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Hydraulic Breaker

# HYDRAULIC BREAKERS

Fx - SERIES
F6, F9 - SERIES
Fxj - SERIES

FURUKAWA ROCK DRILL

FRD FURUKAWA

*Furukawa built breakers develop remarkable power, designed for world advanced hydraulic excavators.*

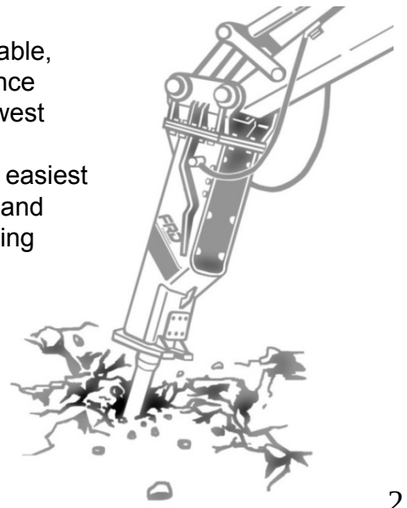
1. ***Increased reliability and durability !***
2. ***Higher blow-breaking power !***
3. ***Reduced maintenance cost !***
4. ***Expanded multifunctional capabilities !***
5. ***Innovative design !***

## WHY FRD HYDRAULIC BREAKERS?

Today Furukawa Rock Drill is a worldwide specialist in demolition and rock excavation with a wide range of carefully designed and robust breakers, attachments and crawler drills. Since its founding in 1875 Furukawa Rock Drill has specialized in the demolition and rock excavation. Their over hundred forty years experience has assured the company of an excellent reputation. All products are manufactured in the company's own plants using only the best materials under the highest quality control.

## LOWEST LIFETIME COST

FRD breakers have been designed to be durable, reliable, simple, and low maintenance: with superior performance adapted to conditions; easy, reliable operation and lowest lifetime cost.
The result of decades of dedication. And synonym for easiest on-site operations, maximum operator peace of mind and optimal contributor to shareholder value. The purchasing department will appreciate the message.

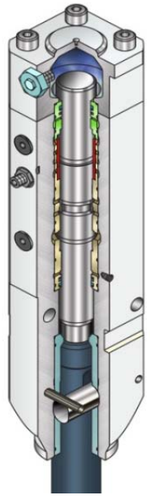


# SMALL HYDRAULIC BREAKERS

Hydraulic + gas operating system

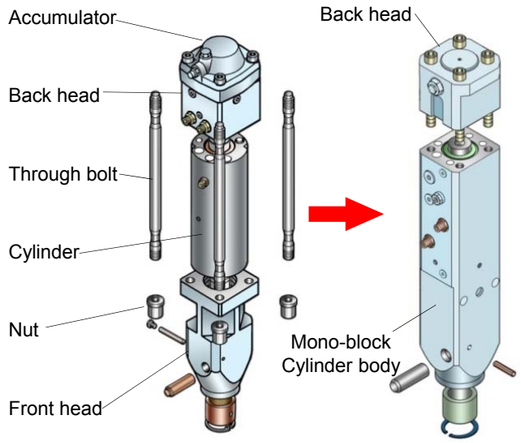
Fx Series model could tremendously reduce the new breakers noise levels.

1. Mono-block cylinder
2. Without through bolt
3. Cylinder liner
4. Easy replaceable wear parts



- Square body design for superior strength.
- Easy access gas charged back head.
- Mono-block design eliminates a separate cylinder, front head & through-bolts.
- Replaceable cylinder liner.
- Large diameter piston.
- Field replaceable front bushing.

Body durability increased and maintenance cost is reduced by using combined cylinder both piston action part and rod seating part, and without through bolt. Expanded oil pressure and oil flow range make it possible to be suits wider range of small size excavator. Using valve adjuster, it is possible to adjust oil pressure and gas pressure for back head to match excavator.




## Conventional model

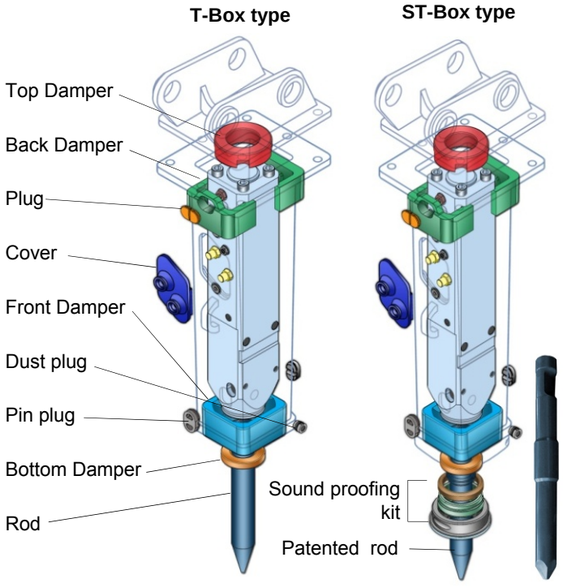
Back head, Cylinder and Front head are chained by through bolt.

## Fx Series

Combined cylinder body by adoption of cylinder liner, and through bolt less body reduce maintenance cost.

ST-Box housing is the extreme silent frame. In relation with new developed breaker body, the fully closed frame with sound proofing kit gives a considerable reduction in sound levels and vibration.

In cooperation with the Technical University of Tokyo, FRD could tremendously reduce the new breakers noise levels.
A complete new development of impact mechanism minimizes the discharge of vibration to the excavator, as well reduces the operators vibration stress drastically.
Because of FRD optimized the applied materials with a new hardness process, a higher efficiency at same operation weight is guaranteed.



Fx15 Side plate

Fx25 T-Box

Fx35 T-Box

Fx45 T-Box

Fx55 T-Box

## ■ Specifications

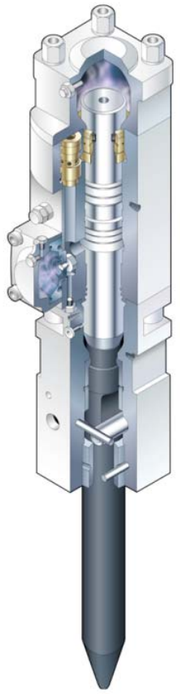
| Model | | Fx15 | Fx25 | Fx35 | Fx45 | Fx55 |
|---|---|---|---|---|---|---|
| Body weight ( incl. Rod) | kg | 36 | 56 | 80 | 110 | 150 |
| Operating weight | | | | | | |
| Side plate | kg | 60 | 83 | 129 | 165 | 220 |
| T-Box incl. Top bracket | kg | - | 112 | 157 | 208 | 280 |
| ST-Box incl. Top bracket | kg | - | 118 | 167 | 220 | 292 |
| Height | | | | | | |
| Side plate | mm | 924 | 1,030 | 1,172 | 1,285 | 1,388 |
| T-Box incl. Top bracket | mm | - | 1,097 | 1,209 | 1,342 | 1,440 |
| Width | | | | | | |
| Side plate | mm | 180 | 180 | 214 | 214 | 235 |
| T-Box incl. Top bracket | mm | - | 180 | 214 | 235 | 235 |
| Impact rate | $min^{-1}$ | 600 - 1,500 | 600 - 1,500 | 600 - 1,300 | 600 - 1,100 | 500 - 1,100 |
| Oil flow rate | ℓ/min | 10 - 22 | 18 - 32 | 24 - 42 | 30 - 56 | 40 - 72 |
| Operating oil pressure | MPa | 10 - 14 | 10 - 14 | 12 - 16 | 12 - 16 | 12 - 16 |
| Rod diameter | mm | 36 | 45 | 52 | 60 | 68 |
| Hose diameter | mm | 9 | 12 | 12 | 12 | 12 |
| Weight of base machine | ton | 0.85 - 1.5 | 1.35 - 2.5 | 1.9 - 3.5 | 3.0 - 4.5 | 4.0 - 5.5 |

SIDE PLATE : The easiest way to fix a hydraulic breaker on an excavator. Order the appropriate pin & bushing set and you can fix your hydraulic on an excavator arm.

# MEDIUM HYDRAULIC BREAKERS

Hydraulic + gas operating system

F Series models responding to next generation needs by offering new functions and greater versatility.



- Large diameter through bolts with “CD” threads.
- Nitrogen charged back head.
- Side mount nitrogen charged accumulator.
- Shuttle valve.
- Large diameter piston.
- Replaceable thrust bushing.
- Two retaining pins for greater alignment with rod.
- Replaceable front head bushing.

F6 T-Box

F9 T-Box

F9 Side Plate

## ■ Specifications

| Model | | F6 | F9 |
|---|---|---|---|
| Body weight (incl. Rod) | kg | 195 | 300 |
| Operating weight | | | |
| Side plate | kg | 320 | 480 |
| T-Box incl. Top bracket | kg | 350 | 535 |
| Height | | | |
| Side plate | mm | 1,630 | 1,855 |
| T-Box incl. Top bracket | mm | 1,617 | 1,835 |
| Width | | | |
| Side plate | mm | 260 | 321 |
| T-Box excl. Top bracket | mm | 260 | 321 |
| Impact rate | $min^{-1}$ | 650 - 1,050 | 550 - 900 |
| Oil flow rate | ℓ/min | 50 - 90 | 65 - 115 |
| Operating oil pressure | MPa | 10 - 14 | 12 - 15 |
| Rod diameter | mm | 75 | 90 |
| Hose diameter | mm | 19 / 19 | 19 / 19 |
| Weight of base machine | ton | 5.5 - 6.5 | 6.5 - 9.0 |

- Increase in back head pressure and large piston diameter results in 25% greater impact energy.
- Longer thrust bushing improves piston alignment during impact and incorporates grease holes to evenly distribute grease in the front head.
- Large diameter piston for increase in impact energy.
- Increased front head wall thickness for added service life.

## F6 Back Hoe Loader Version

F6 “BHL Version” features custom build side plates that are provided with different pin locations by manufacturer. Backhoe, arm and breaker can be folded up within the machine width for on road travel. Custom designed offset hinge pivot pin position increases work distance and elevated support pin of bucket cylinder position ensures strong hold down of the breaker.

# LARGE HYDRAULIC BREAKERS

Hydraulic + gas operating system

The introduction of the newly designed FRD hydraulic breaker is a world premiere. The FXJ is one of a kind in the market, thanks to the new mono-block design. With this new design there are no through bolts needed and it ensures more power and resistance.

Fxj125 V-Box

Fxj175 V-Box

Fxj275 V-Box

Fxj375 V-Box

Fxj475 V-Box

## ■ Specifications

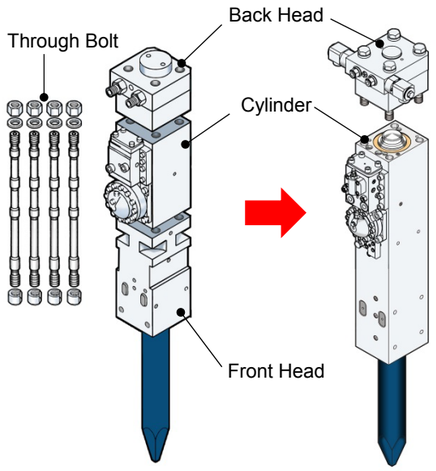
| Model | | Fxj125 | Fxj175 | Fxj275 | Fxj375 | Fxj475 |
|---|---|---|---|---|---|---|
| Body weight （incl. Rod） | kg | 395 | 560 | 940 | 1,295 | 1,630 |
| Operating weight V-Box type | kg | 819 | 960 | 1,705 | 2,445 | 3,100 |
| Height （V-Box） | mm | 2,218 | 2,288 | 2,796 | 3,155 | 3,372 |
| Impact rate | $min^{-1}$ | 400 - 650 | 450 - 600 | 350 - 550 | 300 - 450 | 250 - 350 |
| Oil flow rate | ℓ/min | 70 - 120 | 100 - 160 | 145 - 220 | 170 - 260 | 200 - 300 |
| Operating oil pressure | MPa | 16 - 18 | 16 - 18 | 16 - 18 | 16 - 18 | 16 - 18 |
| Hose diameter（IN/OUT） | mm | 19 / 19 | 19 / 19 | 25 / 25 | 25 / 25 | 32 / 32 |
| Rod diameter | mm | ϕ110 | ϕ120 | ϕ140 | ϕ155 | ϕ170 |
| Weight of base machine | ton | 9 - 14 | 12 - 20 | 19 - 30 | 25 - 40 | 35 - 55 |

The back head gas pressure varies depending on the external air temperature and breaker body temperature. Refer to the operation manual for details.
FRD Furukawa reserves right to change specifications without prior notice.

# LARGE HYDRAULIC BREAKERS

Hydraulic + gas operating system

## Simple Main Body Construction Free of Through Bolts Packed with Several New Technologies

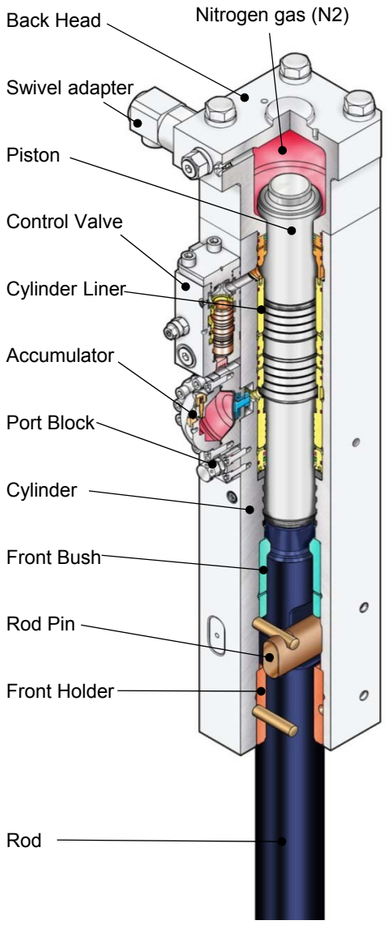


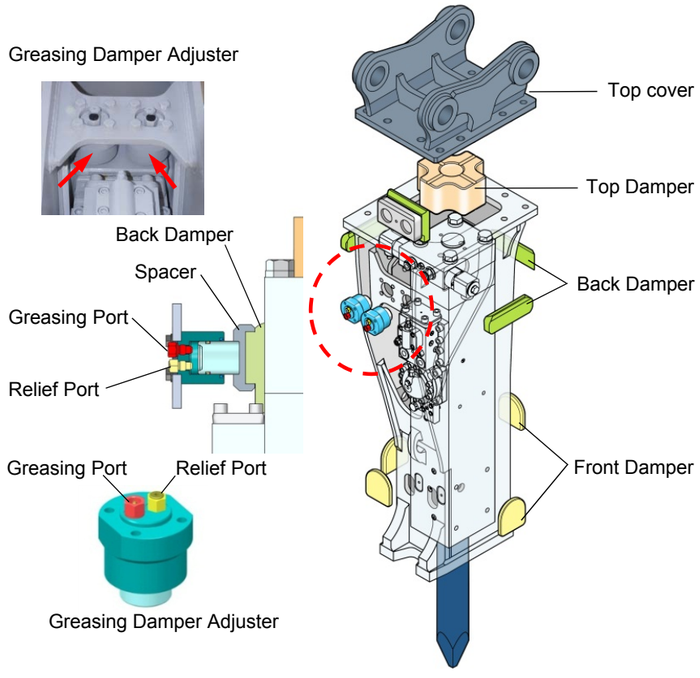

The conventional hydraulic breaker body was constructed of a back head, cylinder, and front head attached by 4 through bolts, and required the 3 different parts to screwed together with large torque.

Elimination of the through bolts has been achieved using a single cylinder construction with a cylinder liner. This contributes to a reduction in maintenance costs by reducing the number of parts and simplifying torque management. Furthermore, the stiffness of the cylinder has been increased by increasing the cross-sectional area in the sections that formerly housed the through bolts, delivering increased reliability.

## How the Hydraulic Breaker Body is Retained

The FXJ Series employs a uniform bracket configuration with a low noise, high stiffness damper type box frame which gives consideration to the noise environment.
The hydraulic damper body is securely retained using a configuration that employs 2 greasing (hydraulic) damper adjusters with up/down motion using a top damper and left/right/front/back motion using a back damper.
The back head unit can be securely held against the bracket simply by greasing it up, which prevents any gaps from occurring from the bracket. Furthermore, noise is reduced through the combination with a front damper, making it possible to stably maintain the anti-vibration and anti-noise properties. This reduces rattling of the hydraulic breaker body and contributes to increased damper life.

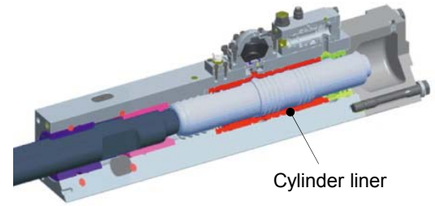



## Main Features of the Next Generation Hydraulic Breaker

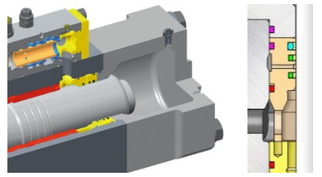
### Employs a cylinder liner

The cylinder liner prevents galling of the cylinder and improves reliability by increasing piston centering through the cushion effect of unique D-rings developed by Furukawa and oil pathways which come from 6 directions.
Furthermore, a distance washer which offers maintainability and dust resistance has been added with the aim of reducing costs during maintenance.




### Employs new seal system

The seal wear resistance, thermal resistance, and sealing capabilities of the piston seal system have been revised in order to increase durability and life and give even higher reliability. Furthermore, in order to increase the breaking capabilities, a new gas seal system is employed that offers increased durability and reliability.

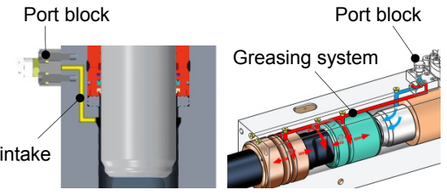


### Optimized piston impact surface

Reliability has been improved by revising the shape of the piston and rod impact surface in order to enlarge and improve the shape of the impact contact area, and by changing the materials and heat treatment (increased hardness).

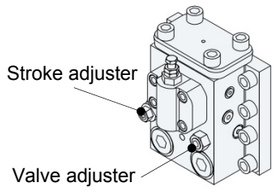
### Port block fitted as standard

A function to prevent the ingress of dust through the internal air intake passage with air check valve, and internal greasing passage that supply the optimal amount of grease to the rod sliding path are fitted.



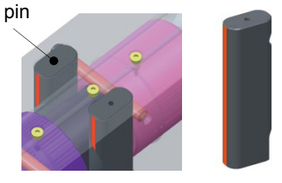

### Stroke adjuster and valve adjuster fitted as standard

A stroke adjuster for arbitrarily adjusting the impact rate and which includes a blank blow prevention function and a valve adjuster for adjusting the amount of oil in the breaker are fitted as standard.



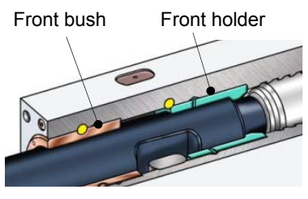

### Employs a longer & wider rod pin

A longer & wider rod pin has been employed that increases the area of the rod pin subject to pressure, with durability improved by the increased diameter.




### Increased rod support length

Wear has been reduced by both increasing the rod support length of the front bush and front holder and making a grease chamber finish on inner surfaces.



LARGE HYDRAULIC BREAKERS

SERIES

# F70 HYDRAULIC BREAKER

## T-Box Type

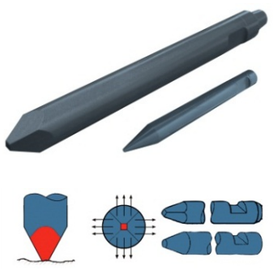
One of the largest of the F-Series, the F70 is truly designed for use on excavators in the 45-70 ton class. Our patented dust intake prevention system keeps the internal parts of the breaker clean for improved service life.
A unique greasing system lubricates both the front head and front bushings for improved service life.
Considered the “quiet giant”, the F70 one-piece enclosure reduces noise levels making the breaker a perfect choice for use in noise sensitive environments.

| Model | | F70 |
|---|---|---|
| Operating weight | kg | 4,310 |
| Height | mm | 3,810 |
| Width | mm | 760 |
| Impact rate | $min^{-1}$ | 250 - 500 |
| Oil flow rate | ℓ/min | 250 - 340 |
| Operating oil pressure | MPa | 16 - 18 |
| Rod diameter | mm | 180 |
| Hose diameter | mm | 32 |
| Weight of base machine | ton | 44 - 70 |

## Types of rods

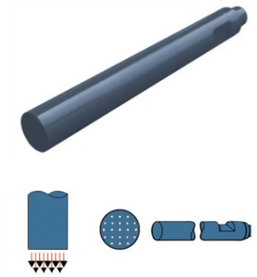
Selecting an appropriate rod is required according to the nature of work and the characteristics of the object to break.
Use : FURUKAWA Genuine ROD

### Moil point



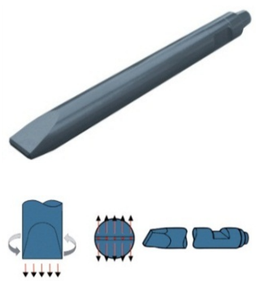
Multipurpose applications, including breaking of extra hard rock, hard rock, hard stone, and reinforced concrete, as well as excavation of bedrock.

### Flat rod



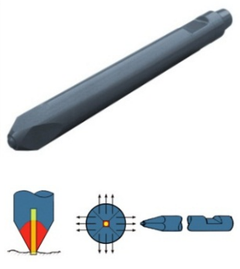
Secondary breaking in quarries, boulder breaking, concrete breaking, and slab breaking.

### Wedge point



Concrete breaking, excavation of bedrock, operations on the face of slope, excavation of ditches, etc.

### Ball point rod



Breaking metal ores, as well as quartzite and other highly abrasive objects.



# Special application

## Tunnel Breaker

The following functions are added to enable the breaker to be more durable even under the harsher operating conditions peculiar to tunneling:
1. The NT-BOX type frame has been designed to especially realize sound suppression and vibration isolation, as well as extended durability.
2. Air compressor piping design prevents water/dust/earth/sand from entering the breaker main unit.
3. Auto grease piping automatically delivers lubrication to the front section, thus helping to further improve durability of the front section.
*Prepare an air compressor.

## Underwater Breaker

A simplified, easily maintained ( as compared with conventional models ) air compressor piping connection port that attaches to the breaker main unit is provided at the upper section of the back head. Also, a check valve ( inside the breaker main unit ) acts to effectively externally discharge air, thus preventing entrance of water, dust, earth and sand.
*Prepare an air compressor.

## Heat-resistant Breaker

## Pedestal System