

# Heavy-Duty RAZOR BACK (HDRB)

## Specialized Tools: Casing Cleaning Tools

The Heavy-Duty RAZOR BACK\* (HDRB) tool from M-I SWACO consists of a high-strength, one-piece mandrel and is designed to meet the demands of complex wellbore cleanups. By allowing a higher RPM and weight-on-bit rating than the standard RAZOR BACK device, the Heavy-Duty RAZOR BACK unit is well suited for drilling up cement accessories commonly found inside the liner or casing.

### Advantages

The Heavy-Duty RAZOR BACK device is more effective, robust and safer to use in all wellbore-cleanup or casing-scraping operations than other designs. It has a higher RPM and weight-on-bit rating than the standard RAZOR BACK unit.

The lantern is self-centralizing inside the pipe to ensure equal cleaning force at all angles of well inclination. The mandrel

rotates through the stabilizer sleeves and lantern to avoid wear or damage to the casing during pipe rotation. The tool is HTHP-compatible and is not vulnerable to chemical or acid attack.

### Operation

The Heavy-Duty RAZOR BACK device is run with a maximum running-in-hole/pulling-out-of-hole speed of 150 ft/min (46 m/min) and should be positioned at least 30 ft (9 m) above the drill bit/mill. The string should be picked up off-bottom and circulated regularly to clear any accumulation of debris.

Where possible, the bit or mill OD should be greater than the stabilizer sleeve OD of the tool. If this is not possible, it is recommended that a full-gauge mill be run below the first Heavy-Duty RAZOR BACK unit in the bottomhole assembly.

### Features

- Self-centralizing flexible-bladed lantern
- Increased strength, one-piece main mandrel
- Carbide-compound-covered, fixed-mill rings
- Available in all common casing and liner sizes
- Supplied with drill-pipe box-up/pin-down connections

### Advantages

- Fixed-mill rings enhance efficiency when drilling cement accessories
- Lower mill ring ensures larger cuttings are ground down to a size that is manageable for other cleanup tools in the string
- Mandrel rotates through stabilizer sleeves and lantern to avoid damage to casing during pipe rotation
- Lantern is self-centralizing inside casing and ensures an equal cleaning force for all hole inclinations



## How it works

This tool has all the unique features of the standard RAZOR BACK device, plus a carbide-compound coated fixed upper and lower mill ring and an increased-strength, one-piece mandrel. This ensures the tool can cope with the demands of drilling up cement accessories commonly found inside the liner or casing. When a drill bit or mill is used, cuttings generated are not always small enough to easily pass inside or around wellbore-cleanup tools. The lower mill ring of the Heavy-Duty RAZOR BACK unit ensures that larger cuttings and debris are ground down

to a size that makes it easier for them to circulate past any other tools in the string.

The one-piece, main mandrel is complete with non-rotating, right-hand spiral stabilizer sleeves and a metal-bladed lantern covering 360°. The main tool body rotates through the stabilizer sleeves and lantern, avoiding wear or damage to the casing during pipe rotation. The metal-bladed lantern is strong, flexible and self-centralizing, providing the force to contact and scrape the pipe ID equally and effectively.

### Operating parameters

Tool (casing) size, in.	Maximum rotating speed in tension, rpm	Maximum rotating speed in compression, rpm	Maximum compression at tool when rotating, lb (kg)
4½ – 5½	90	60	30,000 (13,608)
7 – 7¾	100	60	35,000 (15,876)
9¾ – 11¾	120	90	50,000 (22,680)
13¾	120	100	55,000 (24,948)

These are general guidelines only and are subject to review, if required, for individual circumstances.