JUMBO

PRODUCT CATALOGUE

impco Engineering

"Completely Driven"

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IMPCO 6 BOOM SHAFT DRILLING JUMBO

IMPCO 6 BOOM SHAFT DRILLING JUMBO

Designed to ***enhance*** mining operaions by ***increasing production*** and ***safety*** while reducing cycle times.

Purpose-Built Design

Specifically engineered for blind sinking shafts, allowing operators to work safely from the shaft botttom.

Performance

It promises faster, deeper, and more accurate drilling due to enhanced control systems. The new Human Machine Interface (HMI) allows for both manual and automatc control.

Complete Redundancy

Complete mechanical redundancy on all electrical systems. In event of power failure, all drilling can still commence.

Data & Automation

Incorporates IoT for automated reporting on production and maintenance, ensuring the machine operates at optimal performance.

Operational Efficiency

Multiple independent booms are positioned for redundancy to facilitating the completion of drilling patterns. The design is an advanced version of the standard Jumbo, known for reliability and robustness but now includes modernized automation and data integration.

Safety Features

Automatic **fire suppression** systems

Auto boom **levelling and collision prevention** for boom arms

Integral muffling system for operator comfort and safety

Emergency stop buttons (E-stops) on each arm to comply with safety standards

New Drilling Features, increasing performance

Same look, different performance

FEATURES	MANUAL JUMBO	AUTOMATED JUMBO
Manual Drilling	*Yes*	*Yes*
Manual Flushing	*Yes*	*Yes*
Automated Retracing	*Yes, Detent*	*Yes, Full Cycle with Flushing*
Drifter Retract Speed	*7m/min*	*12m/min*
Automated Drilling	*Manual*	*Full Automated drilling*
Drilling Performance*	*0,8-1,2m/min*	*1-1,6m/min*
Noise Suppression**	*118<dBa*	*107<dBa*
Machine Diagnostics	*Manual Gauges*	*Full Sensor Suite*
Automated Reporting	*No*	*Yes*
Fire Suppression	*Optional*	*Standard*
Feed Length	*3,7m Standard*	*4,2M Standard*
Rod Pull Amplifier Pressure***	*No, 130 bar*	*Yes, 200 bar amplified*
Cover Drill Depth	*32m*	*45m*
Oil Flow Available	*40Lpm, 1 Pump*	*100Lpm, Dual Pump*
Automated Drill Anti Stall	*No*	*Yes*
Drill Cycle Improvement	*100%*	*120%-130%*
AVG Drill Cycle Time****	*4hrs*	*3hrs min*

* The machine adapts to ground conditions and dynamically adjusts pressure improving drilling rates as well as lower the chance of planting drill steel.

** Results measured with air motor & 1 boom drilling in granite on surface.

*** Specialised valving to amplify pressure and remove planted drill steel.

**** Cycle time calculated on 8m shaft with 150 holes drilled with 58mm bit.

Features

TRIED & TESTED DRILLING

– equipped with the **most powerful S140 pneumatic drifters** that are well renowned in the industry, and built for the purpose of shaft sinking operations, offer **powerful** and **efficient** drilling capabilities to help reduce cycle time.

Maximum drilling performance

With each boom having the ability to drill holes from 2ft to 13ft vertically as well as being able to rotate 60° left to right, allows for complete shaft bottom coverage.(HMI) allows for both manual and automatc control.

Drilling Improvement

The new hydraulic design allows for increased performance of drilling and retracting while also introducing quality of life improvements like, automated drilling, automated flushing, drifter anti-stall and rod pullout capabilities.

Noise Reduction

With the new integrated muffling system fitted onto the air motors as well as integrated drifter noise reduction for increased operator safety and comfort.

SAFETY

With the addition of remote controls, operators will be able to control the boom arm from a safe distance from the rock face allowing for ultimate safety. Built into the rig are additional sensors to aid in the ease of operation. Some of the safety features incorporated are boom collision avoidance and integrated e-stop buttons amongst others.

Hydraulic Clamp

For quick and efficient rod and split set handling is fitted on the feed system of the Sidewall Support Jumbo. Allows for both clamping and collaring operations.

Complete automated drilling

With each boom having the ability to drill holes from 2ft to 13ft vertically as well as being able to rotate 60° left to right, allows for complete shaft bottom coverage.(HMI) allows for both manual and automatc control.

Automation and control

Built in functions such as auto leveling of the boom arm and the stabilizing arms ensure that setup and drilling can be done as efficiently as possible. Coupled with the automatic drilling and collaring cycle allows for the best efficiency when drilling your holes and longevity of equipment.

IOT and integrated data

For information about shift performance, predictive maintenance and reports for all relevant personnel.

6 BOOM JUMBO SPECIFICATIONS

Boom	*Independent Booms*
Drifter	*S140*
Lubrication	*Auto Lubrication*
Closing Diameter	*1.95m (6ft.5in)*
Overall Height	*9.1m (30ft.)*
Emergency Stop	*Unit features one per boom and one on main chassis*
Power Unit	*2 x 11 kW Air driven motor with load sensing bent axis pump*
Electrical Supply	*3kW Air motor with alternator; transform to 24V DC*
Boom and Drill Control	*Manual with 10 section valve bank or Remote controller (1 per boom)* *Auto drilling and Auto collaring capability* *Rod Pullout Force Amplifier* *Drifter Rod anti-Stall*
Remote Controls	*Optional IP65 Remote*
Reservoir Capacity	*360ℓ*
Drill Diameter	*10m standard and 12m extended*
Boom Tilt	*0° to +60° from vertical*
Boom Rotation	*-75° to +75° (per boom)*
Feed System	*5.2m (17ft.) Standard with 3.5m stroke* *5.8m (19ft.) Optional with 4.0m stroke*
Feed Extend	*1.3m (4ft.3in)*
Feed Swing	*-10° to +10°*
Noise Suppression	*Integrated Noise Suppression <95dBa Air motor 106< dBa while drilling per boom*
Redundancy	*Complete Manual Redundancy*
Weight (Dry Sling Weight)	*16 tons (metric)*
Automatic Fire Suppression	*Standard*
PITO Clamp	*Hydraulic or Pneumatic*
Software	*V3 Automation and V2 Reporting*
IoT and Reporting	*Service Tool - Automatic Reporting Optional*

Max Shaft Unlined Size
9.50m

Overall Height
8.80m

Closing OD
2m

Slinging Mass
14 800kg

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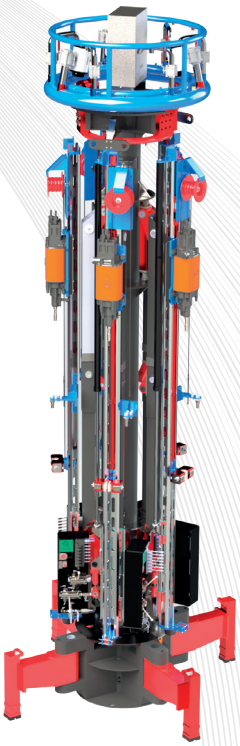
IMPCO 5 BOOM AUTO DRILL JUMBO

IMPCO 5 BOOM AUTO DRILL JUMBO

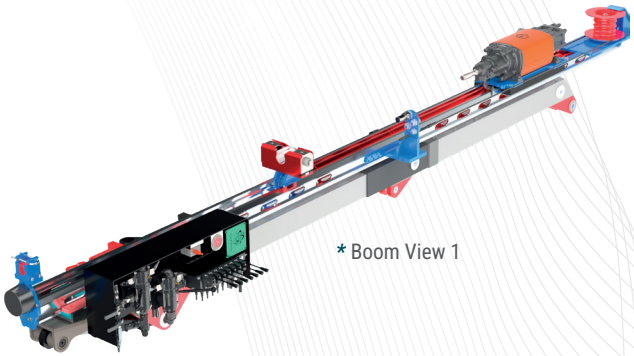
* Open View

* Closed View 1

* Closed View 2

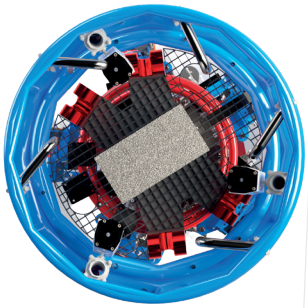


* Closed View 3



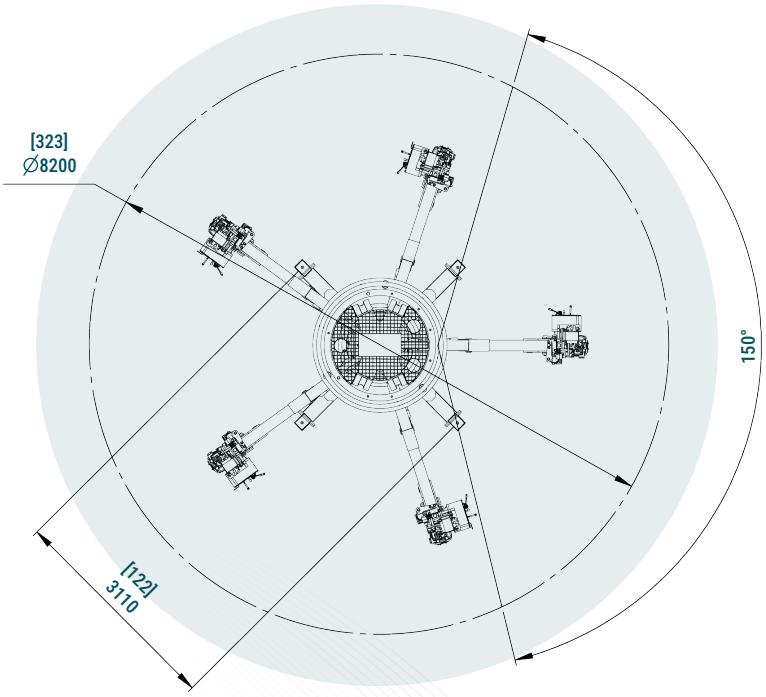
* Boom View 1

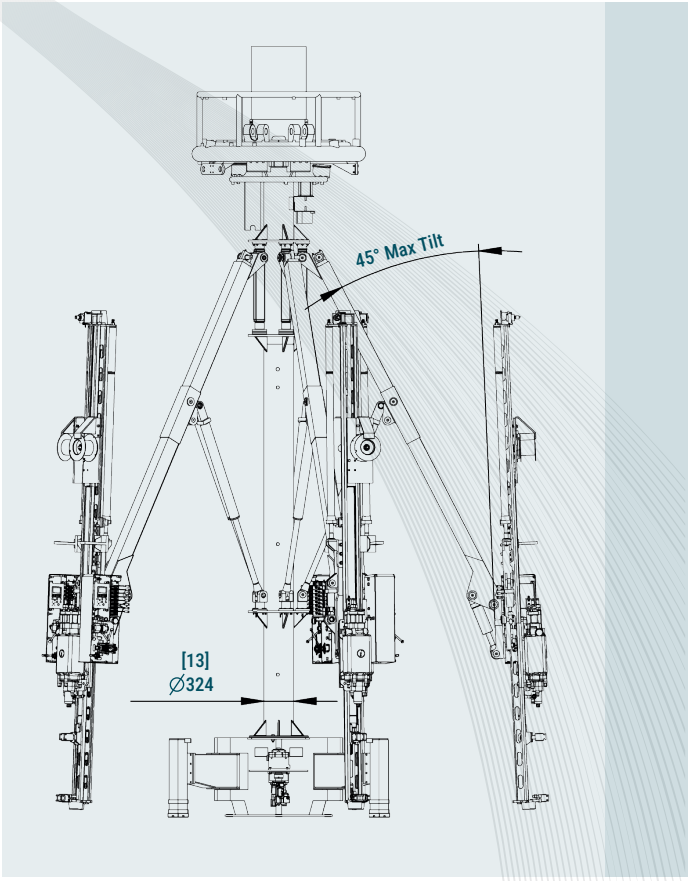
* Boom View 2

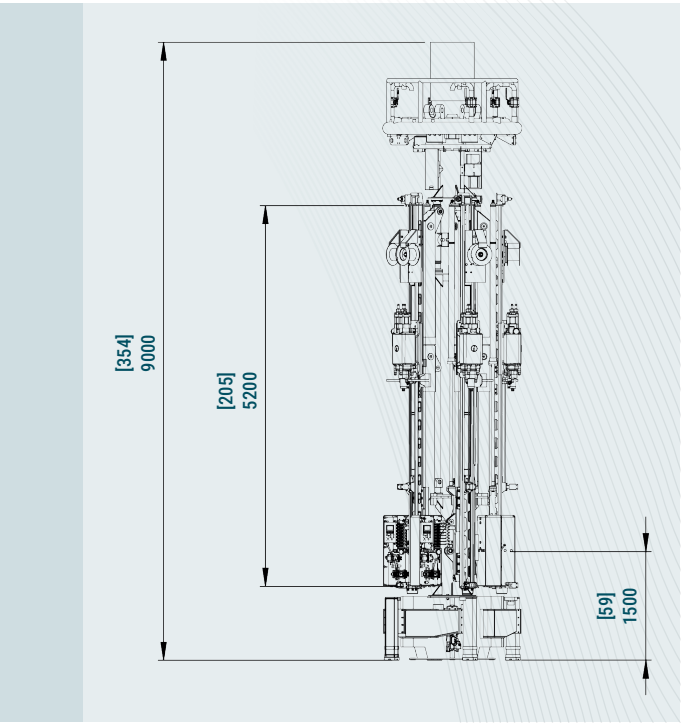


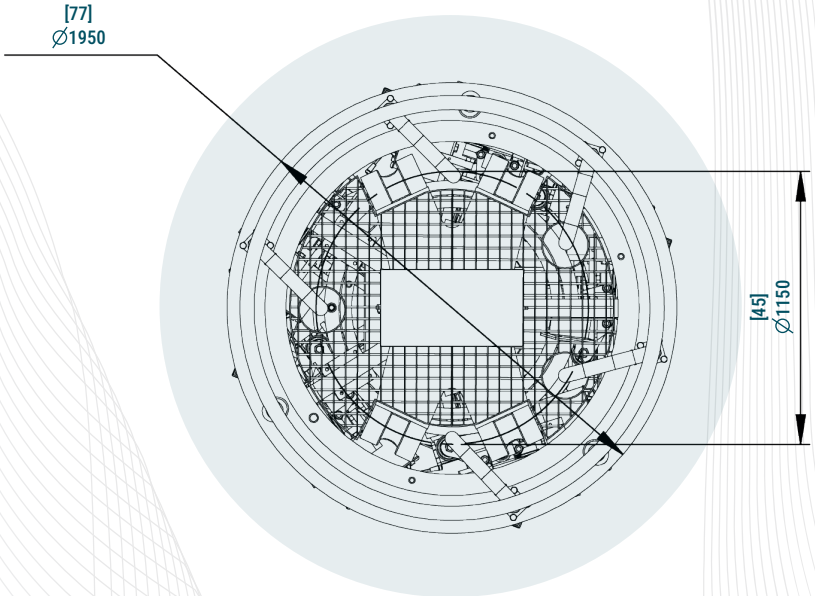
* Top View

TECHNICAL DRAWINGS









5 BOOM JUMBO SPECIFICATIONS

No. of Booms	*5*
Drill Diameter	*8.2m (27ft.)*
Overall Height	*8.2m (27ft.)*
Closing Diameter	*1950mm (6,4ft.)*
Drifter	*5xS140 Pneumatic Drifters*
Feed Rail Length	*5.2m (17ft.)*
Drill Steel Length	*3.7m (12.1ft)*
Rod Clamping	*Bolt and Pneumatic Pito Clamp*
No. of Stabliser Jacks	*4*
Foot Print Base	*3x3m*
Power Pack	*11kW (8,5hp) Air Driven Motor with Load Sensing Pump*
Total Air Consumption @600 kPa	*3500CFM*
Total Water Consumption @400 kPa	*120lmp (32gpm)*
Hydraulic Oil Capacity	*340ℓ (90gal)*
Electrical Connection	*3kW (4hp) Air Motor Driven 24V Altenator*
Control And Monitoring	*PLC with HMI Display; Manual and IoT*
Automation	*Drill Cycle Automation with Hydraulic Solenoid Valve*
Sensing	*Consumption, Control, Safety and Machine Operation*
Fire Suppression	*Automatic and Manual Fire Suppression*
Dry Mass Without Consumables	*13 500kg (29 800lb)*
Slinging Mass With Oil and Drilling Consumables	*14 300kg (31 500lb)*
Lifting Arrangement	*4 Celvis and Pin; 2x2 or 3 Celvis Design*

Max Shaft Unlined Size
8.50m

Overall Height
8.16m

Closing OD
1.90m

Slinging Mass
11 800kg

SHAFT SINKING JUMBO SELECTION TABLE

DESCRIPTION	4 BOOM	5 BOOM	6 BOOM	7 BOOM	8 BOOM	6 BOOM EXT	8 BOOM EXT
Max Shaft Unlinied Size	7.50m	8.50m	9.50m	10.50m	11.50m	12.20m	12.20m
Centre Column Length	6.18m	6.68m	7.34m	7.72m	8.12m	8.85m	8.85m
Centre Column OD	320mm	324mm	355mm	406mm	457mm	406mm	457mm
Overall Height	7.65m	8.16m	8.80m	8.20m	8.55m	9.5m	9.5m
Shipping Mass excl Oil	7480kg	11500kg	13900kg	16800kg	19200kg	16900kg	21000kg
Closing OD	1.85m	1.90m	2.00m	2.10m	2.40m	2.3m	2.4m
Number of Drifters	4	5	6	7	8	6	8
Feed Rail Length	4.8m	4.8-5.2m	4.8-5.2m	5.2-5.8m	5.2-5.8m	5.2-5.8m	5.2-5.8m
Max Drill Steel Length	3.00m	3.00m	3.70m	4.30m	4.30m	4.30m	4.30m
Number of Stabilisers (Outriggers)	4	4	4	4	4	4	4
Base Foot Print	3mx3m	3mx3m	3.5mx3.5m	3.5mx3.5m	4.1mx4.1m	4.5mx4.5m	4.5mx4.5m
Air Consumption @6Bar(CFM)	2000/2300	2700/3000	3300/3400	3800/3900	4400/4500	3300/3400	4400/4500
Total Water Consumption @4Bar	1.25-1.3lt/sec	1.6-1.7lt/sec	1.9-2lt/sec	2.1-2.2lt/sec	2.5-2.6lt/sec	1.9-2lt/sec	2.5-2.6lt/sec
Hyddraulic Tank Capacity	220	320	420	600	700	440	700
Slinging Mass	7 700kg	11800kg	14800kg	17400kg	19800kg	17500kg	21750kg
No of Power Packs	2	2	2	2	2	2	2

*The weight can vary depending on actual spec and build of the jumbo. Allow for a 5% tolerance on slinging mass

**The drill steel length quoted is compete length including shank stick out, and drill bit length