SURFACE VEHICLE STANDARD

J2520™ FEB2026

Issued 2002-07
Reaffirmed 2007-08
Revised 2026-02

Superseding J2520 JAN2013

Classification, Nomenclature, and Specification Definitions for Directional Drilling Tracking Equipment

RATIONALE

This document is used in conjunction with SAE J2519 and needs review and updates. SAE J2022 no longer includes horizontal earthboring machines, so the reference needed to be corrected to ISO 21467:2023.

1. SCOPE

This SAE Standard applies to directional drilling electronics and tracking equipment of the following types:

- Tracking transmitter
- Tracking receiver
- Telemetry device
- Remote display

This type of tracking equipment is typically used with horizontal earthboring machines as defined in SAE J2022.

1.1 Purpose

The purpose of this document is to define common terms and commercial specifications associated with tracking equipment used in the horizontal earthboring industry.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

SAE Executive Standards Committee Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2026 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, or used for text and data mining, AI training, or similar technologies, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: **Tel: 1-877-606-7323 (U.S. and Canada only)**
Tel: 1-724-776-4970 (outside U.S. and Canada)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: http://www.sae.org

For more information on this standard, visit
https://www.sae.org/standards/content/J2520_202602/

Documents Document Sharing Hub
Full document details: SAE J2520-2026 Classification, Nomenclature, and Specification Definitions for Directional Drilling Tracking Equipment

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), www.sae.org.

SAE J2022 Classification, Nomenclature, and Specification Definitions for Horizontal Earthboring Machines

2.1.2 ISO Publications

Copies of these documents are available online at www.iso.org/store.

ISO 21467:2023 Drilling and Foundation Machinery - Horizontal Directional Drilling (HDD) Machines - Commercial Specifications

3. DEFINITIONS

3.1 PILOT BORE PATH

The centerline location of the pilot bore.

3.2 AS-BUILT

The actual map derived from measurements received by the tracking receiver.

3.3 BORE PATH LENGTH

The distance from the entry point to the exit point along the actual bore path.

3.4 DEPTH

The vertical distance from the surface to the transmitter.

3.5 DRILL STRING COMMUNICATION

Data that is communicated, at least in part, through the drill string.

3.6 HEADING

An angle of direction in the horizontal plane relative to true or magnetic north.

3.7 INSTALLED PATH

The centerline of the completed bore.

3.8 PLANNED PATH

The planned location for the bore.

3.9 LEFT AND RIGHT DEVIATION

The distance measured perpendicular to the reference line when facing the direction the drill rig is heading.

3.10 LEFT AND RIGHT STEERING INDICATOR

Display indicating the amount of left/right steering required to proceed on the intended path to a target point; given in degrees, distance, or means of steering indication.

Documents
Document Sharing Hub
Full document details: SAE J2520-2026 Classification, Nomenclature, and Specification Definitions for Directional Drilling Tracking Equipment

3.11 LOGGING FUNCTION

Hardware or software or both are used for collecting the data about the drilling operation.

3.12 PITCH

The angle of the tracking transmitter relative to the horizontal plane.

3.13 PLANNING FUNCTION

A system used for planning and displaying the projected bore path in relation to known points above ground, below ground, or both.

3.14 REFERENCE LINE

A predetermined line or set of surface characteristics used to measure and document the location of the planned path, actual bore, or installed path.

3.15 REMOTE DISPLAY

A device at or near the drilling unit used to display information communicated from the tracking receiver. It can also display bore plans, as-builts, and other useful information.

3.16 ROLL

Rotation about the longitudinal axis of the transmitter shown in degrees or segmented displays, usually starting from a 12 o'clock position.

3.17 SURVEY PATH DISTANCE

Horizontal distance measured along the reference line to the point of interest.

3.18 TELEMETRY REPEATER

A device that receives data and transmits data.

3.19 TRACKING RECEIVER

A portable device used above ground that detects the signal from the tracking transmitter.

3.20 TRACKING TRANSMITTER

A removable device that fits in the drill pipe and measures parameters about the drill bit and the drilling process and emits electromagnetic signals. Note that the terms transmitter, beacon, sonde, and probe are often used interchangeably.

3.21 YAW

The intended angle of a heading relative to the reference path of a horizontal plane.

3.22 UPDATE RATE

The delay in updating changed parameters, measured in seconds.

3.23 MAXIMUM DEPTH RANGE

The distance where depth reading accuracy no longer meets published accuracy values.

Documents
Document Sharing Hub
Full document details: SAE J2520-2026 Classification, Nomenclature, and Specification Definitions for Directional Drilling Tracking Equipment