

# Self-Drilling Hollow Bar System Series R51

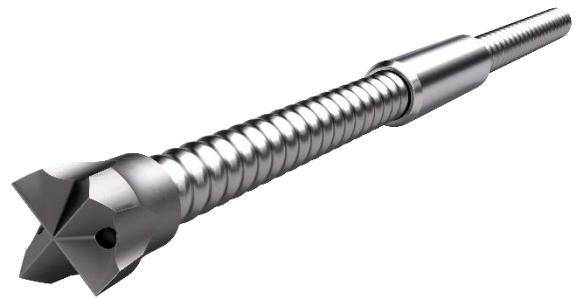
Product code: HBS R51-550(L) & R51-800(N)

Product specification: Tunneling and Mining

Category: Hollow Bar, continuous bonded

## Introduction

The Self-Drilling Hollow Bar System is a self-drilling ground control solution used for underground applications and in civil engineering. Underground, it can be used for bolting, piling, face stabilization, as forepoling element for pre-support, or as a lance for injection works. The Self-Drilling Hollow Bar System also features a wide range of applications in civil engineering such as rock and soil nails, micropiles, or ground anchors. The system is an “all in one” tool for drilling, flushing, post- or simultaneous grouting, and finally the load-carrying member itself. Installations in weak ground and unstable borehole conditions represent no difficulty and are ideal for the application of the Self-Drilling Hollow Bar System. Sandvik Ground Support has long-term experience in the design, development, manufacturing, testing, and distribution of the Self-Drilling Hollow Bar System.



## Key features

- Self-drilling ground control solution
- Preferably used under unstable borehole conditions
- Self-drilling installation without casing using a lost drill bit
- Installation with standard rotary or rotary-percussive drilling machines
- Hollow bar with continuous left-hand, cold-rolled outside thread utilized as drill rod during installation
- Easy extension of hollow bars using couplings
- Grouting can either be performed simultaneously during drilling with a rotary injection adapter or after the drilling operation (post injection)
- Threaded profile allows an ideal bond between the hollow bar and the grouting medium

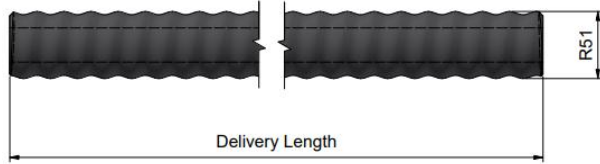
## Main advantages

- Fast and safe self-drilling installation
- Trouble-free application in unstable boreholes
- Easy and similar operating principle using on-site personnel and standard drilling machinery
- Drilling, installation, and optional grouting in a single operational step
- Proven installation process in difficult ground conditions
- Sound and efficient alternative compared to time-consuming cased drilling installation methods and products
- Same installation principle for all applications and ground conditions

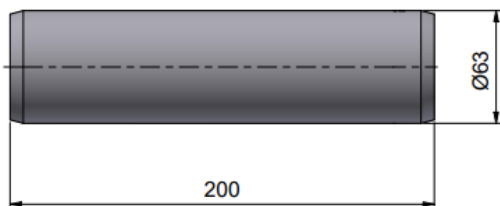
## System components

### Basic elements

- Hollow bar  
Used as drill rod during installation  
Suitable for simultaneous or subsequent grouting  
Tension or compression member



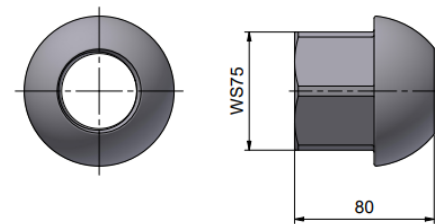
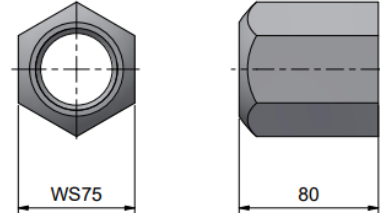
- Coupling  
Continuous inside thread with middle stop or center bridge  
Controlled drilling energy transmission  
Full load-bearing capacity



- Drill bit  
One drill bit per installed unit  
Different diameters and designs  
Hardened and carbide insert versions  
Optimized for various ground conditions

### Anchorage and foundation constructions

- Nut  
Hex or domed version  
Weldable square nut  
Different designs and dimensions available



- Plate  
Flat or domed  
Plate design adjusted to system demands  
Various solutions for angle compensations and special plate designs available

## Specifications

| No. | Characteristic value/ type <sup>1)</sup>   | Symbol         | R51-550(L)            | R51-800(N)            |
|-----|--------------------------------------------|----------------|-----------------------|-----------------------|
| 1   | Nominal external diameter                  | $D_{e,nom}$    | 51 mm                 | 51 mm                 |
| 2   | Actual external diameter                   | $D_{e,act}$    | 50.4 mm               | 50.4 mm               |
| 3   | Nominal internal diameter                  | $D_{i,nom}$    | 36 mm                 | 31 mm                 |
| 4   | Nominal cross-sectional area <sup>2)</sup> | $S_0$          | 860 mm <sup>2</sup>   | 1,045 mm <sup>2</sup> |
| 5   | Nominal weight <sup>3)</sup>               | m              | 6.0 kg/m              | 8.2 kg/m              |
| 6   | Yield load                                 | $F_{p0.2,nom}$ | 450 kN                | 630 kN                |
| 7   | Ultimate load                              | $F_{m,nom}$    | 550 kN                | 800 kN                |
| 8   | Yield strength <sup>4)</sup>               | $R_{p0.2}$     | 520 N/mm <sup>2</sup> | 600 N/mm <sup>2</sup> |
| 9   | Tensile strength                           | $R_m$          | 640 N/mm <sup>2</sup> | 765 N/mm <sup>2</sup> |
| 10  | Elongation                                 | $A_5$          | 8 %                   | 8 %                   |

1) status: 2026-06, note: all values are subject to changes.

2) calculated from the nominal weight:  $S_0 = 10^6 \times m / 7.850 \text{ kg/m}^3$ , rounded.

3) Deviation:  $\pm 5\%$ .

4) Rounded. Steel grade: 40Cr.

## Order information

| Article number | Article Designation               | Unit Weight (kg) | COO |
|----------------|-----------------------------------|------------------|-----|
| 383010551020F  | R51-550(N), L=2,000 [mm], 40Cr    | 12.0             | CN  |
| 383010551030F  | R51-550(N), L=3,000 [mm], 40Cr    | 18.0             | CN  |
| 383010551040F  | R51-550(N), L=4,000 [mm], 40Cr    | 24.0             | CN  |
| 383010551060F  | R51-550(N), L=6,000 [mm], 40Cr    | 38.0             | CN  |
| 383010801020F  | R51-800(N), L=2,000 [mm], 40Cr    | 16.4             | CN  |
| 383010801030F  | R51-800(N), L=3,000 [mm], 40Cr    | 24.6             | CN  |
| 383010801040F  | R51-800(N), L=4,000 [mm], 40Cr    | 32.8             | CN  |
| 383010801060F  | R51-800(N), L=6,000 [mm], 40Cr    | 49.2             | CN  |
| 303030060200   | Coupling R51x200 [mm], Series "B" | 1.84             | CN  |
| 303020023075   | Nut R51, Series "B"               | 1.84             | CN  |
| 303020065075   | Domed Nut R51                     | 1.82             | CN  |

- Off-size hollow bar lengths are available on request.
- For GeoTech applications in requirement of a system approval, refer to the DSI Hollow Bar System.
- Order information for further system components is available on request.

## System accessories

### Structural elements

- S-D expansion bolt
- Expansion shell
- Yielding anchor head
- Lock nut
- Eye nut and loop nut
- Bail nut
- Reverse anchor head
- Lock coupling
- Angle compensation disk
- Sleeve for free length
- Protective cap

### Drilling, grouting, and monitoring

- Bayonet connector
- Injection adapter
- Rotary injection adapter
- Grout mixing pump
- DSI Inject Systems
- Sealing coupling
- Post-injection coupling
- Drill bit adapter
- Rock drilling equipment
- Centralizer
- Injection flow-pressure meter
- Pull testing equipment
- Drill rod wrench
- Tensioning tools

## Legal disclaimer

All dimensions, weights, quantities, and specifications are those applicable at the time of this publication and may be amended from time to time. Please contact your local representative for final confirmation of any key specifications. This document replaces older versions.