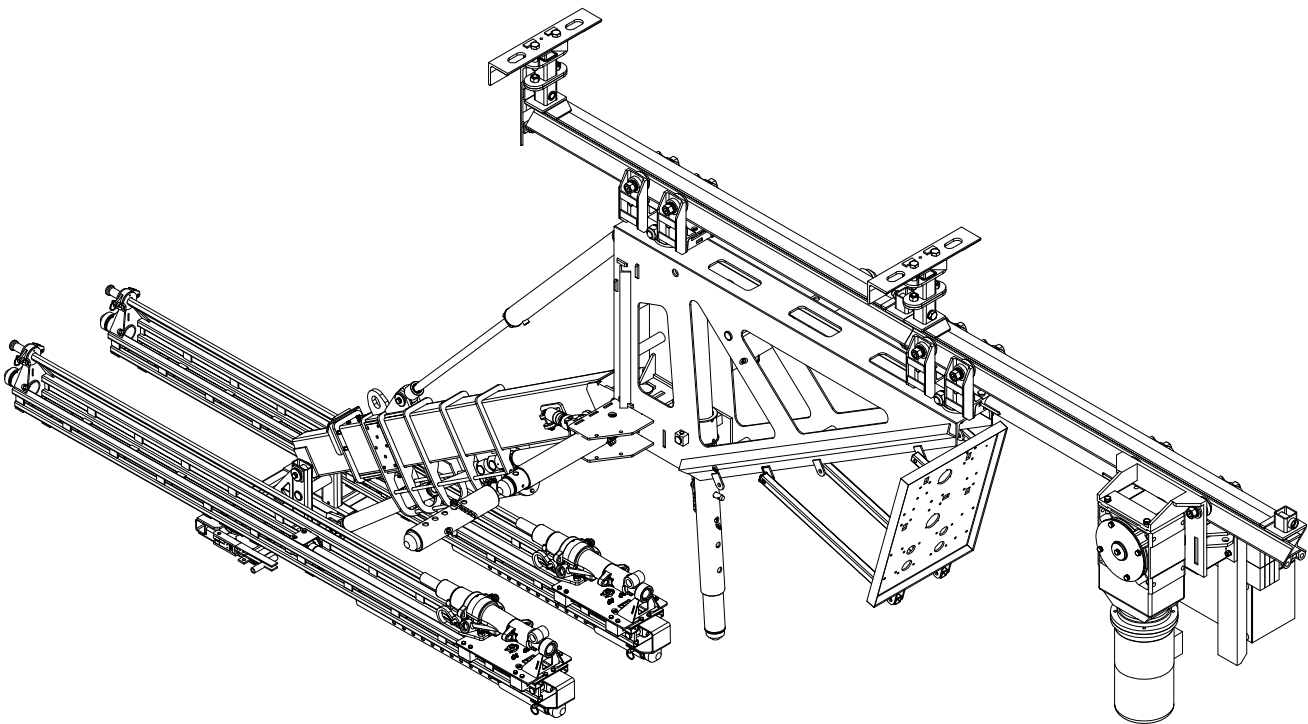


# SPECIFICATIONS

## — NOVATEK RAISE MINING SYSTEM ELECTRIC HYDROPOWERED VERSION



### INTRODUCTION

Novatek's raise mining system is designed for cost-effective mechanized development of small ends.

The system is mechanized with 2 drill feeds to enable faster and more accurate drilling - with a smaller crew. The benefits are improved advance per blast and faster development rates, improved productivity, operating cost savings and enhanced safety.

A high ground clearance enables the system to easily pass over muck piles, allowing cleaning to continue concurrent with drilling operations.

The system is monorail-mounted and driven by an electrical traction unit. The drills and hydraulics are water-based.

The system is able to drill face holes and roofbolt holes and to assist in installing monorails.

It is usable in small ends in elevations or dips up to 30 degrees.

## PRODUCT SPECIFICATIONS

Working area dimensions:	1.5 m to 2.0 m wide; nominally 3.0 m high. Typically 180 to 200m long.
Bend radius:	4.0 m from monorail.
Angle of inclination:	From 0 to 30 deg from the horizontal
Electrical data:	550 V±10% supply to motor, switchgear and lighting 24 V, pilot wire system
Backbone cable:	shielded cable with connector boxes at approx 30 or 60m intervals, attached to hanging wall or vent piping
Trailing cable:	30m 6 core cable with reinforced PVC protector, plug-in connectors
Water supply:	400 to 1500 kPa, 2 l/s max flow, quality to Comro spec
Hydraulic data:	14 to 16 MPa pump output, 2 l/s max flow
Drilled holes:	Typically 36 mm diameter to 2.0m deep
Monorail support:	Monorails rigidly bolted to spacer and headboard, headboard secured using 2 roof bolts. Monorails interlock and are secured to each other using 3 bolts (4 on universal bends). Monorails are secured by 1 headboard each (straight sections) or 1 or 2 headboards each (curved sections).
Monorail section length:	Approx 2m (straight), approx 1m (curved sections - 4 per 90 degree bend)
Monorail mass:	65 kg (2m straight)
Traction drive:	Braked single-speed motor via gearbox to rack and pinion drive system 4kW motor
Travelling speed:	0.25 m/s no load speed on horizontal
Overall rig dimensions:	Typically 6700 L x 780 W x 1300 H (mm), incl feeds and traction unit approx 1400 kg, depending on configuration. Use of utility carrier will increase overall length and mass.
Transport dimensions:	Equipment mounted in frames, combined mass
Traction unit dimensions:	1200 L x 750 W x 1200 H (mm), approx 400 kg
Mainframe dimensions:	2200 L x 700 W x 1300 H (mm), approx 580 kg
Telescopic arm dimensions:	2500 L x 880 W (mm) x 700, approx 450 kg
Drill feed stroke:	2.0 m
Traction unit control:	Electrical pendulum controller with on/off and emergency stop
Rig controls:	Hydraulic remote control valves located on control panel
Rock drills:	Novatek MkV Medium Pressure Feed Drills

Novatek drill rigs, feed booms, methods of support and attachment are patented. Due to product development, specifications are subject to change without notice.

## **SYSTEM OVERVIEW**

Novatek's raise mining system is designed for operation in small ends (typically 1.5 to 2.0 m wide by 3.0 m high and up to 30° gradient). The major components are:

### **HYDRO POWER UNIT AND RETICULATION**

Water from the mine service water supply is reticulated through a sand filter to a pump driven by an electric motor. High pressure water is fed to the drill rig via manifolds and supply hoses

### **ELECTRICAL SYSTEM**

A 525 V ac supply is sourced from the mine power system. This supplies power to the pump motor and the raise climber traction motor. An armoured backbone cable daisy-chains between a network of heavy duty industrial 3 phase sockets to provide the outlet power at each remote destination.

A trailing cable installed in an armoured hose connects via a power plug to the power socket. A pilot line safety system is used to provide safe operation of the equipment; it will disconnect the main 525V power should the operator unplug the rig from the power source.

The on-rig switchgear and lighting is 24V.

A simple digital communications system is provided to allow for signalling from the machine to the base station using a flashing light for communication.

### **RAIL SYSTEM**

Monorails are interconnected and affixed to the hanging wall. A rack gear on the underside is used to engage the traction drive gear. The drilling system is suspended from the monorails.

### **TRACTION DRIVE UNIT**

The drive system is used to move the drill rig along the monorail. It uses an electric motor and reduction gearbox mounted onto a separate frame, linked to the drill rig unit.

### **DRILL RIG UNIT**

The unit is made of the following sub-component systems:

#### **MAIN FRAME, ARMS AND ACTUATORS**

Supported on the monorail, the frame is the structural member for the movable components and their actuators. It also houses the hydraulic components. A staking system is used to anchor the frame for drilling.

#### **EMERGENCY/PARKING BRAKE**

It is located on the top beam of the rig frame, and is able to be swung to engage the teeth of the rack gear. The plunger uses 3 aluminium shear pins to absorb energy in the event of it being actuated.

#### **HYDRAULIC CONTROLS**

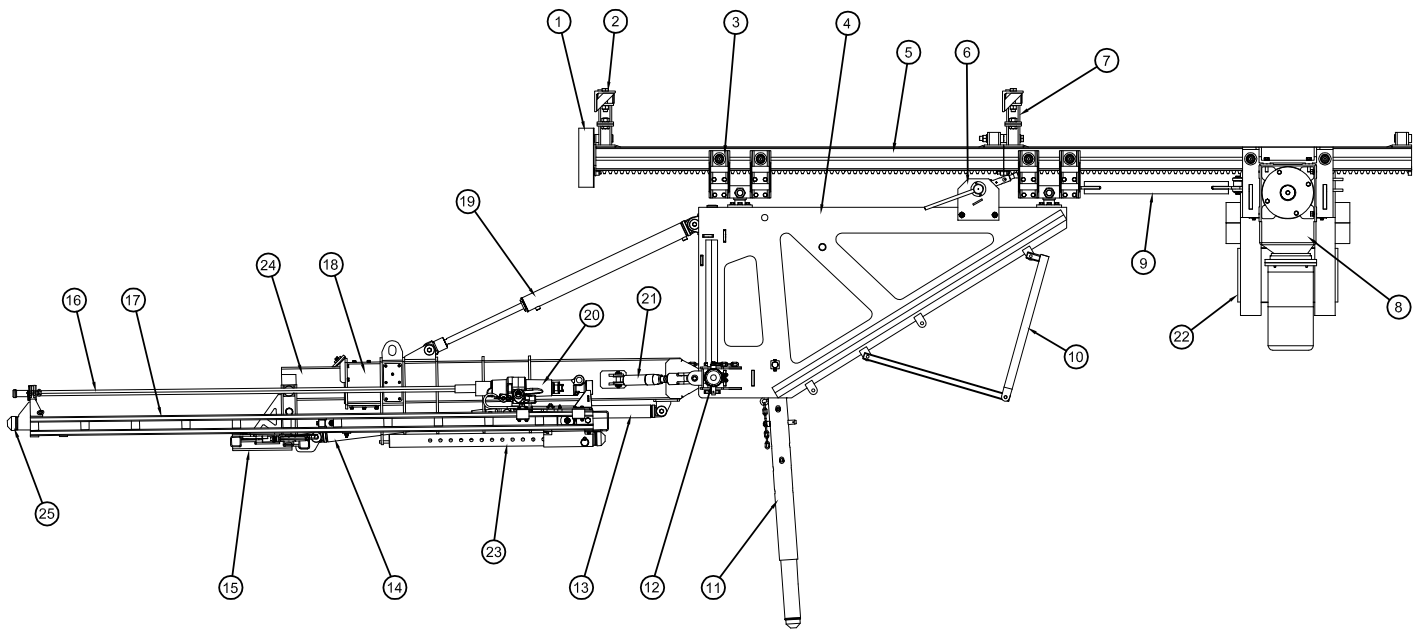
A control panel houses the commonly used controls, to allow remote operation from the rear of the rig.

Additional isolating valves for the staker and slew cylinders are located on the main frame.

#### **DRILL FEEDS AND ROCK DRILLS**

Two feeds are mounted on the cradle attached to the telescopic arm. They are capable of drilling a 2.0 m stroke. Feeds can be manually positioned for angled holes.

The primary parts of the rig and traction unit are shown below:



The parts are:

1. Blast shield and end stop
2. Headboard
3. Trolley with rollers
4. Main frame
5. Monorail
6. Emergency/parking brake
7. Spacer
8. Traction drive (motor and gearbox)
9. Drive link arm
10. Control panel (hydraulic)
11. Footwall staker
12. Sidewall stakers
13. Extension cylinder
14. Rotation cylinder
15. Cradle
16. Drillsteel
17. Drill feed frame
18. Telescopic arm – outer
19. Lift cylinder
20. Water rockdrill
21. Slew cylinders
22. Electrical Control box
23. Feed staker (for roofbolt drilling)
24. Telescopic arm – inner