CONCRETE DRILLING

MRS15 APPLICATION PACKAGES

BAUBOT
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DRILLING DOWN TO BUSINESS

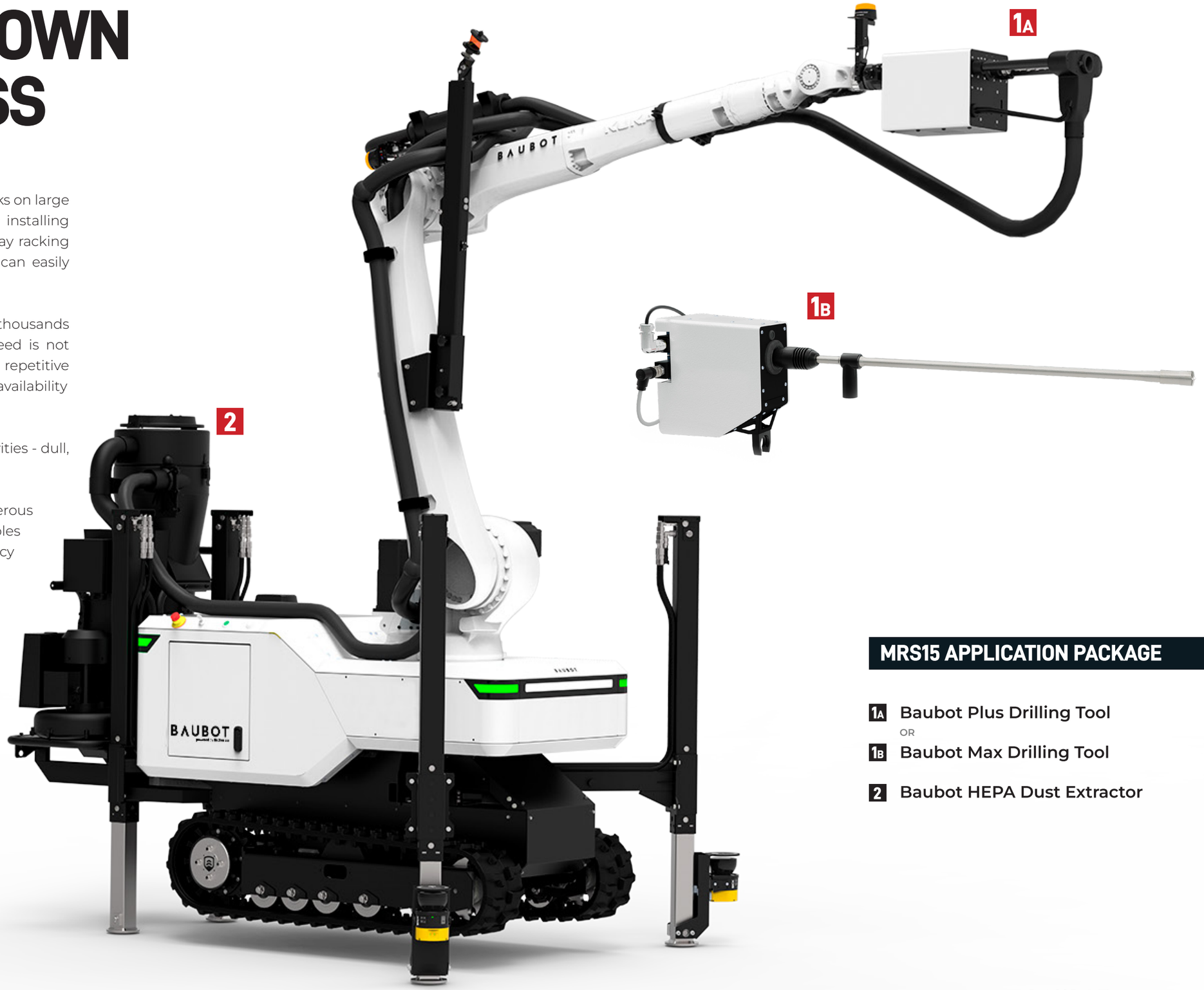
Drilling, is in fact, one of the most repetitive tasks on large infrastructure and commercial projects. From installing crash barriers on a highway project, to high-bay racking in a warehouse, the number of drilled holes can easily number in the thousands.

Doing the same task over and over again, thousands of times while maintaining accuracy and speed is not something humans excel at. On the contrary, repetitive work is a common source of injuries, reducing availability in an already depleted workforce.

Drilling falls within the 4D classification of activities - dull, distant, dirty, dangerous.

Baubot systems aim to take this tedious, dangerous work from people. No matter the number of holes on a project, our systems maintain their accuracy for each hole from start to finish.

The Baubot Concrete Drilling Application Packages are designed to seamlessly integrate with your Baubot MRS15 series system with no modification required to the basic system itself. Simply attach the tool to the tool changer on the robot arm, mount the dust extractor to the rear of the system and plug in the application plug and you are ready to go!



n.b. System shown is a Baubot MRS15-3120

MRS15 APPLICATION PACKAGE

1A Baubot Plus Drilling Tool

OR

1B Baubot Max Drilling Tool

2 Baubot HEPA Dust Extractor

DUST-FREE, CLEAN & SAFE OPERATION

The construction industry is widely recognized as one of the most hazardous industries to work in, due to the inherent risks and potential for accidents. Although mitigation efforts are taken, it can be costly to do and certain risks can never be fully eliminated.

Drilling operations can give rise to some of the most common hazards on a construction site, and often the most violated safety standards[1]:

- **working at height**
- **noise & vibration**
- **dust exposure**

With the Concrete Drilling application package from Baubot these risks are either significantly reduced or eliminated entirely.

The risk of contracting silicosis is significantly reduced. Hammer drilling into concrete has been shown to generate up to 11 times the permitted daily exposure of silica dust[2]. With Baubot's integrated dust extractor, and its dual stage, cyclone filtration system, **dust exposure to the operator can be reduced by up to 99.995%**.

The risk of vibration **injuries such as Hand-Arm Vibration Syndrome can be almost entirely eliminated[2], due to the heavy vibration of drilling into concrete being managed entirely by the Baubot system.**

Working at height is no longer necessary, the operator can stand safely on the ground while the system can utilize its impressive vertical reach - up to 4900 mm. This brings a secondary benefit in **cost and time reduction as there is no setup time or equipment cost** involved in the purchase or hire of equipment to allow workers to reach these heights.

Drilling into concrete with both electrical rotary hammer drills and pneumatic drills generates incredible high levels of noise. Although all workers wear hearing protection, inadequate fitment or an insufficient noise reduction rating can still expose workers to unacceptable levels of noise. Hammer drilling into concrete can generate in excess of 100 decibels[2], with the **5m safe operation distance** of Baubot systems, this is reduced by over 80%.

Fatigue can also dramatically increase the risk of injury and is shown to directly impact the increase in errors and the need for rework[3]. With **the physically demanding task of drilling taken over by the system, the operator is free to ensure accuracy and safe operation.**

1. U.S. Department of Labor (2024) 'Top 10 Most Frequently Cited Standards', www.osha.gov/top10citedstandards.

2. Rempel, D. et al. (2019) 'Pneumatic rock drill vs. electric rotary hammer drill: Productivity, vibration, dust, and noise when drilling into concrete,' Applied Ergonomics, 74, 2018.08.05

3. Zong, H. et al. (2024) 'Fatigue in construction workers: A systematic review of causes, evaluation methods, and interventions,' Safety Science, 176, 2024.04.05

A MANUAL EQUIVALENT		B AUTOMATIC DRILLING
~100 dB(A)	**NOISE EXPOSURE** 80% REDUCTION	<90 dB(A)
4.5 m	**WORKING AT HEIGHT** HAZARD ELIMINATED	0.0 m
~7.15 m/s²	**VIBRATION** HAZARD ELIMINATED	0.00 m/s²
~0.55 mg/m³	**DUST EXPOSURE** 99.9% REDUCTION	<0.01 mg/m³

VERSATILITY FOR THE DYNAMIC JOB SITE

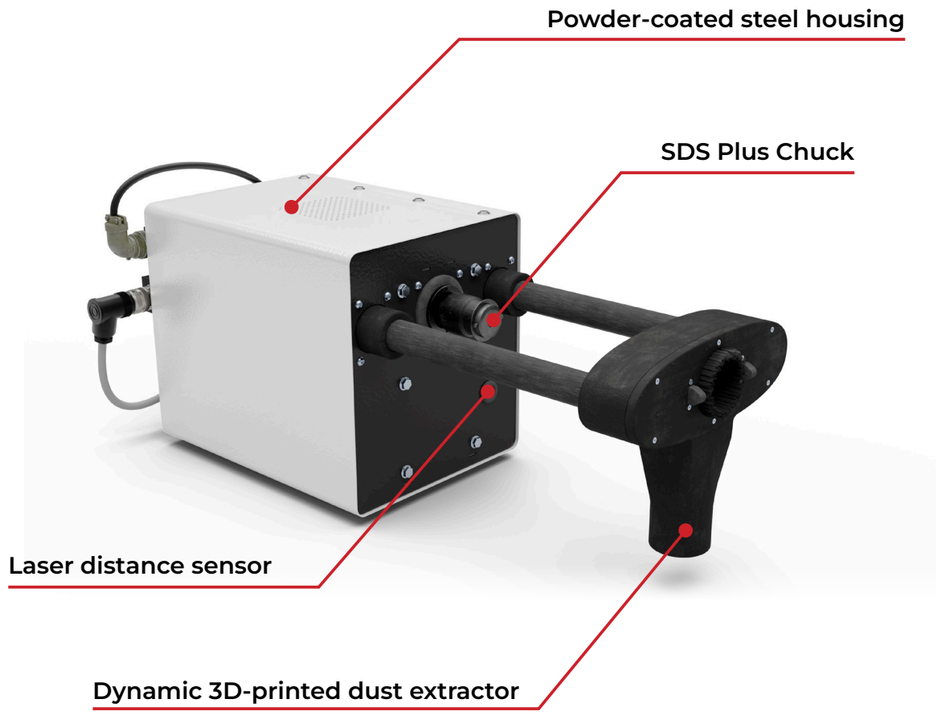
The Plus drilling tool is as versatile as your job sites are dynamic.

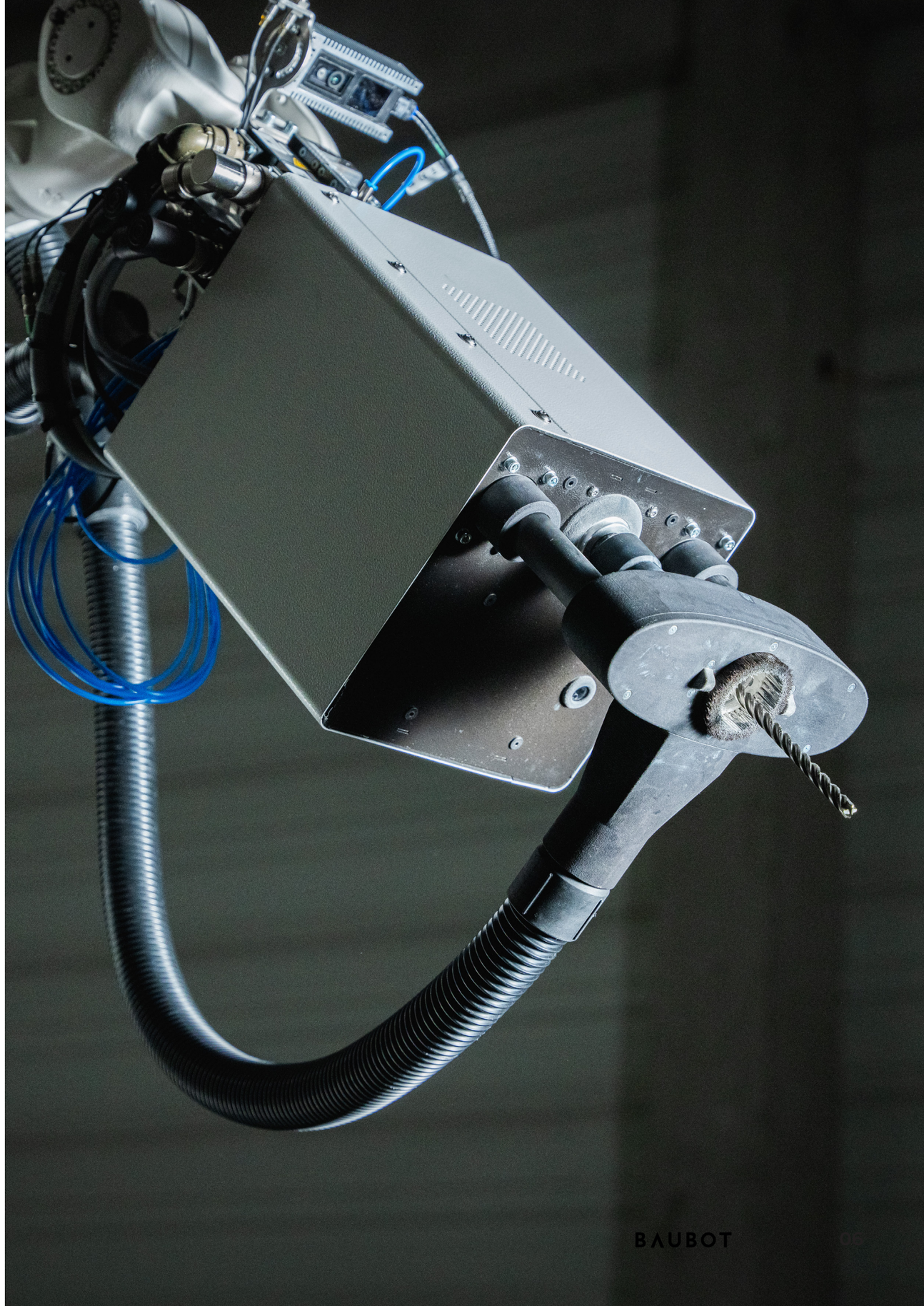
Equipped with a powerful hammer drill and SDS-plus chuck, all major concrete grades can be easily conquered.

Bit sizes from 6 to 22 mm cover common drilling operations to be easily achieved with commercially available drill bits.

The integrated dust isolation ensures contact with the drilling surface throughout the duration of the drilling operation, guaranteeing a dust free working environment.

Dedicated, directed cooling fans ensure drilling operations can continue uninterrupted, improving uptime and efficiency.





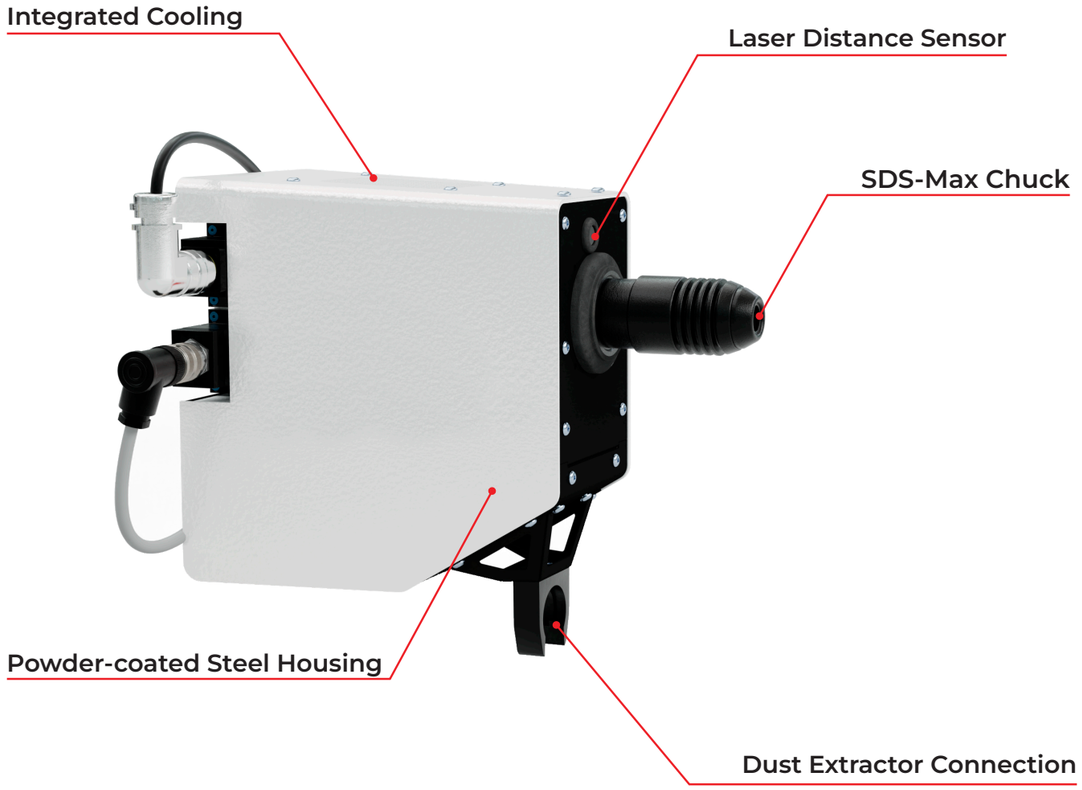
HUGE POWER FOR HUGE PROJECTS

The Max drilling tool can take on projects of any size.

Equipped with more powerful hammer drill and SDS-MAX chuck, all major concrete grades can be easily conquered.

Bit sizes from 12 to 35 mm cover most common drilling operations (to be easily achieved with commercially available drill bits.) The integrated dust isolation operates dynamically, ensuring dust and debris is directly removed at the drill face, ensuring a dust free working environment.

Dedicated, directed cooling fans ensure drilling operations can continue uninterrupted, improving uptime and efficiency.



PLUS SERIES
SPECIFICATIONS

STANDARD DRILLING TOOL

Tool Mass	kg	12.5
Chuck Type	-	SDS Plus
Hammer Impact Energy	J	0 - 3.6
Speed at Rated Load	rpm	0 - 700
Impact Rate	bpm	0 - 3700
Max. Drill Bit Diameter	mm	22
Min. Drill Bit Diameter	mm	6
Max. Drill Hole Depth	mm	250
Drill Hole Depth Precision	mm	-0 +3
Maximum Concrete Grade	-	C 120

DUST EXTRACTOR

Max. Flow Rate	m^3/h	260
Max. Negative Pressure	kPa	28
Max. Sound Level	dB(A)	72
Fine Filter Polyester, Area	m^2	2.5
Separation Efficiency of Fine Filter, EN 60335-2-69, Class M	%	99.9
Microfilter, Filter Area	m^2	2.2
Microfilter, Filter Classification, EN 1822-1	-	HEPA H13
Machine Separation Efficiency, EN 60335-2-69, Annex AA, Class H	%	99.995

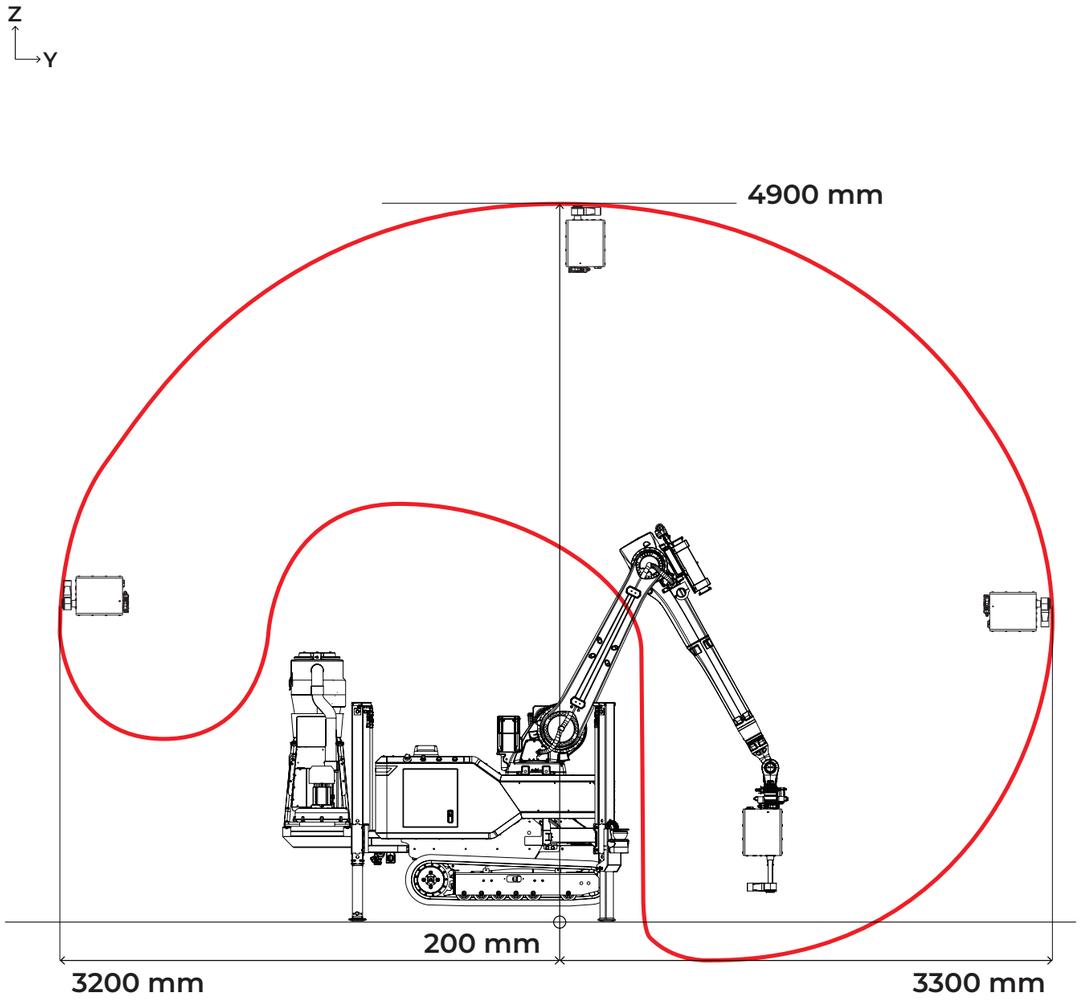
SYSTEM DATA

		MRS15-3120	MRS15-2550
Max. Horizontal Reach	mm	3300	3150
Max. Ceiling Height	mm	4900	4100
Min. Ceiling Height	mm	3200	3200
Arm Payload	kg	20	50
Absolute Accuracy	mm	± 4	± 4
Relative Accuracy	mm	± 1.5	± 1.5
Joint Speed with Rated Payload	°/s	30	30
Number of Axes	-	6	6
Motion Range - A1	°	-180° to 185°	-180° to 185°
Motion Range - A2	°	-170° to -35°	-165° to 0°
Motion Range - A3	°	-120° to 170°	-120° to 165°
Motion Range - A4	°	-350° to 350°	-180° to 180°
Motion Range - A5	°	-109° to 109°	-75° to 75°
Motion Range - A6	°	-160° to 240°	-250° to 250°

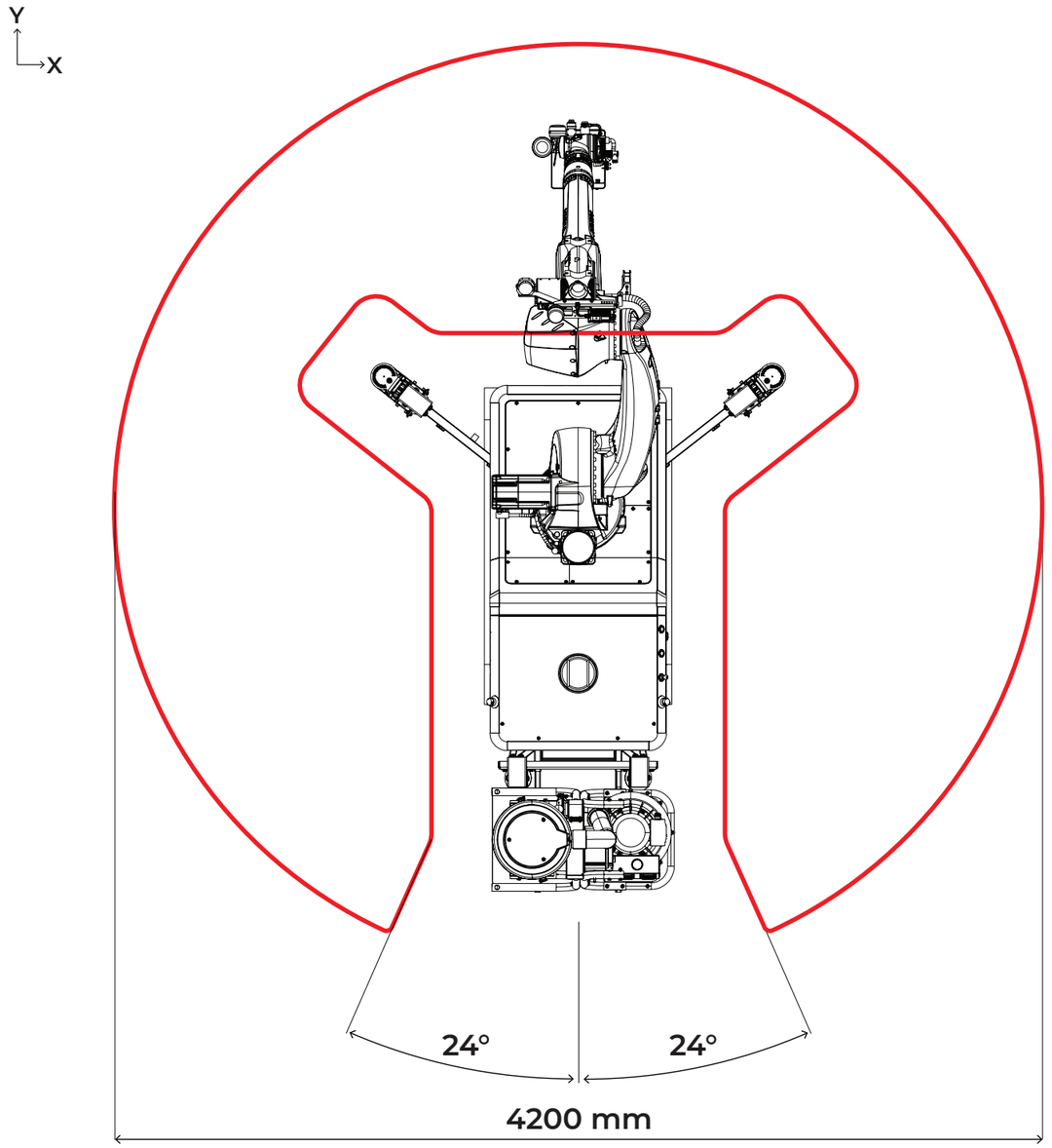
NOTE:

- The reach diagrams contained in the following pages are illustrative only. For detailed consultation, please contact Baubot directly or directly simulate projects within Baubot PSE.
- Stabilization is set at 100 mm above level ground. On uneven ground this may be higher.
- All maximums are set at the maximum achievable hole depth. If the maximum depth is not required, the difference may be added to the maximum reaches.
- Accuracy is dependent on the use case.

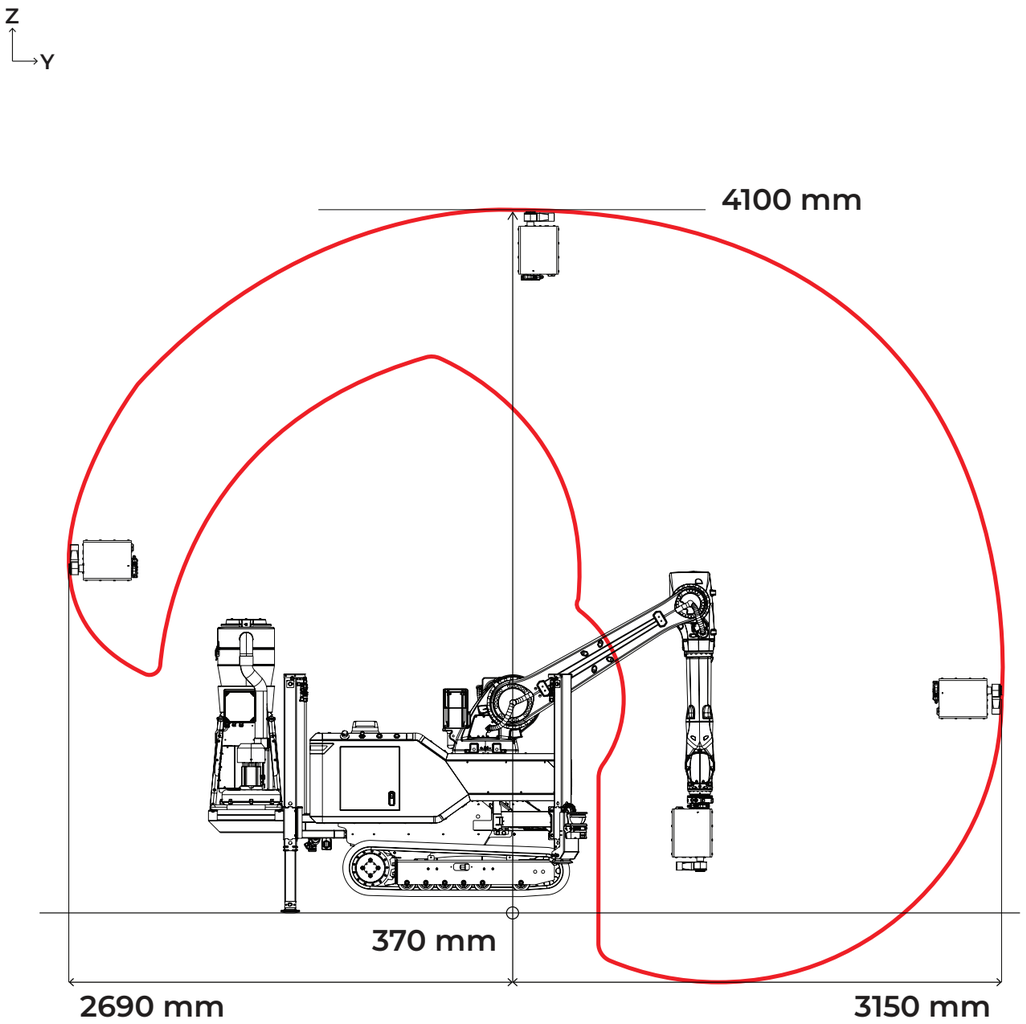
MRS15-3120 + PLUS TOOL
GENERAL WORKING AREA



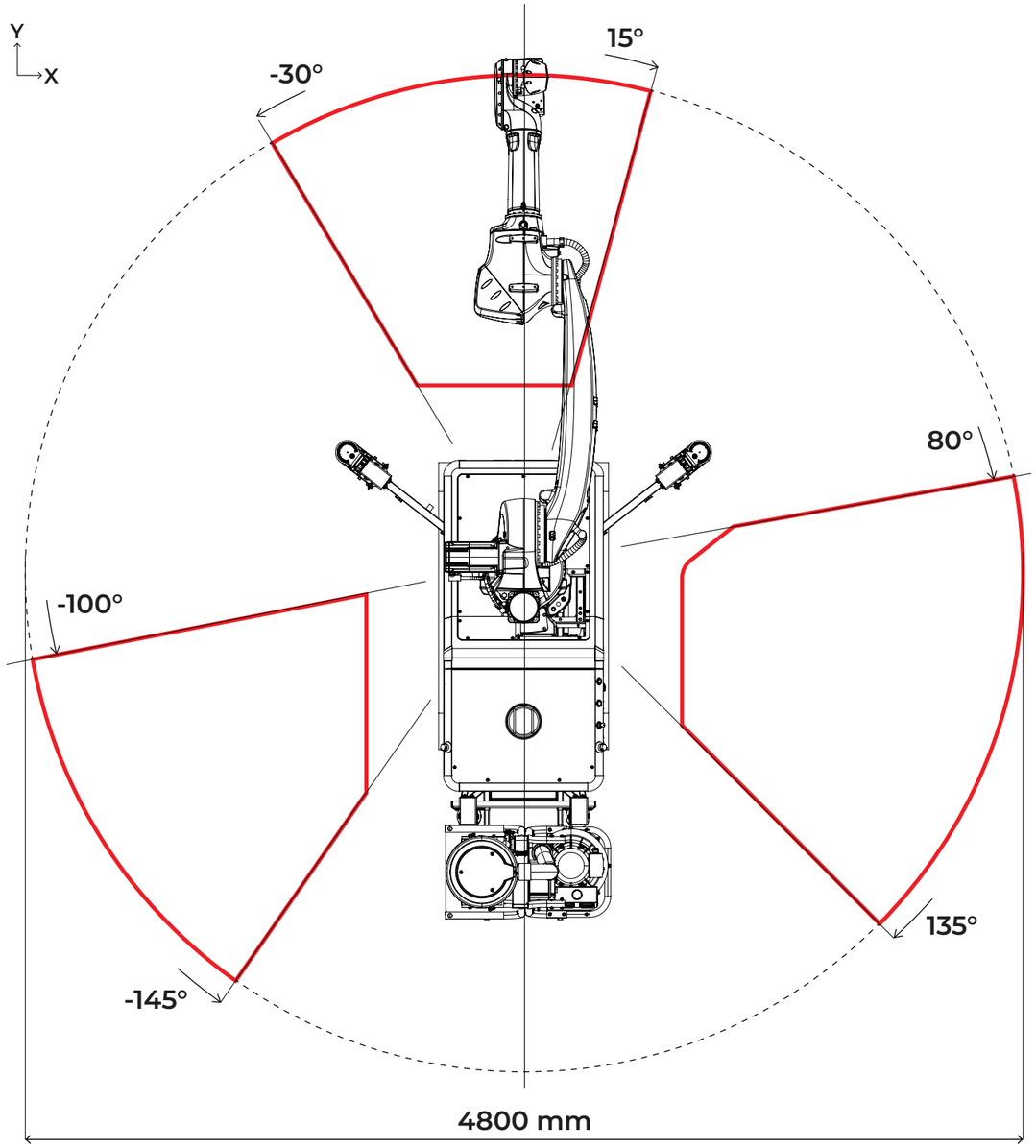
MRS15-3120 + PLUS TOOL
FLOOR DRILLING AREA



MRS15-2550 + PLUS TOOL
GENERAL WORKING AREA



MRS15-2550 + PLUS TOOL
FLOOR DRILLING AREA



MAX SERIES
SPECIFICATIONS

STANDARD DRILLING TOOL

Tool Mass	kg	12.5
Chuck Type	-	SDS MAX
Hammer Impact Energy	J	0 - 7
Speed at Rated Load	rpm	0 - 480
Impact Rate	bpm	0 - 3700
Maximum Concrete Grade	-	C 120
Drill Hole Depth Precision	mm	-0 +3
Max. Drill Bit Diameter	mm	35
Max Hole Depth*	mm	650

* BASED ON FISCHER FHD MAX HOLLOW DRILL BITS

DUST EXTRACTOR

Max. Flow Rate	m^3/h	260
Max. Negative Pressure	kPa	28
Max. Sound Level	dB(A)	72
Fine Filter Polyester, Area	m^2	2.5
Separation Efficiency of Fine Filter, EN 60335-2-69, Class M	%	99.9
Microfilter, Filter Area	m^2	2.2
Microfilter, Filter Classification, EN 1822-1	-	HEPA H13
Machine Separation Efficiency, EN 60335-2-69, Annex AA, Class H	%	99.995

SYSTEM DATA

		MRS15-3120	MRS15-2550
Max. Horizontal Reach	mm	3500	3200
Max. Ceiling Height	mm	5000	4200
Min. Ceiling Height	mm	3200	3200
Arm Payload	kg	20	50
Absolute Accuracy	mm	± 4	± 4
Relative Accuracy	mm	± 1.5	± 1.5
Joint Speed with Rated Payload	°/s	30	30
Number of Axes	-	6	6
Motion Range - A1	°	-180° to 185°	-180° to 185°
Motion Range - A2	°	-170° to -35°	-165° to 0°
Motion Range - A3	°	-120° to 170°	-120° to 165°
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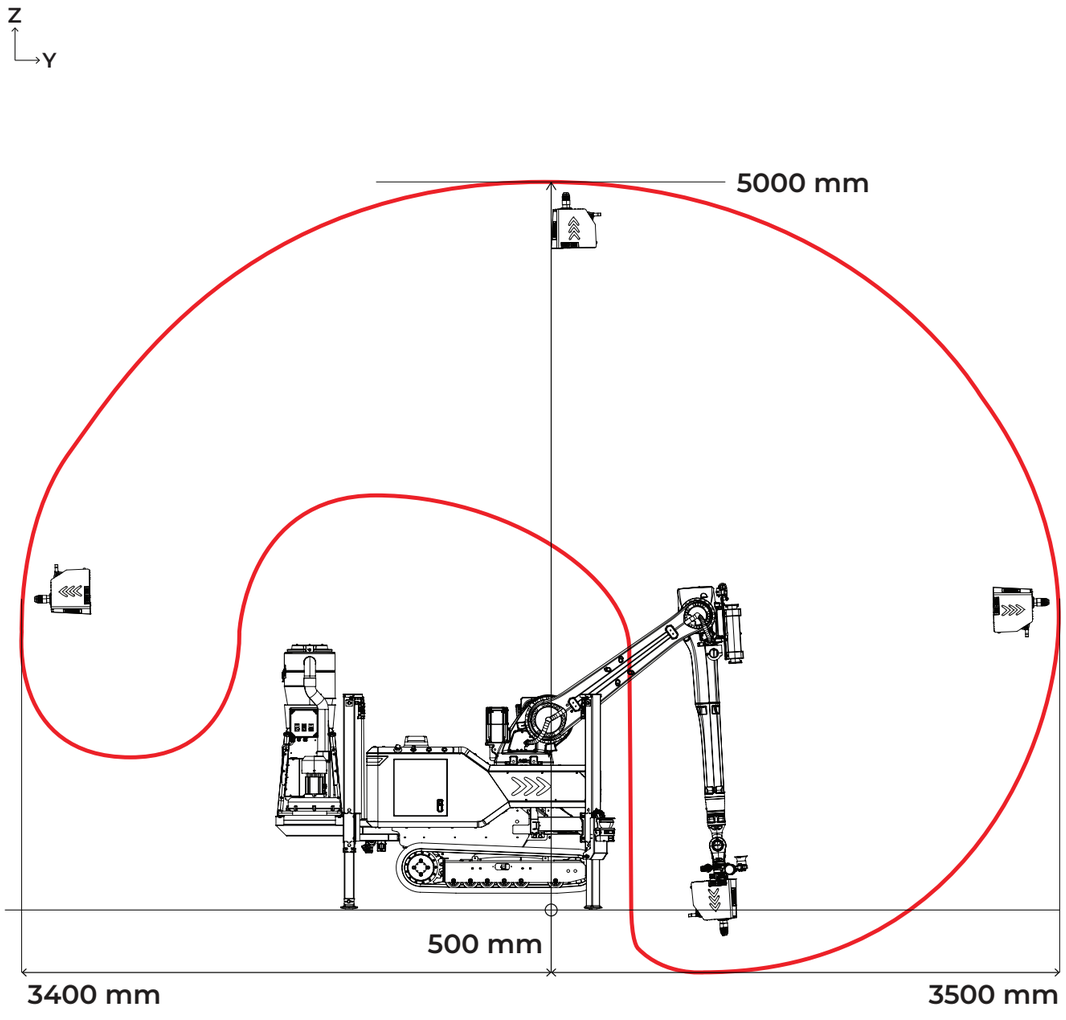
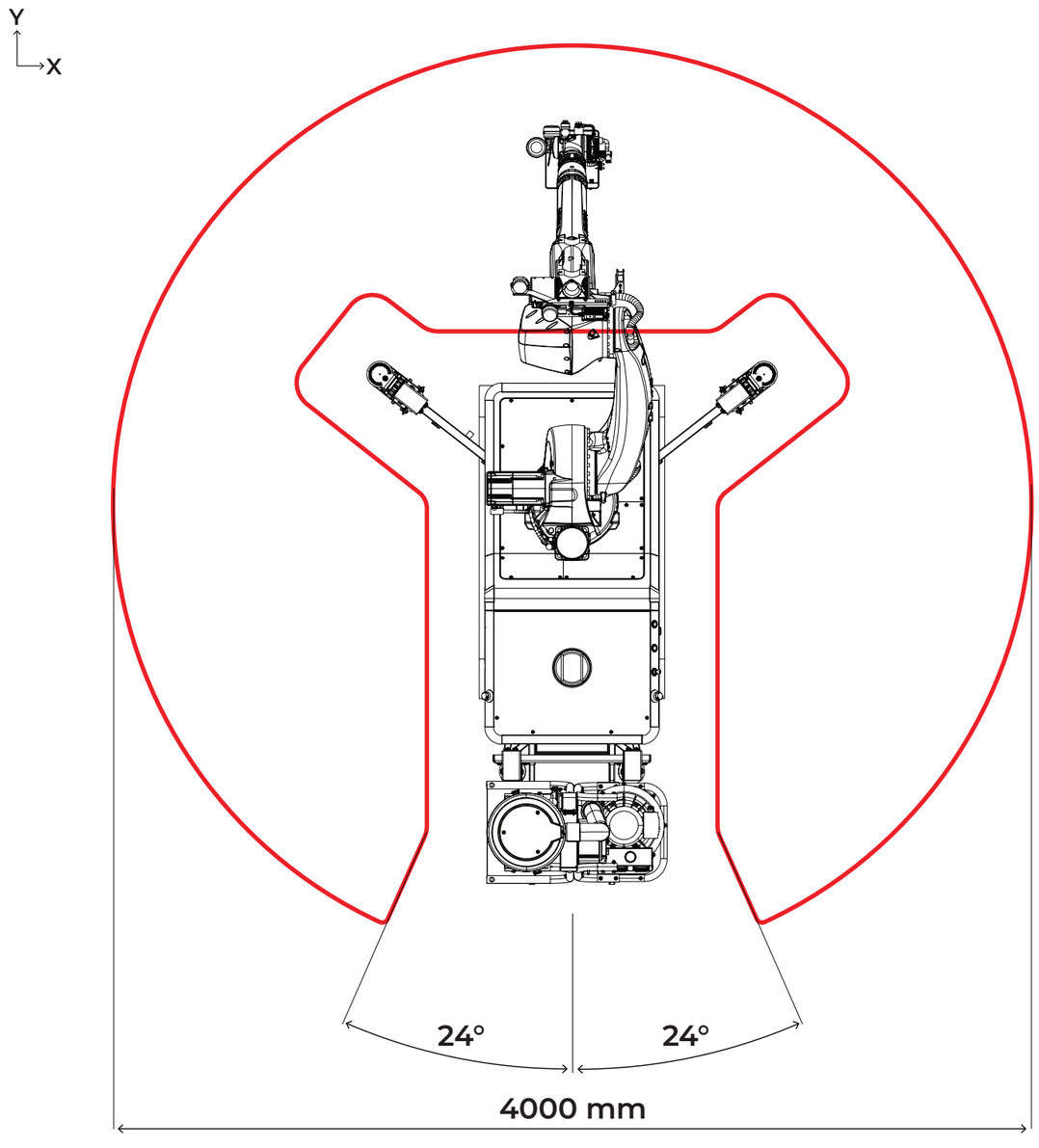
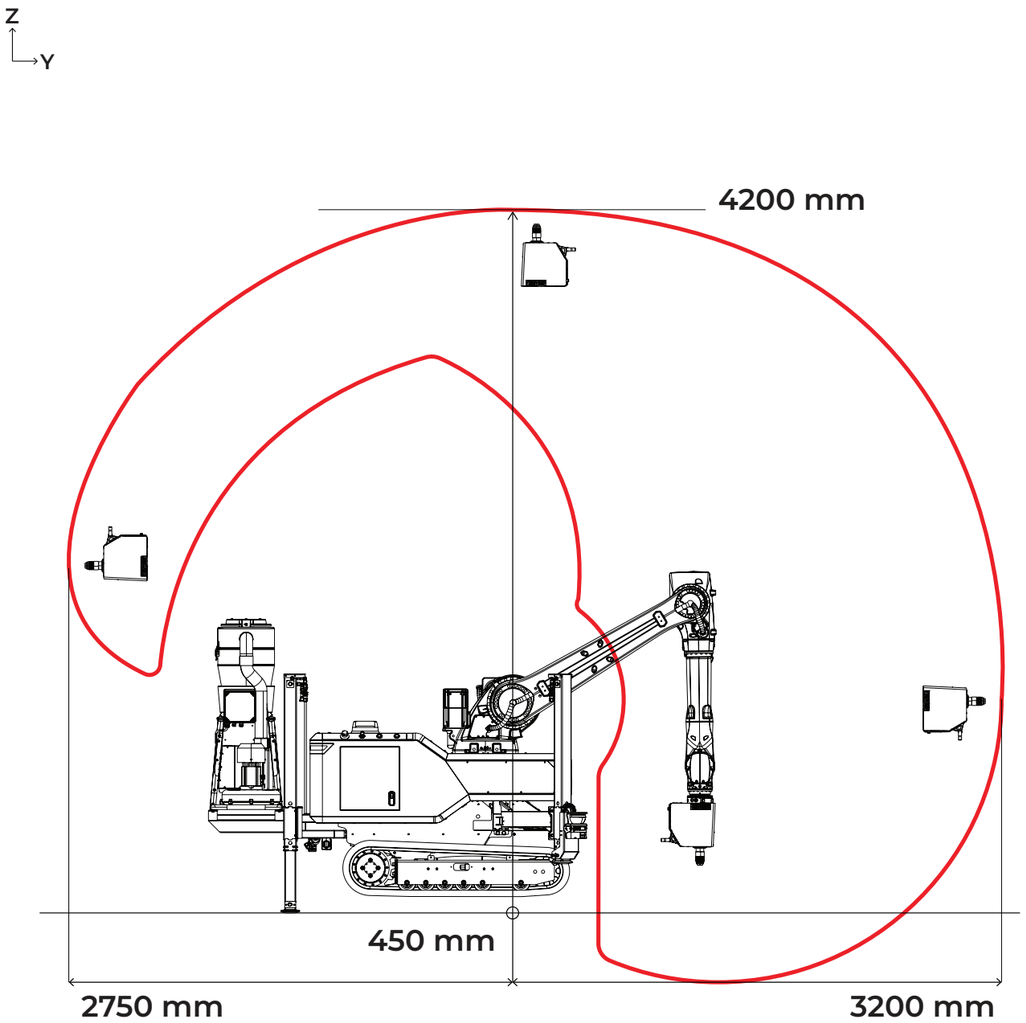
MRS15-3120 + MAX TOOL
GENERAL WORKING AREA



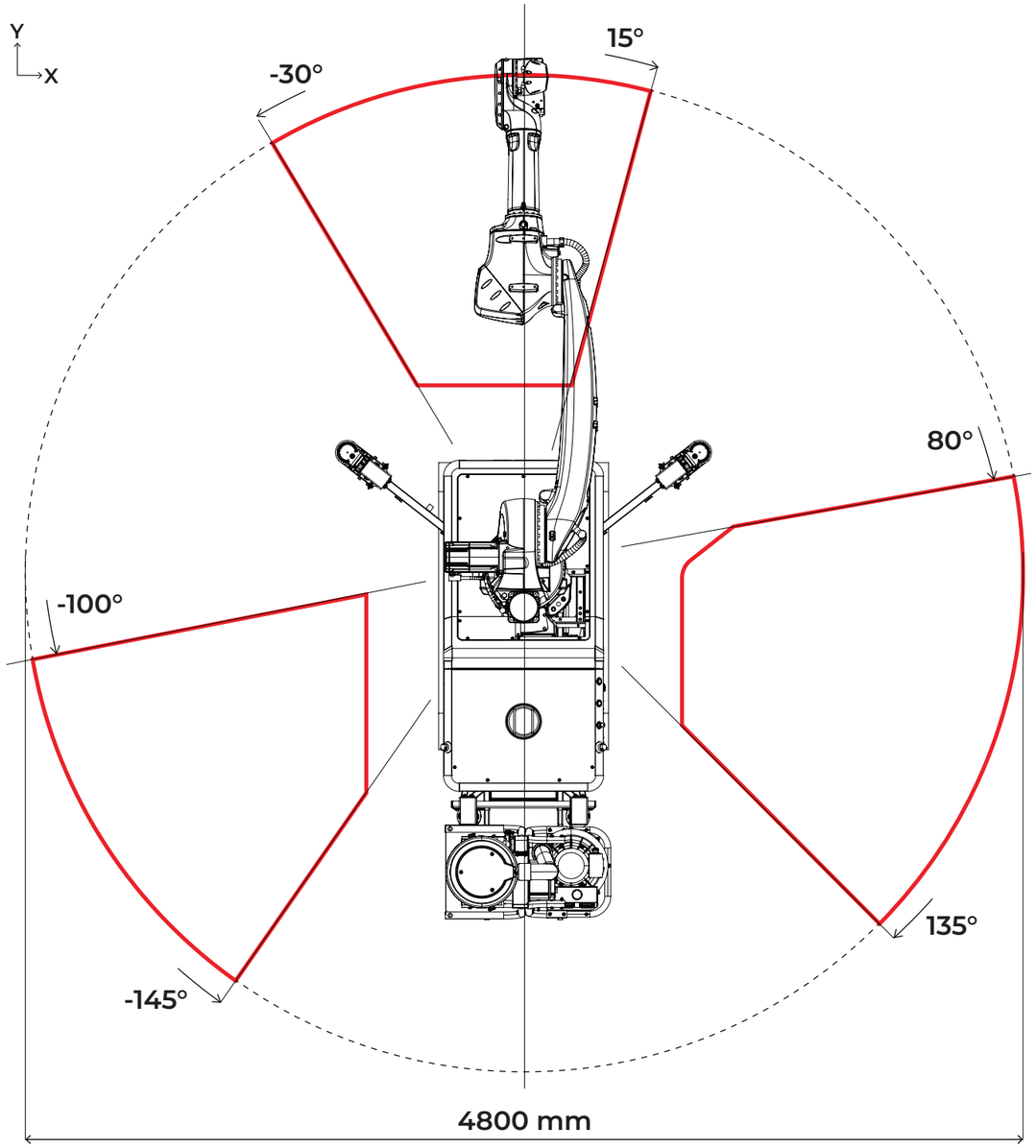
MRS15-3120 + MAX TOOL
FLOOR DRILLING AREA



MRS15-2550 + MAX TOOL
GENERAL WORKING AREA



MRS15-2550 + MAX TOOL
FLOOR DRILLING AREA



NOTES & SKETCHES

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