

HYDRAULIC BREAKERS



WHERE **EXPERIENCE COUNTS**

FURUKAWA ROCK DRILL



TRADITION AND HIGH-TECH FROM ONE COUNTRY

Japan, country of old traditions, has proven its high technical performances in many different ways. Already many years ago Japanese electronic equipment contributed highly to the possibility to reach the moon and other planets. In almost every computer, telephone or any other kind of electronic equipment we can find some Japanese components. In the car industry Japanese engineers have achieved high performances in order to produce cars more efficient and economical. Car tests in different countries have often concluded that Japanese cars are the most reliable and with a minimum of maintenance cost. Also Furukawa is one of those traditional concerns, that could show continuous growth through their on going product improvement and development.

Everything started in 1875, when Furukawa opened their Kusakura Copper Mine. The mining job always required new and specific solutions to improve our production. For this reason Furukawa started in 1900 to produce their own mining equipment, which led to higher production levels of the mine. With this step Furukawa unintentionally created the base for a new, high technology concern. The better results with their custom made machinery soon created a demand for similar machines in other mines. To be able to fulfill these requirements, Furukawa started to separate their activities in different divisions. In 1918 Furukawa Mining Co. Ltd was found and in 1920 Furukawa Electric Co. Ltd. Later in 1961 the start of Furukawa Rock Drill Co. Ltd was an answer to the demand to be able to sell worldwide, the machines, that initially were meant only for their own use.

In 1971 Furukawa established a new factory in Yoshii for the production of crawler drills and demolition equipment. The demand for those products was so large, that in 1976 a second production unit was established in Takasaki. Since then from these two factories more than 100.000 hydraulic breakers were delivered all over the world. In the meantime Furukawa Rock Drill division has built an international sales and service network, which secures an optimum after sales service for all equipment. Our slogan **WHERE EXPERIENCE COUNTS** we take as serious as other Japanese traditions and we hope you will approach us with your specific demands. We and our Distributor network are ready to help you.

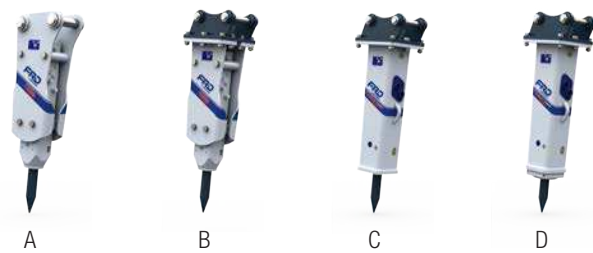


FX-ALPHA SERIES



FX-ALPHA SERIES

Behind their simple exterior FRD breakers hide many years of experience, careful learning and intelligent design. There are hundreds of reasons to let FRD products do your work, here are just some of them.



- A Standard frame with pin and bush connection
- B Standard frame for top bracket mounting (FT)
- C Silent for top bracket mounting (S)
- D Extreme Silent for top bracket mounting (XS)

HIGH POWER/WEIGHT RATIO

The use of high quality materials and highest quality production process results in a breaker with less weight, with higher output/performance.

MINIMUM MOVING PARTS

The fewer parts move, the fewer parts will wear. This reduces maintenance cost and downtime.

ADJUSTABLE VALVE

The breaker can be adjusted to any specification of the carrying excavator and to each required optimal working condition.

HIGH RELIABILITY

The use of the best quality materials and the highest quality standard in production securely creates a product that will work longer and is more efficient.

LOW MAINTENANCE

High quality materials give longer lifetime to each part, which drastically reduce the total maintenance cost.

LOWEST LIFETIME COST

Over long periods the advantages of less downtime and fewer parts to replace results in a cost per year, which are the lowest in the market.



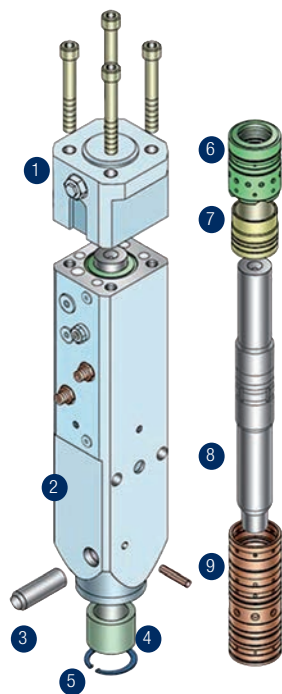
			FX15 ¹	FX25 ¹	FX35 ¹	FX45 ¹	FX55 ¹
Operating weight ¹⁾	A, B	kg	69	101	146	187	245
Operating weight ¹⁾	C, D	kg		112	157	208	280
Height with rod	A	mm	924	1030	1172	1285	1388
Height with rod	B	mm	816	939	1060	1167	1264
Height with rod	C	mm		961	1062	1173	1276
Height with rod	D	mm		1015	1116	1227	1330
Operating pressure	min	Mpa	10	10	12	12	12
	max		14	14	16	16	16
Oil flow	min	l/min	10	18	24	30	40
	max		28	35	52	60	85
Impact rate 1/min	min	bpm	600	600	600	600	500
	max		1500	1500	1300	1100	1100
Rod diameter Ø		mm	36	45	52	60	68
Effective length Rod		mm	234	293	322	355	378
Weight Rod		kg	2,6	5	8	11	15
Hose inner dia Ø HD, ND		mm	9	12	12	12	12
Noise level guaranteed	P&B, FT	dB(A)	116	118	124	126	126
	S	dB(A)		112	119	120	119
	XS	dB(A)		110	117	117	116
Base machine weight	t		0,5 - 1,5	1,0 - 2,5	1,5 - 4,0	2,5 - 5,5	4,0 - 7,0

¹⁾ Operating weight with top bracket. ²⁾ S and XS Silent Version = Sound and vibration damping

Specifications subject to change without notice

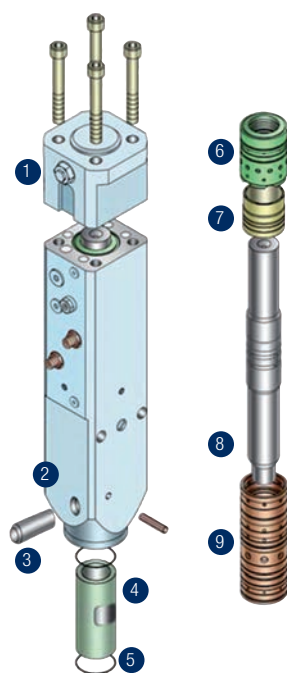
WHERE **EXPERIENCE** COUNTS

FX-ALPHA SERIES



FX-alpha 15/25/35

- 1.Back Head
- 2.Mono-Block Cylinder
- 3.Rod Pin
- 4.Front Bushing
- 5.Snap Ring
- 6.Seal Retainer
- 7.Valve
- 8.Piston
- 9.Cylinder Liner



FX-alpha 45/55



















- 1.Back Head
- 2.Mono-Block Cylinder
- 3.Oval rod Pin
- 4.Front Bushing
- 5.Top & Bottom O-Rings
- 6.Seal Retainer
- 7.Valve
- 8.Piston
- 9.Cylinder Liner

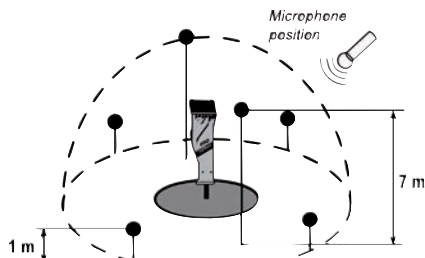


FX-ALPHA SERIES

SOUND POWER & SOUND PRESSURE

These are two distinct and commonly confused characteristics of sound. Sound power is the acoustical energy emitted by the sound source, and is an absolute value. It is not affected by the environment. Sound pressure levels quantify in decibels the intensity of given sound sources. Sound pressure levels vary substantially with distance from the source, and also diminish as a result of intervening obstacles and barriers, air absorption, wind and other factors. Sound pressure is what our ears hear and what sound pressure level meters (SPL meters) measure.

Sound level	FX15 α	FX25 α	FX35 α	FX45 α	FX55 α
PIN & BUSH (PB)	 116 dB	 118 dB	 124 dB	 126 dB	 126 dB
FLATTOP (FT)	 116 dB	 118 dB	 124 dB	 126 dB	 126 dB
SILENCE (S)	-	 112 dB	 119 dB	 120 dB	 119 dB
XTRA SILENCE (XS)	-	 110 dB	 117 dB	 117 dB	 116 dB



$$L_{wA,g} = L_p - k_1 - k_2 + 10 \cdot \log(s/s_0) + K$$

Guaranteed Sound Power level

Measured Sound Pressure

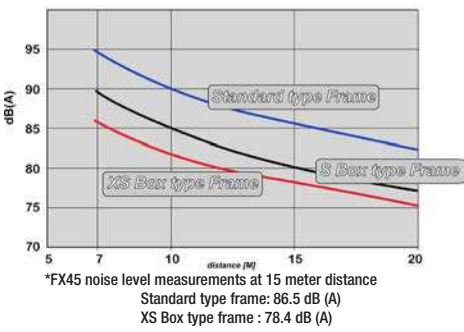
Correction Excavator Noise

Correction Sound reflection surroundings

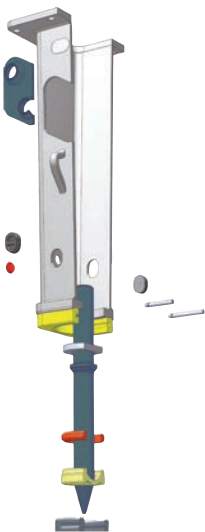
Conversion of measure distance

Surcharge Measure assurance

Sound level FX45 [dB (A)] (SPL)



- XS Housing
- Paented rod system

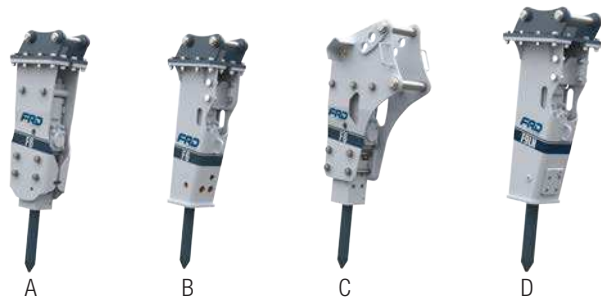


F SERIES



F SERIES

The F6 and F9 breaker are specialized for the midi excavators and backhoe loaders. For each request, FRD provides the optimum breaker frame.



- A Standard frame for top bracket mounting (FT) F6
- B Low Noise for top bracket mounting (LN) F6
- C Special frame for backhoe loader mounting (BHL) F6
- D Low Noise for top bracket mounting (LN) F9

HIGH POWER/WEIGHT RATIO

The use of high quality materials and highest quality production process results in a breaker with less weight and higher output/performance.

MINIMUM MOVING PARTS

The fewer parts move, the fewer parts will wear. This reduces maintenance cost and downtime.

ADJUSTABLE VALVE

The breaker can be adjusted to any specification of the carrying excavator and to each required optimal working condition.

HIGH RELIABILITY

The use of the best quality materials and the highest quality standard in production securely creates a product that will work longer and is more efficient.

LOW MAINTENANCE

High quality materials give longer lifetime to each part, which drastically reduce the total maintenance cost.

LOWEST LIFETIME COST

Over long periods the advantages of less downtime and fewer parts to replace, results in a cost per year, which are the lowest in the market.



				F6	F9
Operating weight, ¹ FT, BHL		kg		365	
Operating weight, ¹ LN ²⁾		kg		350	535
Height with rod, FT, BHL		mm		1450	
Height with rod, LN		mm		1400	1595
Operating pressure	min	Mpa		10	12
	max			14	15
Oil flow	min	l/min		50	65
	max			90	110
Impact rate 1/min	min	bpm		550	550
	max			950	900
Impact energy		joules		884	1305
Rod diameter Ø		mm		75	90
Effective length Rod		mm		450	500
Weight Rod		kg		21,5	35,5
Hose inner dia Ø HD, ND		mm		12	19
Noise level guaranteed	FT / BHL	dB(A)		129	
	LN	dB(A)		125	125
Base machine weight		t		3,5 - 10	6 - 12

¹⁾ Operating weight with top bracket. ²⁾ LN Silent Version – Sound and vibration damping

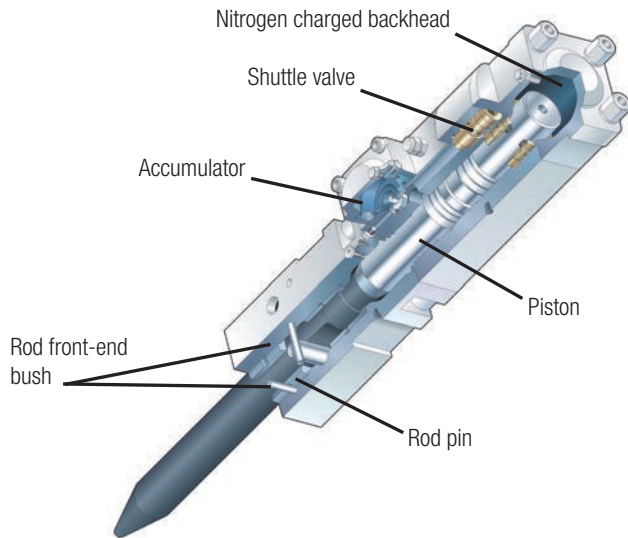
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WHERE **EXPERIENCE** COUNTS

F SERIES

Features and Benefits:

- Nitrogen charged back head for superior energy transfer
- Large diameter piston for increase in impact energy
- CD designed threads on through-bolt provide even load distribution and greater surface contact between the nut and bolt
- New front head design includes replaceable thrust bushing for added service life



WHERE **EXPERIENCE** COUNTS

FXJ SERIES



TECHNOLOGY THAT MAKES A DIFFERENCE

GREAT BREAKING POWER

The use of high quality materials and the highest quality production process results in a breaker body with less weight and higher output/performance. The impact energy is higher than ever.

OPERATOR FRIENDLY

With the new slim design the FXJ has a better accessibility in demolition and quarry. It provides high efficiency in trench work. In addition to its slim design, there is a newly designed top damper which reduces the noise and vibration.

IMPROVED DURABILITY

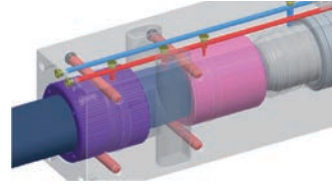
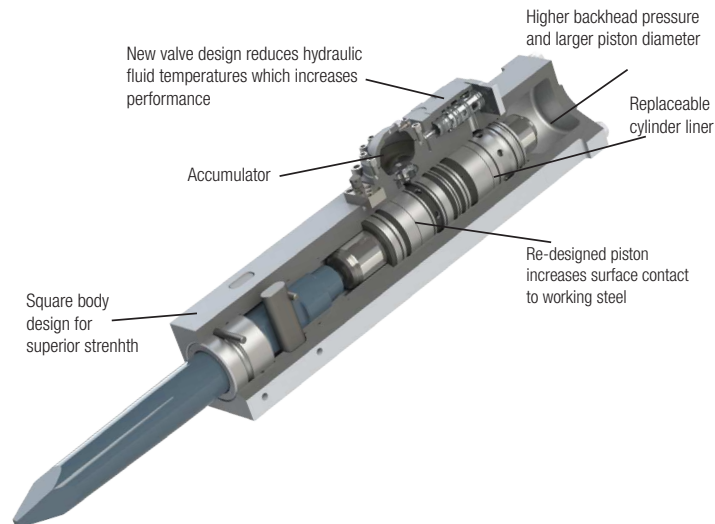
The use of the best quality materials and the highest quality standard in production creates a product that will work longer and is more efficient. The new floating rod seal, minimizes dust intake and result in an extended life time.

EASY SERVICE

To ease the service FRD developed the mono-block cylinder which reduced the parts. With this unique construction, there are no through bolts needed. With the new rod pin design and other improvements of the parts, the lifetime is longer and are easy to replace.

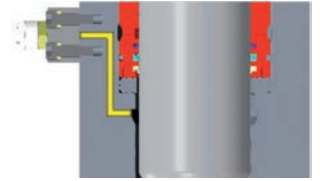
LOWEST LIFETIME COST

High quality materials give a longer lifetime to each part, which drastically reduces the total maintenance cost. Over long periods the advantages of less downtime and fewer parts to replace, results in a cost per year, which are the lowest in the market.



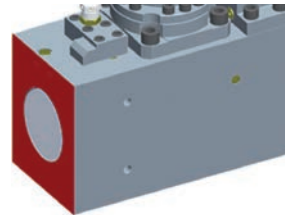
GREASING SYSTEM

Advanced greasing system that evenly distributes grease to front holder, front bushing and rod pins



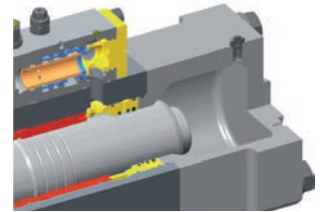
DUST CONTROL SYSTEM

2-Point Patent dust intake prevention system.



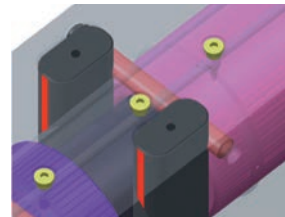
SLIM BODY DESIGN

The rectangular design allows better pressure distribution



VALVE DESIGN

Low resistance reduces hydraulic fluid temperatures which increases the efficiency



SMART DEVELOPED ROD PIN

Load is decreased by the long rod pin, which enlarge the supporting area



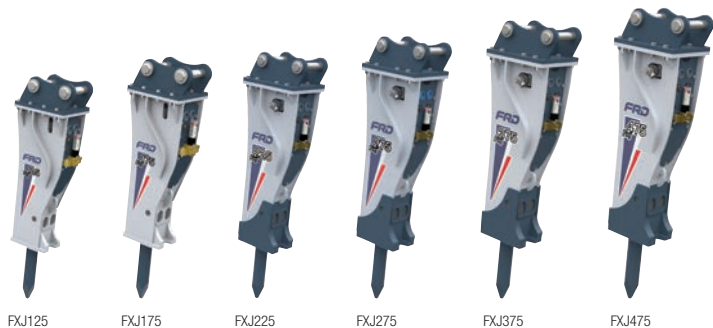
REDESIGNED PISTON

Increased contact area to the impact surface of the rod

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FXJ SERIES

FRD's line of hydraulic breakers for excavators represents the latest in design technology. With multiple patented enhancements, the FXJ series improves day-to-day performance, offering less maintenance and downtime, smoother operation, superior strength and the highest level of reliability. A wider hydraulic flow range allows for use on a broad range of carriers reducing inventory while increasing utilization.



			FXJ125	FXJ175	FXJ225	FXJ275	FXJ375	FXJ475
Operating weight, ¹⁾ FXJ	kg		800	1000	1600	1800	2600	3200
Height with rod,	mm		2005	2043	2411	2468	2715	2892
Operating pressure	min	MPa	16	16	16	16	16	16
	max		18	18	18	18	18	18
Oil flow	min	l/min	70	100	125	145	170	200
	max		120	160	190	220	260	300
Impact rate	min	bpm	400	450	350	350	300	250
	max		1000	900	850	620	550	450
Impact energy	joules		2320	3610	4580	5120	7310	9620
Rod diameter Ø	mm		110	120	135	140	155	170
Rod effective length	mm		640	620	650	680	715	720
Rod weight	kg		69	81	120	143	167	229
Hose inner dia Ø Press/Return	mm		19	19	25	25	25	32
Sound power level	dB		125	118	120	121	121	121
Guaranteed sound power level	dB		129	120	121	122	123	124
Base machine weight	ton		9 - 16	12 - 21	16 - 25	21 - 30	25 - 42	33 - 55

¹⁾ Operating weight with top bracket.

Specifications subject to change without notice

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FXJ SERIES

As usual FRD has designed the FXJ series to offer the benefits of minimum maintenance needs and a maximum of user convenience and output assurance. Large noise reductions of some 6 dbA has been achieved against past models. Reduced vibration effects likewise make the models more friendly for users and the immediate user environment. Modern design and increased power complements a carefully thought through physical structure.



ADVANTAGES FXJ SERIES

- High reliability
- High power and performance (adjustable blows/blow energy)
- Can work in any type of application/material
- Low maintenance design
- Minimized moving parts
- Adjustable valve for maximum performance on each type/size of excavator
- Auto grease connection
- Compressed air connection for anti dust or working underwater
- FXJ frame for low noise and vibration
- Dust suction prevent function



			FXJ770	FXJ1070
Operating weight, ¹⁾		kg	4800	6600
Height with rod		mm	3390	3800
Operating pressure	min	Mpa	16	16
	max		18	18
Oil flow	min	l/min	250	280
	max		340	420
Impact rate 1/min	min	bpm	250	200
	max		420	375
Impact energy		joules	11850	13690
Rod diameter Ø		mm	190	210
Effective length Rod		mm	860	980
Weight Rod		kg	315	434
Hose inner dia Ø HD, ND		mm	32	32
Noise level guaranteed		dB(A)	124	128
Base machine weight		t	44-75	65-110

¹⁾ Operating weight with top bracket.






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TYPE OF ROD

FRD is a recognized manufacturer of hydraulic breakers thanks to her experience. This experience is also used in the manufacture of rods. The FRD rod are beased on the in-house experience in the heat treatment of steel, the design of the breaker and the demands placed upon our customers made.



Type of rods	Shape	Major applications	Material	Occurrence	Specification	Rod
Flat rod		Secondary breaking in quarries, boulder breaking, concrete breaking, and slab breaking	Asphalt	Parking, Roads	soft structures	Wedge point / Wide rod
Moil point		Multi purpose applications, including breaking of extra hard rock, hard rock, hard stone, and reinforced concrete, as well as excavation of bedrock	Concrete	Thin floors, walls	Reinforced	Wedge point
				Thick floors, walls	not reinforced	Moil point
					Reinforced	Wedge point
					not reinforced	Moil point
				Foundations	Reinforced	Wedge point
Wedge point		Concrete breaking, excavation of bedrock, operations on the face of slope, excavation of ditches, etc.			not reinforced	Moil point
Asphalt spading \ Wide rod		<u>Asphalt spading:</u> Cutting of asphalt or soft material <u>Wide rod:</u> Breaking of asphalt in road building, knocking out of ladles, demolition of concrete or reinforced concrete		Recycling		Flat rod
			Sedimentary rock (limestone, sandstone, graywacke, calcareous sediment)	Trenching, foundation work, primary quarry breaking	heavily fissured	Wedge point
					lightly fissured	Moil point
					monolithic	Moil point
				Breaking oversizes		Wedge point
Core rod (Ball Point Rod)		Breaking metal ores, as well as quartzite and other highly abrasive objects	Crystalline rock (magma, greenstone, gabbro, granite etc.)	Trenching, foundation work, primary quarry breaking	heavily fissured	Wedge point
					lightly fissured	Flat rod
					monolithic	Flat rod
				Breaking oversizes		Flat rod

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FRD SENCI LUBE & OPTIONS

Senci Lube

The FRD Central lubrication concept eliminates the regular manual greasing intervals during operation and provides an optimum level of lubrication. This FRD designed automatic lubrication system is directly breaker frame mounted without external hose guiding and provides continuous adjustable greasing of the working tool guiding area. The filling level of the transparent screw cartridge can be easily monitored from the excavator cabin and if required exchanged within minutes.

Sencio-Rod grease is characterized by:

- High load carrying capacity
- Good corrosion protection
- Good water resistance
- Good separation efficiency
- Wear reduction
- Oxidation resistance



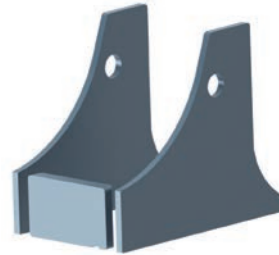
Sencio Blue

Rod grease is a lithium-complex soap grease based on mineral oil. molybdenum disulphide (MoS₂). It has good separation efficiency and reduces wear at high surface loads and temperatures up to 1100 °C



Sencio White

BIO-Rod grease based on selected, rapidly biodegradable, synthetic esters, which give a very stable lithium saponified grease. Sencio-BIO-Rod grease has been awarded the European Ecolabel, registration no. DE/027/089.



ARMOUR PLATES

Extra protection against wear in trenching and quarry works



SWIVELS

Extending the life of the hoses



TOOLBOX

All breakers have a toolbox with the necessary tools included.

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DEALER NETWORK

LOCAL SERVICE AND SUPPORT

FRD seeks firstly to supply a product of undoubted integrity. Then back this up with a support network of dedicated Distributors to ensure whatever support, wherever and whenever needed. The FRD-Distributor combination has been made unbeatable.

FRD Distributors have been selected for their professional competence, their market coverage, their dedication to quality and their willingness to work. They receive intense training on all machines and systems and every support that a committed manufacturer can give them. They actively exchange experience between each other to ensure their clients get the latest lessons from the market. They are a skilled and fast team of professionals.

VALUE FOR MONEY

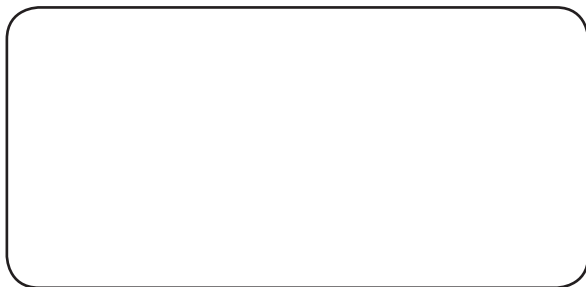
Buying FRD products is a smart investment. Top quality for a reasonable price, with long lifetime, with low maintenance and less break-down-time. In the long term this choice makes financially better results.

Next steps? FRD Europe and its Distributors have a vast resource of information beyond what can be mentioned here. Do not hesitate to get in touch for more detail and an unbeatable quote.



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Authorized distributor:



Furukawa Rock Drill Europe BV

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Phone +31-(0)30-2412277, frd@frd.eu / www.frd.eu



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