
4.1.2.2 TWO AXLES, TWO-AXLE DRIVE



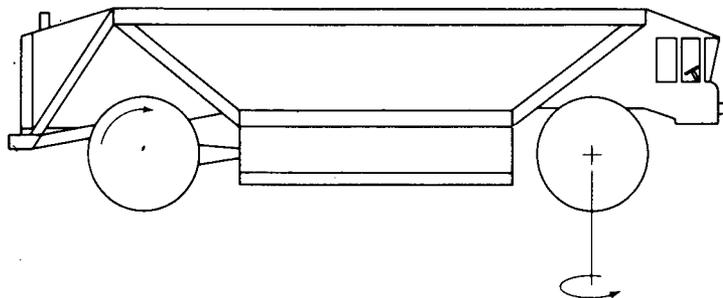
4.1.2.3 THREE AXLES, FRONT- AND CENTER-AXLE DRIVE



4.1.2.4 THREE AXLES, ALL DRIVE

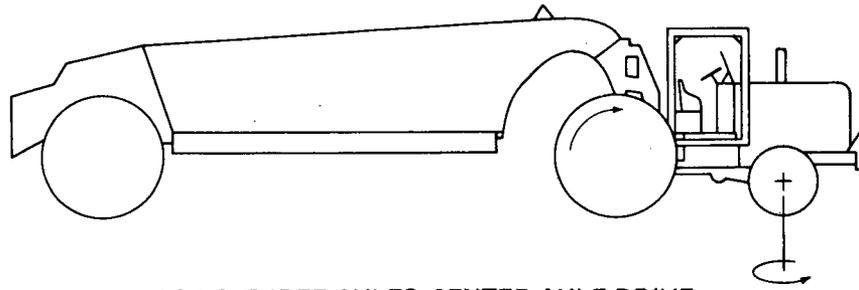


4.2.1.1 THREE AXLES, CENTER-AXLE DRIVE

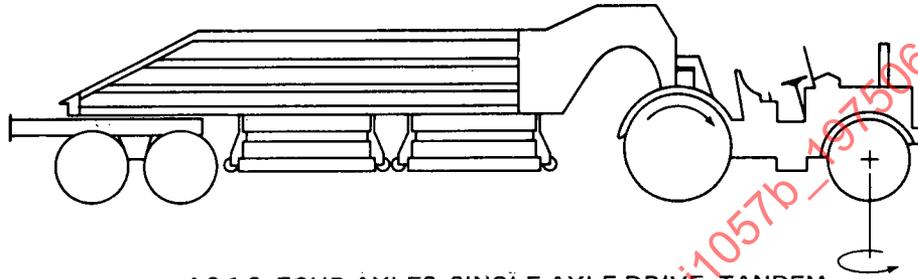


4.3.1.1 TWO AXLES, REAR ENGINE AND DRIVE

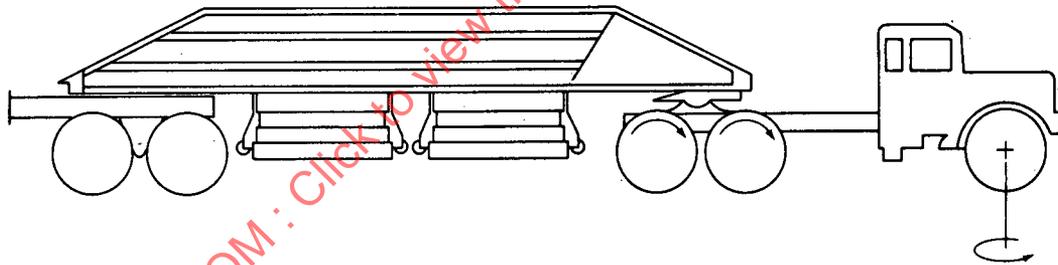
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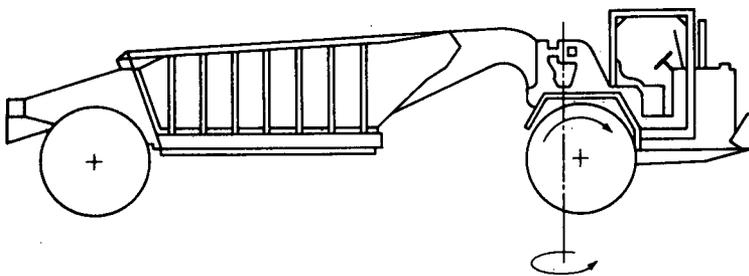
4.3.1.2 THREE AXLES, CENTER-AXLE DRIVE



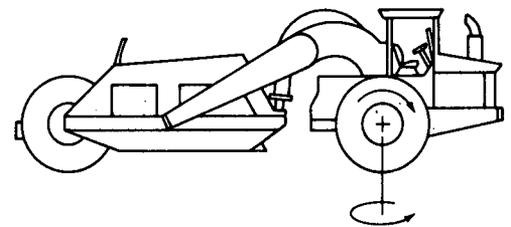
4.3.1.3 FOUR AXLES, SINGLE-AXLE DRIVE, TANDEM TRAILING AXLES



4.3.1.4 FIVE AXLES, TANDEM-AXLE DRIVE, TANDEM TRAILING AXLES

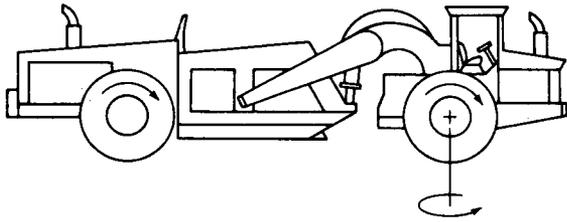


4.3.2.1 TWO AXLES, FRONT AXLE DRIVE

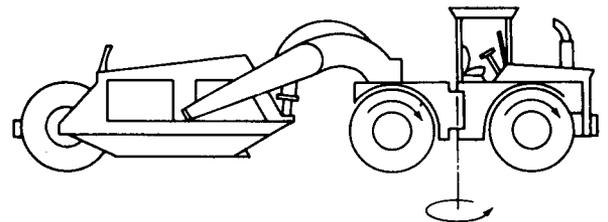


5.1.1 TWO AXLES, ARTICULATED STEER, FRONT AXLE DRIVE

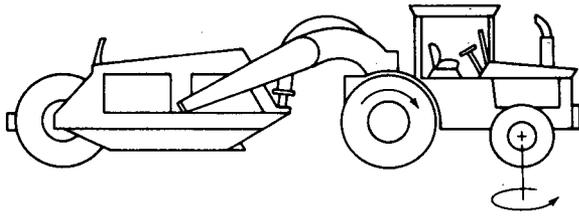
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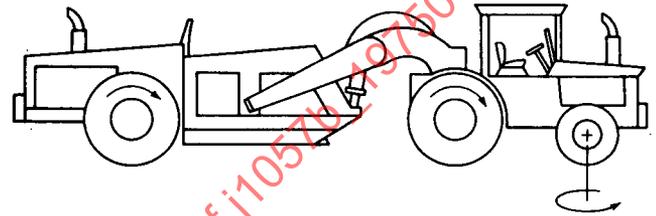
5.1.2 TWO AXLES, ARTICULATED STEER, TWO AXLE DRIVE



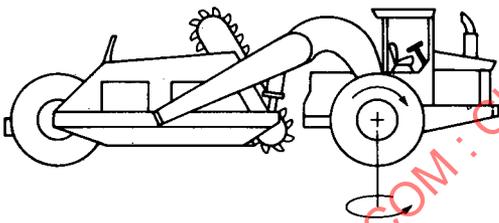
5.1.3 THREE AXLES, ARTICULATED STEER, FRONT AND CENTER AXLE DRIVE (ARTICULATED TRACTOR OR FOUR-WHEEL STEER TRACTOR)



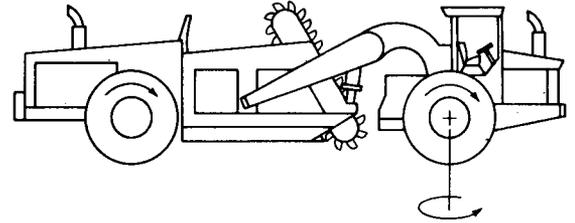
5.1.4 THREE AXLES, FRONT WHEEL STEER, CENTER AXLE DRIVE



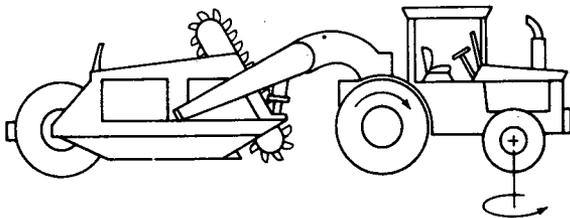
5.1.5 THREE AXLES, FRONT WHEEL STEER, CENTER AND REAR AXLE DRIVE



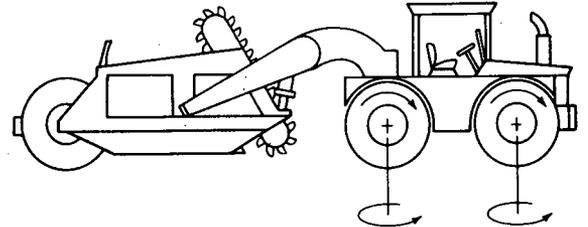
5.2.1 TWO AXLES, ARTICULATED STEER, FRONT AXLE DRIVE



5.2.2 TWO AXLES, ARTICULATED STEER, TWO AXLE DRIVE

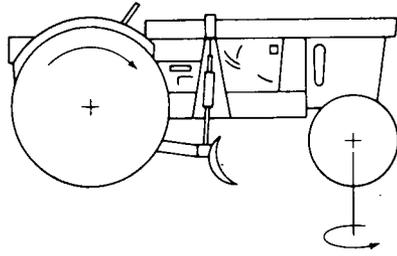


5.2.3 THREE AXLES, FRONT WHEEL STEER, CENTER AXLE DRIVE

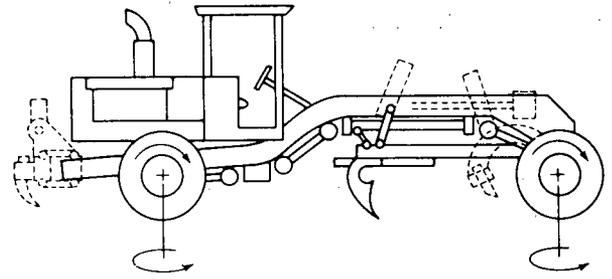


5.2.4 THREE AXLES, ARTICULATED STEER, FRONT AND CENTER AXLE DRIVE (ARTICULATED TRACTOR AND FOUR WHEEL STEER TRACTOR)

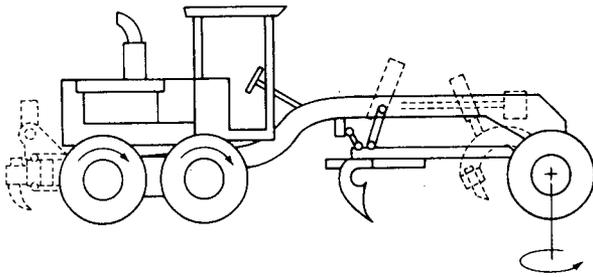
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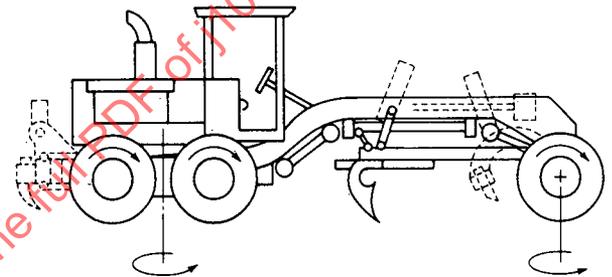
6.1.1 FOUR WHEEL, FRONT WHEEL STEER, TWO WHEEL DRIVE (FRONT ENGINE)



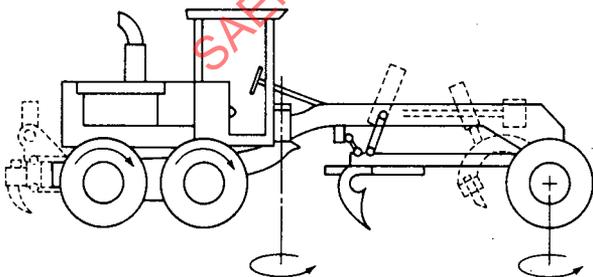
6.1.2 FOUR WHEEL, FRONT AND REAR WHEEL STEER, FOUR WHEEL DRIVE



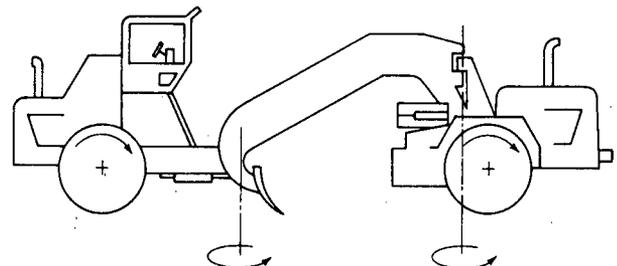
6.1.3 SIX WHEEL, FRONT WHEEL STEER, FOUR WHEEL DRIVE



6.1.4 SIX WHEEL, FRONT WHEEL AND REAR BOGIE STEER, SIX WHEEL DRIVE



6.2.1 SIX WHEEL, FRONT WHEEL AND ARTICULATE STEER, FOUR WHEEL DRIVE



6.2.2 FOUR WHEEL, DOUBLE ARTICULATED STEER, FOUR WHEEL DRIVE

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4.1.1.5 Three axles, center- and rear-axle drive.

4.1.2 *Articulated Steer*

4.1.2.1 Two axles, front-axle drive.

4.1.2.2 Two axles, two axle drive.

4.1.2.3 Three axles, front- and center-axle drive.

4.1.2.4 Three axles, all drive.

4.2 SIDE DUMP

4.2.1 *Front-wheel steer*

4.2.1.1 Three axles, center-axle drive.

4.3 BOTTOM DUMP

4.3.1 *Front-wheel steer*

4.3.1.1 Two axles, rear engine and drive.

4.3.1.2 Three axles, center-axle drive.

4.3.1.3 Four axles, single-axle drive, tandem trailing axles.

4.3.1.4 Five axles, tandem-axle drive, tandem trailing axles.

4.3.2 *Articulated steer*

4.3.2.1 Two axles, front-axle drive.

5. TRACTOR-SCRAPER DEFINITION-A self propelled machine, having a cutting edge positioned between front and rear axles, which loads, transports, discharges, and spreads material. Tractor-scrappers include the following types:

5.1 Open bowl, with means of steering and propulsion as follows:

5.1.1 Two axles, articulated steer, front axle drive.

5.1.2 Two axles, articulated steer, two axle drive.

5.1.3 Three axles, articulated steer, front and center axle drive (articulated tractor or four-wheel steer tractor).

5.1.4 Three axles, front wheel steer, center axle drive.

5.1.5 Three axles, front wheel steer, center and rear axle drive.

5.2 Self-Loading, with separately powered mechanism, with means of steering and propulsion as follows:

5.2.1 Two axles, articulated steer, front axle drive

5.2.2 Two axles, articulated steer, two axle drive.

5.2.3 Three axles, front wheel steer, center axle drive.

5.2.4 Three axles, articulated steer, front and center axle drive (articulated tractor or four wheel steer tractor).

6.1 GRADER DEFINITION-A self-propelled machine having an adjustable blade, positioned between front and rear axles to cut, move, and spread material, usually to grade requirements:

6.1 Rigid frame with means of steering and propulsion as follows:

6.1.1 Four wheel, front wheel steer, two wheel drive (front engine).

6.1.2 Four wheel, front and rear wheel steer, four wheel drive.

6.1.3 Six wheel, front wheel steer, four wheel drive.

6.1.4 Six wheel, front wheel and rear bogie steer, six wheel drive.

6.2 Articulated frame with means of steering and propulsion as follows:

6.2.1 Six wheel, front wheel and articulated steer, four wheel drive.

6.2.2 Four wheel, double articulated steer, four wheel drive

7. TRACTOR DEFINITION-A self-propelled machine used to exert a push or pull force through a mounted attachment or drawbar to move objects or material. Tractors include both crawler tractors and wheel tractors.

7.1 CRAWLER TRACTOR

7.2 WHEEL TRACTOR

7.2.1 Rigid frame, with means of steering and propulsion as follows:

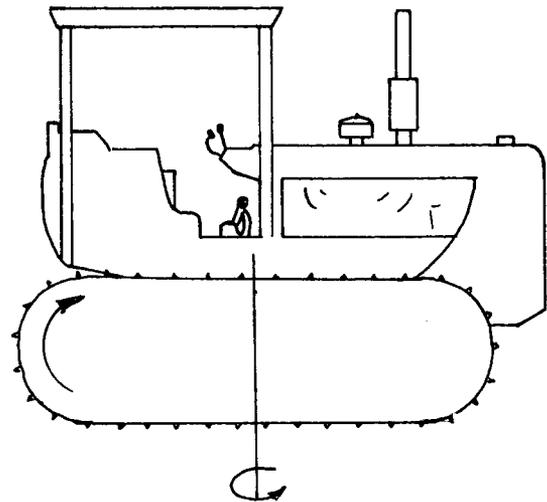
7.2.1.1 Four wheel, rear wheel steer, four wheel drive.

7.2.1.2 Four wheel, front wheel steer, rear wheel drive.

7.2.2 Articulated frame, with means of steering and propulsion as follows:

7.2.2.1 Four wheel, articulated steer, four wheel drive, operator front.

7.2.2.2 Four wheel, articulated steer, four wheel drive, operator rear.



7.1 - CRAWLER TRACTOR