FBR® REVERSIBLE HAMMERMILL

Pennsylvania Crusher
The Most Choices, The Most Experience
A RUGGED HAMMERMILL FOR LASTING SERVICE, WITH LOW INITIAL COST, CONTINUING LOW MAINTENANCE

This hammermill crushes fuel and limestone for fluid bed boiler operations and is also used for many other minerals in various industries.

It is well suited for power plant service from the standpoint of economy, performance and maintenance. While its cost of ownership is far less than one might expect of a reversible hammermill, its ability to crush coal, sorbents and other minerals is comparable to crushers that are far more costly.

Unlike some light duty crushers offered today which were designed to crush non-mineral products, our FBR model is very rugged and will stand up to the rigors of industrial service. Year in, year out, it operates reliably, offering extremely long service life, coupled with simplified maintenance requirements.

This crusher possesses a considerable performance record. It has found acceptance among numerous power generating stations and minerals producers within the U.S. as well as in Asia, Europe, and South America. Plant names are available upon request.

MAJOR ADVANTAGES

The crushing chamber is symmetrical and the rotor assembly is reversible. In effect, this provides two distinct crushing chambers, enabling you to crush in one chamber or the other by simply reversing the motor.

Regular reversal of the rotor produces uniform wear on both working faces of the hammer, keeping its edges sharp and producing a consistently uniform output size. The need to shut down and manually turn hammers as required of one-way crushers is eliminated.

Another advantage exists because the other crushing components — breaker blocks, screen plate or screen bars — are double in number and therefore provide greatly extended time-between-changes, about twice that of one-way crushers.

Rotor Assembly

The rotor assembly consists of the rotor shaft, suspension discs and hammers. Forged of special steel and heat treated, the rotor shaft is drilled for convenient hydraulic removal of the bearings. The suspension discs are drilled for various hammer configurations, a feature that greatly enhances the flexibility of this particular design.

The hammers are forged steel, differentially heat treated to a BHN that is superior to ordinary cast manganese steel hammers.

The heads of these special hammers are hardened to 500 BHN. This makes them abrasion resistant from the outset, unlike ordinary hammers which must rely on work hardening, which is unreliable and inefficient. In the vital shank and eye areas, Pennsylvania hammers are normalized to a nominal 350 BHN, providing the ductility needed to resist shock.

CRUSHING ACTION

Material enters through the feed chute into the upper half of the crushing chamber where it is subjected to two distinct crushing actions. It first is struck and shattered by the swing hammers and is then driven against the breaker blocks. It then ricochets back into the path of the hammers. By this point, most reduction has occurred.

As the shattered material enters the lower portion of the crushing chamber — the attrition zone — the hammers sweep it across the screen plate or screen bars — depending on model — and the final sizing is performed by shear and attrition. Proper output size is the result of correct clearance between the hammers and the screen cage being maintained.

In addition, power requirements are relatively low, and fines are kept at a minimum while meeting the D50 and top size requirements.
TO ACHIEVE THE BEST INSTALLATION

Our application engineering staff can assist you by evaluating your material, by guiding you in selection of the correct crusher type and size, and in specifying the proper motor and other drive components.

Our resources include an extensive database of crushers and materials derived from a century of experience with crusher installations. This means that our recommendations will be based upon the actual performance of a crusher model and size.

In addition, we can review your arrangement of feed and discharge equipment and advise you on other important aspects. We frequently help customers to avoid problems that could otherwise result when a crusher is installed improperly. For example, improper feeding can result in material hitting the crusher hammers from the wrong angle or at the wrong velocity. These and other missteps would result in uneven or premature wear of crusher components.

MATERIALS HANDLED

Though the Model FBR was initially developed for coal and sorbents for fluid bed boiler operations, it is highly effective for crushing other materials as well:

- Chemicals
- Coal
- Calcined Petroleum Coke
- Limestone
- Pebble Lime
- Ores
- Other friable minerals and substances

TEST CRUSHING OF YOUR MATERIAL

Where necessary, we can also perform test crushing of your material(s) in our Crushing Test Laboratory and provide you with documented test results prior to purchase. Such test may involve one or more types of crushers, depending on circumstances.

Remember that Pennsylvania Crusher manufactures dozens of crusher models, in hundreds of sizes. We therefore have gained the experience and the perspective on how to equip our customers with the crusher that is best suited for their installation. For information about test crushing, please contact our representative or our home office as listed in this brochure.

STANDARD FEATURES

- Reversible rotor assembly
- Alloy forged steel hammers
- Alloy steel breaker plates (dual set)
- Alloy steel scrubber and screen sections (dual set)
- Both sides of unit open fully for complete access to the crushing chamber
- Product size maintenance and wear compensation via cage adjustment
- Tramp iron pocket

Options

- Hydraulic door opener
- Screen bar assemblies instead of screen plate
- Integrated into drying system

THE POSIMETRIC® FEEDER PRODUCES LONGER CRUSHER LIFE

The internal crushing elements of hammermills and other crushers perform better and last longer when material is properly fed into the crusher.

To ensure proper feeding, many plants now employ the Pennsylvania Posimetric® Feeder. It feeds material into your crusher at a constant rate and with the proper distribution across the full rotor width. This prevents premature wear and helps all operating components deliver their maximum service life.
## FBR® REVERSIBLE HAMMERMILL DIMENSIONS

### BRITISH IMPERIAL UNITS (INCHES)

| FBR Size | Approx. Shipping Wt. (lbs) | A | B | C | D | E | F | G | H | J | K | L | M | N | O |
|----------|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 422      | 6,600                     | 19| 9 | 30½| 21| 10| 21| 42 | 3½| 24½| 60 | 59 | 67 | 82 | 18 |
| 423      | 8,400                     | 30½| 9 | 32½| 25| 27 | 33½| 50 | 3½| 24½| 60 | 59 | 67 | 82 | 18 |
| 424      | 10,200                    | 38 | 9 | 45 | 36| 42 | 63 | 3½| 24½| 60 | 59 | 67 | 82 | 18 |
| 483      | 12,600                    | 31 | 10½| 35½| 29| 35 | 55 | 3½| 27 | 69 | 61½| 74 | 88 | 24 |
| 484      | 15,400                    | 38 | 10½| 39 | 31| 36 | 42 | 62 | 3½| 27 | 69 | 61½| 74 | 88 | 24 |
| 485      | 18,400                    | 45 | 10½| 42½| 34½| 43 | 49 | 69 | 4  | 27 | 69 | 61½| 74 | 88 | 24 |
| 545      | 22,000                    | 43 | 12 | 50½| 39 | 40 | 48 | 78 | 4  | 32½| 78 | 78 | 103½| 119½| 26 |
| 547      | 28,900                    | 64½| 12 | 61½| 49½| 61½| 69½| 99½| 4½| 32½| 78 | 78 | 103½| 119½| 26 |
| 549      | 36,000                    | 86 | 12 | 72 | 60½| 83 | 91 | 121| 5  | 32½| 78 | 78 | 103½| 119½| 26 |

### METRIC UNITS (mm)

| FBR Size | Approx. Shipping Wt. (kg) | A | B | C | D | E | F | G | H | J | K | L | M | N | O |
|----------|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 422      | 2,994                     | 483| 229| 775| 533| 533| 1067| 89 | 622| 1524| 1499| 1702| 2083| 457 |
| 423      | 3,810                     | 768| 229| 826| 635| 686| 1270| 89 | 622| 1524| 1499| 1702| 2083| 457 |
| 424      | 4,627                     | 965| 229| 1143| 800| 914| 1600| 95 | 622| 1524| 1499| 1702| 2083| 457 |
| 483      | 5,715                     | 787| 267| 902| 699| 737| 1397| 95 | 686| 1753| 1562| 1880| 2235| 600 |
| 484      | 6,985                     | 965| 267| 991| 787| 914| 1575| 95 | 686| 1753| 1562| 1880| 2235| 600 |
| 485      | 8,346                     | 1143| 267| 1080| 876| 1092| 1753| 102| 868| 1753| 1562| 1880| 2235| 600 |
| 545      | 9,979                     | 1092| 305| 1283| 991| 1016| 1981| 102| 826| 1981| 1981| 2629| 3035| 660 |
| 547      | 13,109                    | 1638| 305| 1556| 1562| 1652| 2527| 114| 826| 1981| 1981| 2629| 3035| 660 |
| 549      | 16,329                    | 2184| 305| 1829| 1537| 2108| 3073| 127| 826| 1981| 1981| 2629| 3035| 660 |