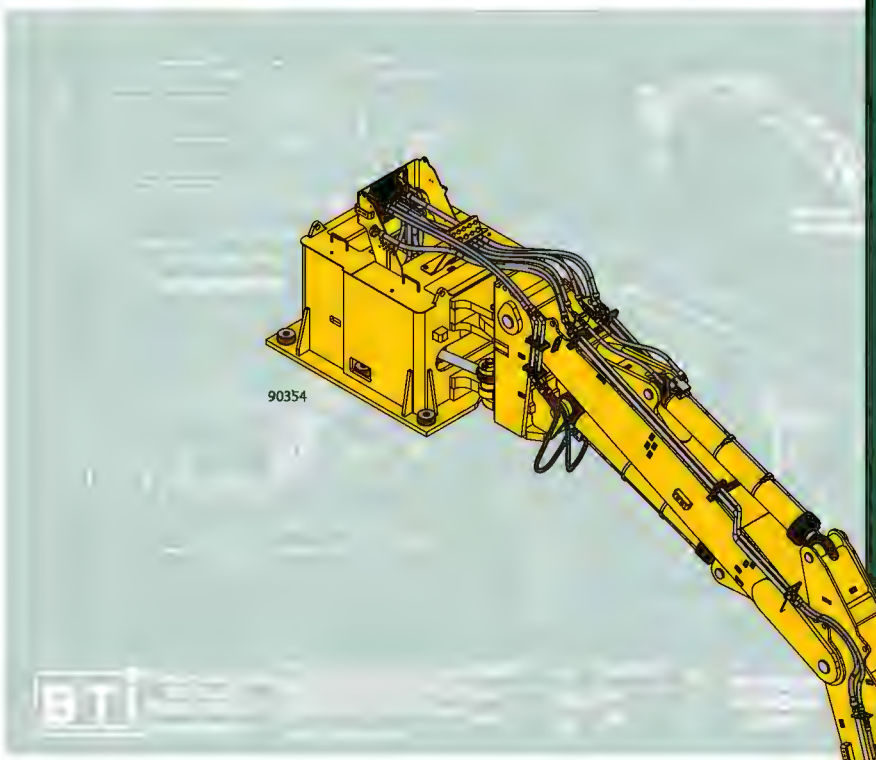
BTI BREAKER TECHNOLOGY
an Astec Industries Co.

MRH SERIES

Rockbreaker System

MRH 16, 20, 20/25, 25



FEATURES & BENEFITS

Pedestal design with 170 degrees of positive swing rotation allows for maximum power and performance over the swing range of boom and provides for safe positioning for maintenance and storage.

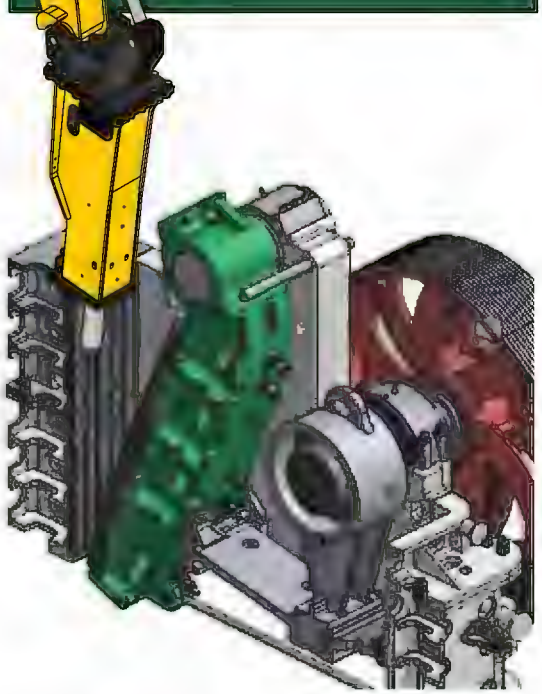
Excavator style boom design provided for added strength and increased depth of reach.

Massive boom cross sections with reinforced pivot joints provide excellent durability against fatigue.

Aluminum bronze bushings and oversized pivot pins are designed for extended service life in high shock load applications.

Joystick Control System complete with anti-lunge control, and anti-blank fire option.

Auto-lube System (boom and breaker) hydraulic or pneumatic driven.



AT A GLANCE

Operating Weights: lb (kg)

Model	Pedestal & Boom only	Complete system
MRH16	14, 180 (6 432)	18,580 (8 428) – 21,390 (9 702)
MRH20	16, 200 (7 355)	19,703 (8 937) – 23,615 (10 712)
MRH20/25	16, 500 (7 484)	20,208 (9 166) – 23,460 (10 641)
MRH25	17,100 (7 764)	21,108 (9 574) – 24,360 (11 050)

* Complete system from smallest to largest with appropriate electric hydraulic power pack.

Dimensions:

Model	Overall Height	Working Length	Base
MRH16	15' 11" (4.9 m)	15' 8" (4.8 m)	62¾" x 50" (1 594 mm x 1 270 mm)
MRH20	17' 4" (5.3 m)	19' 6" (6.0 m)	62¾" x 50" (1 594 mm x 1 270 mm)
MRH20/25	17' 4" (5.3 m)	22' 9" (6.9 m)	62¾" x 50" (1 594 mm x 1 270 mm)
MRH25	20' 2" (6.1 m)	25' 3" (7.7 m)	62¾" x 50" (1 594 mm x 1 270 mm)

Hydraulic Breaker Operating Weight: lb (kg)

Model	Breaker Model Range
MRH16:	**BX20:** 2,050 (1 210) thru to **BXR85:** 6,500 (2 950)
MRH20:	**BX20:** 2,050 (1 210) thru to **BXR65:** 4,860 (2 200)
MRH20/25:	**BX20:** 2,050 (1 210) thru to **BXR50:** 4,200 (1 900)
MRH25:	**BX20:** 2,050 (1 210) thru to **BXR50:** 4,200 (1 900)

TECHNICAL SPECIFICATIONS

STATIONARY PEDESTAL HYDRAULIC BREAKER SYSTEM FOR MINING AND QUARRY APPLICATIONS

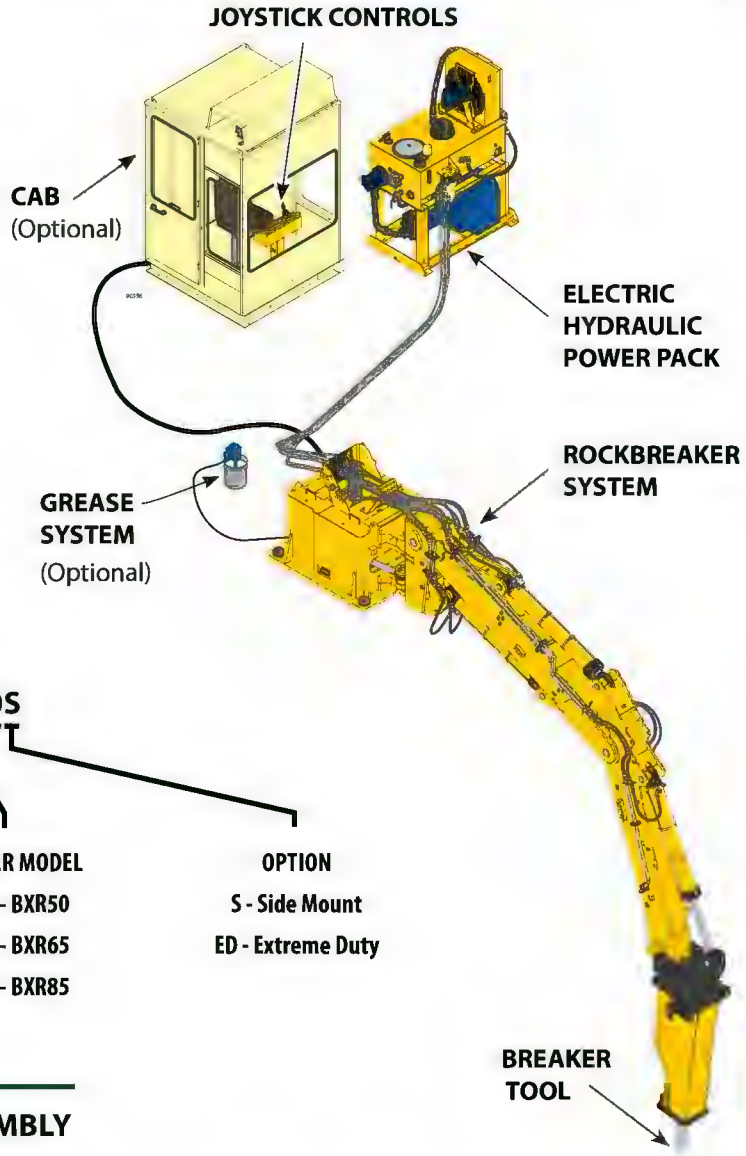
APPLICATIONS

Secondary breaking of oversize material at gyratories, crushers, and grizzlies.

CONSTRUCTION

A typical system consists of the following main assemblies:

- Boom Assembly
- Hydraulic Breaker
- Breaker Tool
- Joystick Controls
- Control Cable
- Electric Hydraulic Power Pack
- Grease System
- Options



MODEL CONFIGURATION MRH20 / BX40S

BOOM MODEL	SERIES / BOOM LENGTH	BREAKER MODEL	OPTION
MRH	16 ft	BX20 – BXR50	S - Side Mount
	20 ft	BX30 – BXR65	ED - Extreme Duty
	20/25 ft	BX40 – BXR85	
	25 ft		

MRH ROCKBREAKER SYSTEM – BOOM ASSEMBLY

Design Parameters

Provide maximum endurance in gyratory, stationary and impact crushers, and grizzly applications such as:

- Side bending and torsional loading inherent in raking, moving, or breaking
- Vibration and shock loads from the hydraulic breaker and crusher

Key Features

- 16 ft to 25 ft (5 m to 8 m) nominal boom lengths
- Fabricated profiled plate construction to optimize material thickness, strength, and weights

Joint Construction

Designed for extended service free operation

- Oversize hardened alloy pins, and aluminum bronze bushings deliver maximum service life
- Replaceable thrust washers protect main boom components

Heavy Hydraulic Cylinders

- One cylinder design for hoist, dipper, and tilt
- Oversized, hardened, chrome plated rod for durability
- Spherical Bearings control alignment
- Cast high tensile steel mounting ends withstand shock and vibration

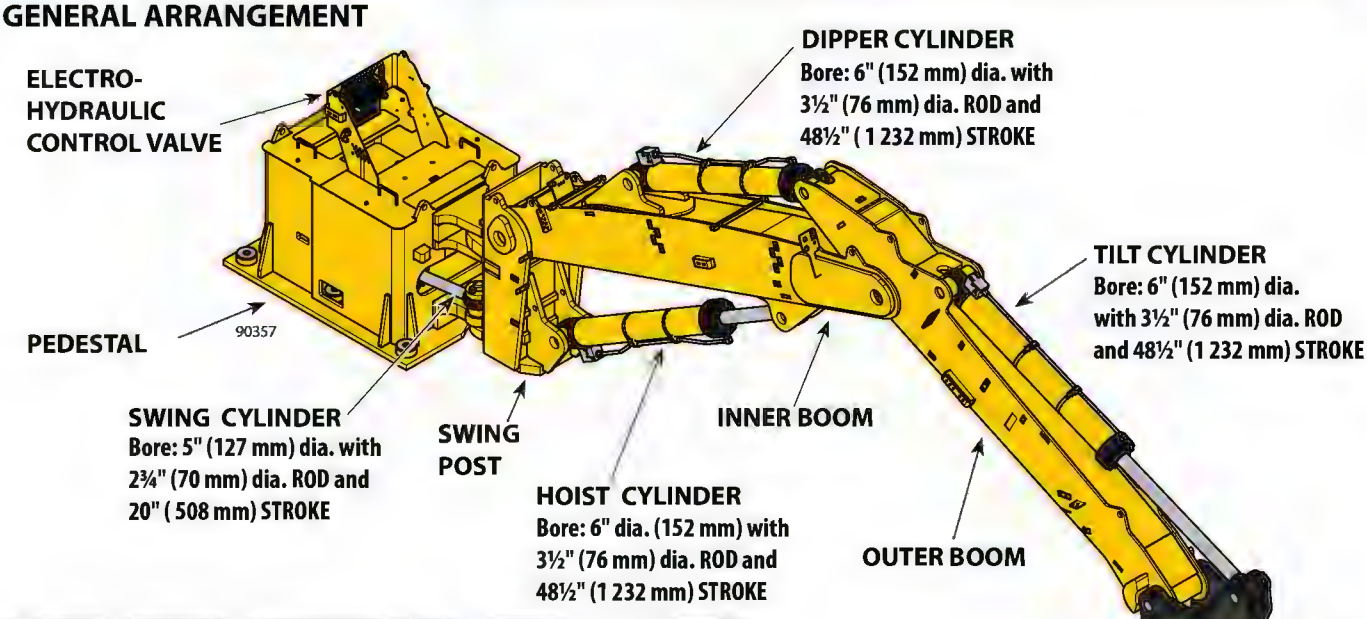
Pedestal Construction

For Concrete or Structural Steel Mounting

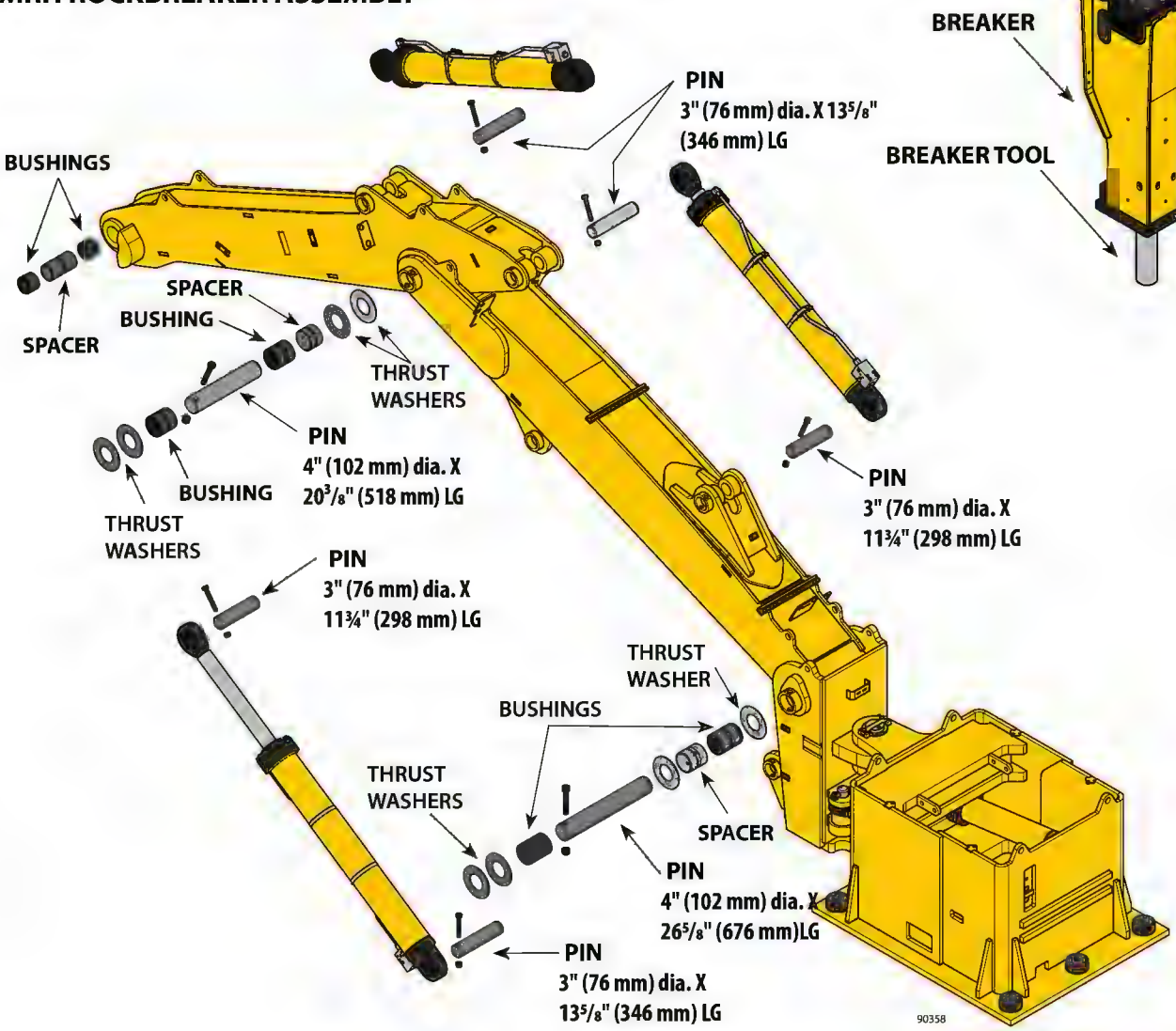
- 16 ft to 25 ft (5 m to 8 m) boom lengths
- Anchored with a quantity of 8—1½" (38 mm) dia. anchor rods for endurance
- Positive 170 degree swing
- Control is achieved by a hydraulic drive motor, brake, and gear box

TECHNICAL SPECIFICATIONS

GENERAL ARRANGEMENT

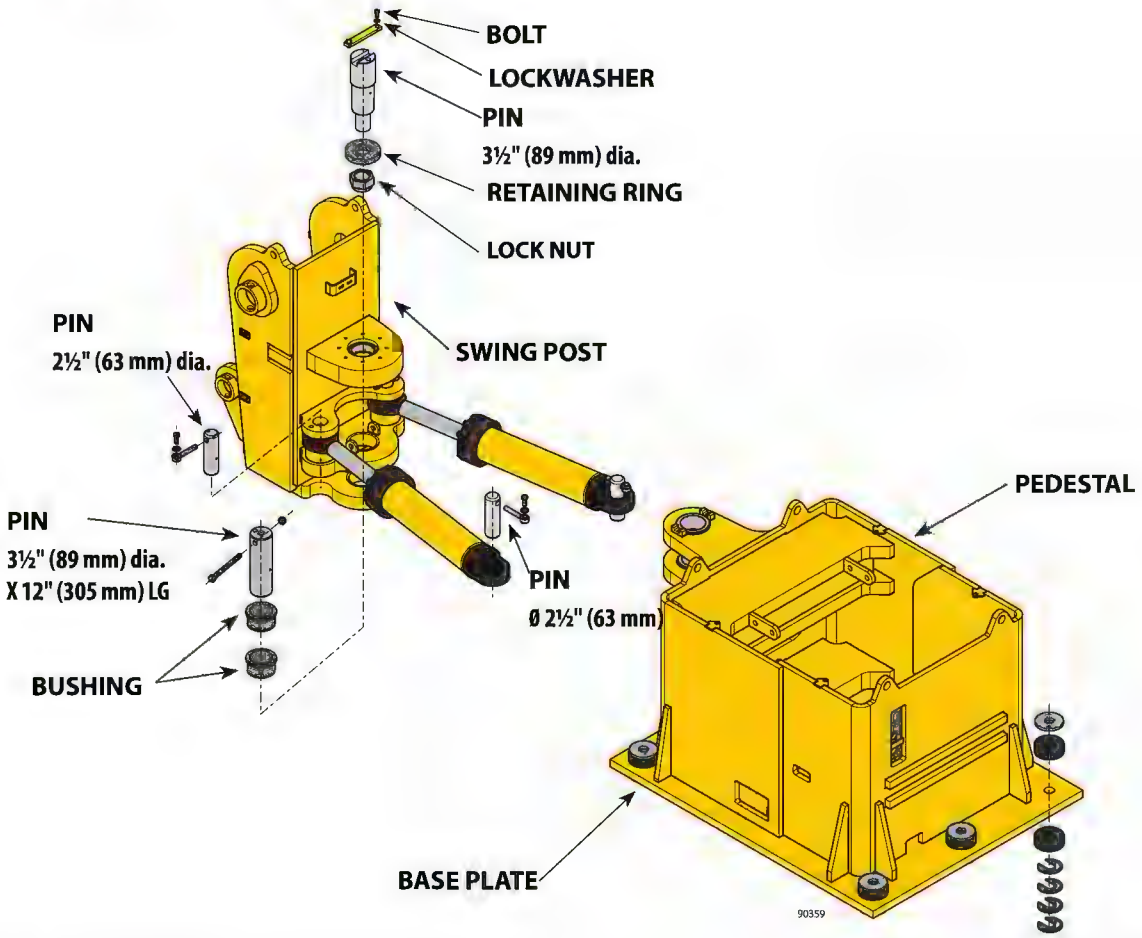


MRH ROCKBREAKER ASSEMBLY

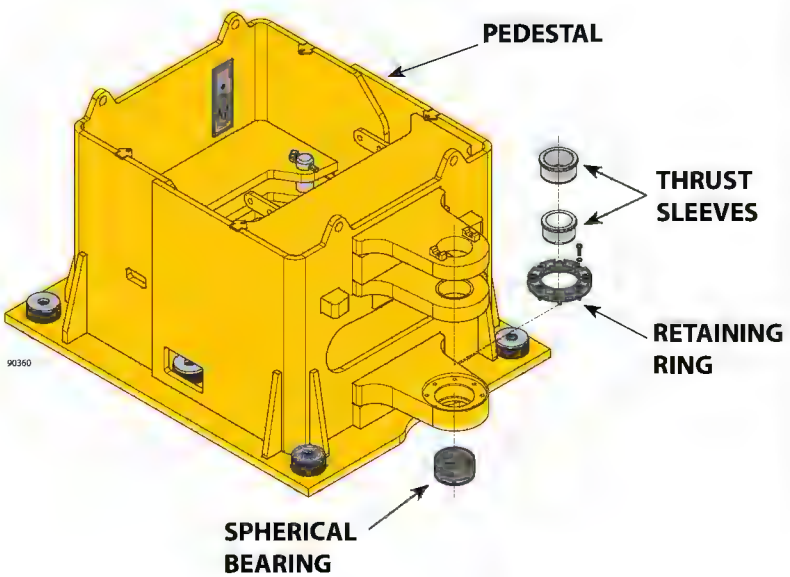


TECHNICAL SPECIFICATIONS

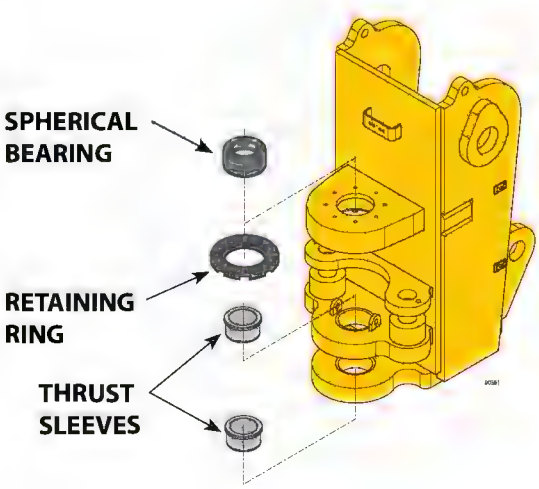
PEDESTAL & SWING POST ASSEMBLY



PEDESTAL ASSEMBLY



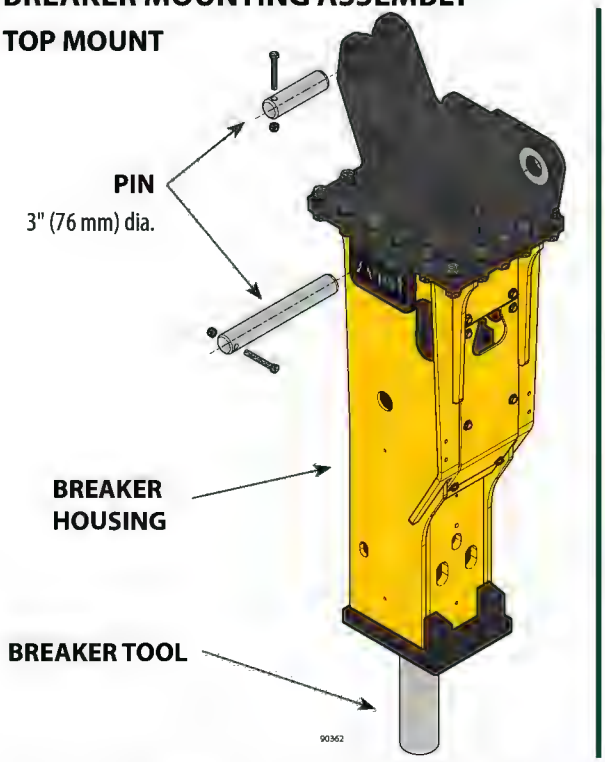
SWING POST ASSEMBLY



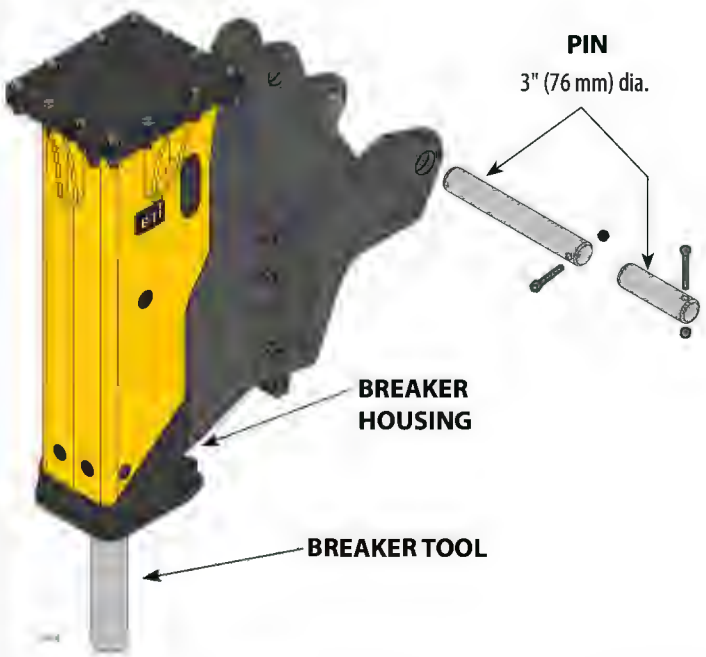
TECHNICAL SPECIFICATIONS

BREAKER MOUNTING ASSEMBLY

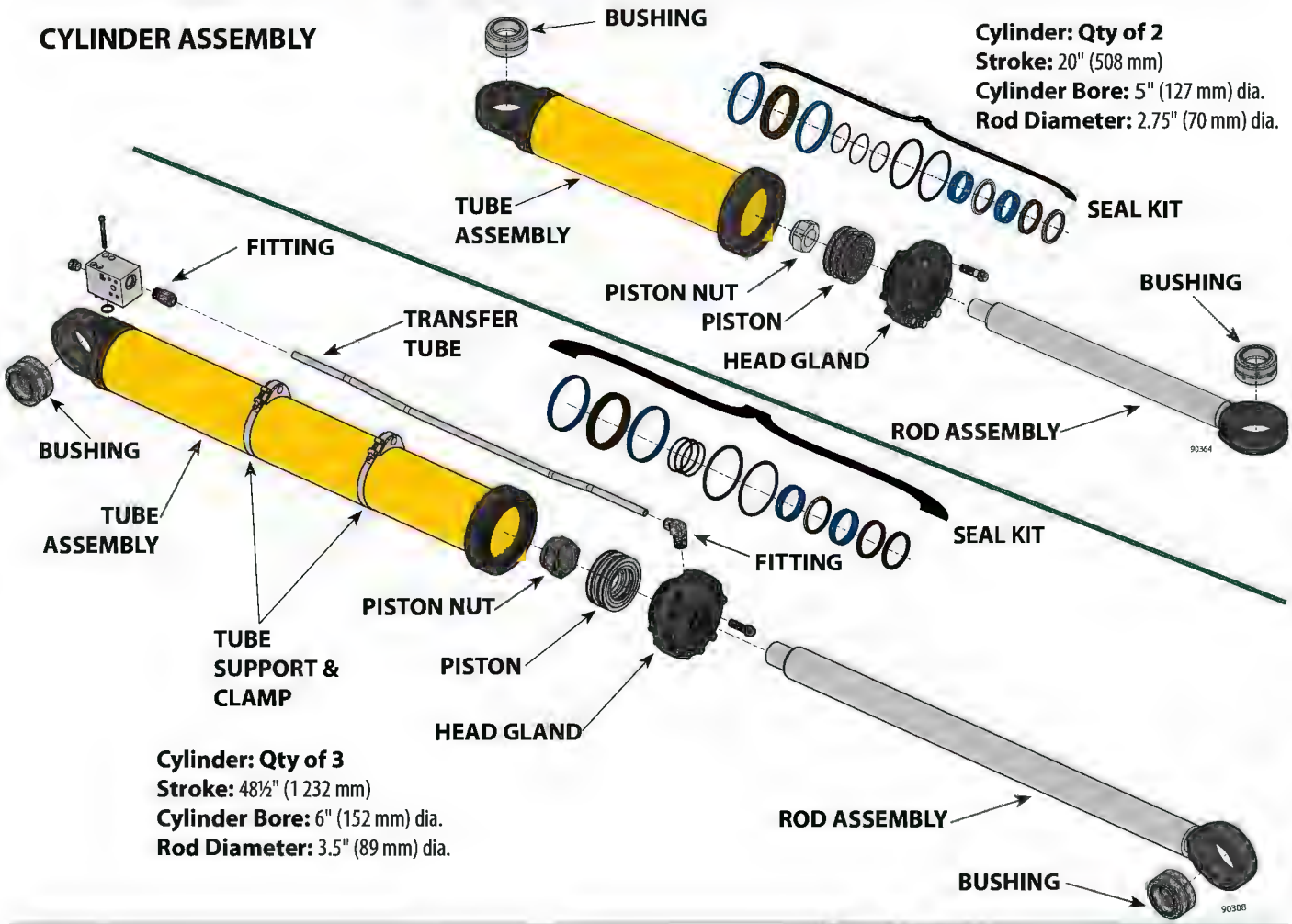
TOP MOUNT



INTEGRATED SIDE MOUNT



CYLINDER ASSEMBLY



Cylinder: Qty of 2
Stroke: 20" (508 mm)
Cylinder Bore: 5" (127 mm) dia.
Rod Diameter: 2.75" (70 mm) dia.

Cylinder: Qty of 3
Stroke: 48½" (1 232 mm)
Cylinder Bore: 6" (152 mm) dia.
Rod Diameter: 3.5" (89 mm) dia.

TECHNICAL SPECIFICATIONS

MRH SERIES CYLINDER, PIN, AND PEDESTAL SPECIFICATIONS

CYLINDER SPECIFICATIONS – BORE DIA. | ROD DIA. | STROKE

in (mm)

MODELS	HOIST	DIPPERSTICK	TILT	SWING
MRH16	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	5 (127) | 2.8 (70) | 20 (508)
MRH20	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	5 (127) | 2.8 (70) | 20 (508)
MRH20/25	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	5 (127) | 2.8 (70) | 20 (508)
MRH25	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	6 (152) | 3.5 (89) | 48 1/2 (1 232)	5 (127) | 2.8 (70) | 20 (508)

PIN DIAMETER SPECIFICATIONS

in (mm)

MODELS	INNER FOOT DIA.	INNER NOSE DIA.	OUTER NOSE DIA.	BREAKER PIN DIA.	HOIST CYLINDER DIA.	DIPPER CYLINDER DIA.	TILT CYLINDER DIA.	SWING POST CYLINDER DIA.	SWING CYLINDER DIA.
MRH16	4 (102)	4 (102)	3 (76)	3 (76)	3 (76)	3 (76)	3 (76)	3 3/4" (95 mm)	2 3/4" (70 mm)
MRH20	4 (102)	4 (102)	3 (76)	3 (76)	3 (76)	3 (76)	3 (76)	3 3/4" (95 mm)	2 3/4" (70 mm)
MRH20/25	4 (102)	4 (102)	3 (76)	3 (76)	3 (76)	3 (76)	3 (76)	3 3/4" (95 mm)	2 3/4" (70 mm)
MRH25	4 (102)	4 (102)	3 (76)	3 (76)	3 (76)	3 (76)	3 (76)	3 3/4" (95 mm)	2 3/4" (70 mm)

FOOTPRINT MOUNTING SPECIFICATIONS

MODELS	BASE SIZE LENGTH | WIDTH	BASE AREA	ANCHOR BOLT QTY – SIZE	SWING ARC*
MRH16	62 3/4" (1 594 mm) | 50" (1 270 mm)	21.88 ft² (2 m²)	8 — 1 1/2" (38 mm)	170°
MRH20	62 3/4" (1 594 mm) | 50" (1 270 mm)	21.88 ft² (2 m²)	8 — 1 1/2" (38 mm)	170°
MRH20/25	62 3/4" (1 594 mm) | 50" (1 270 mm)	21.88 ft² (2 m²)	8 — 1 1/2" (38 mm)	170°
MRH25	62 3/4" (1 594 mm) | 50" (1 270 mm)	21.88 ft² (2 m²)	8 — 1 1/2" (38 mm)	170°

* Limited Rotation Stops can be provided on request

MRH SERIES ROCKBREAKER SYSTEM AND HYDRAULIC BREAKER MATCH UP

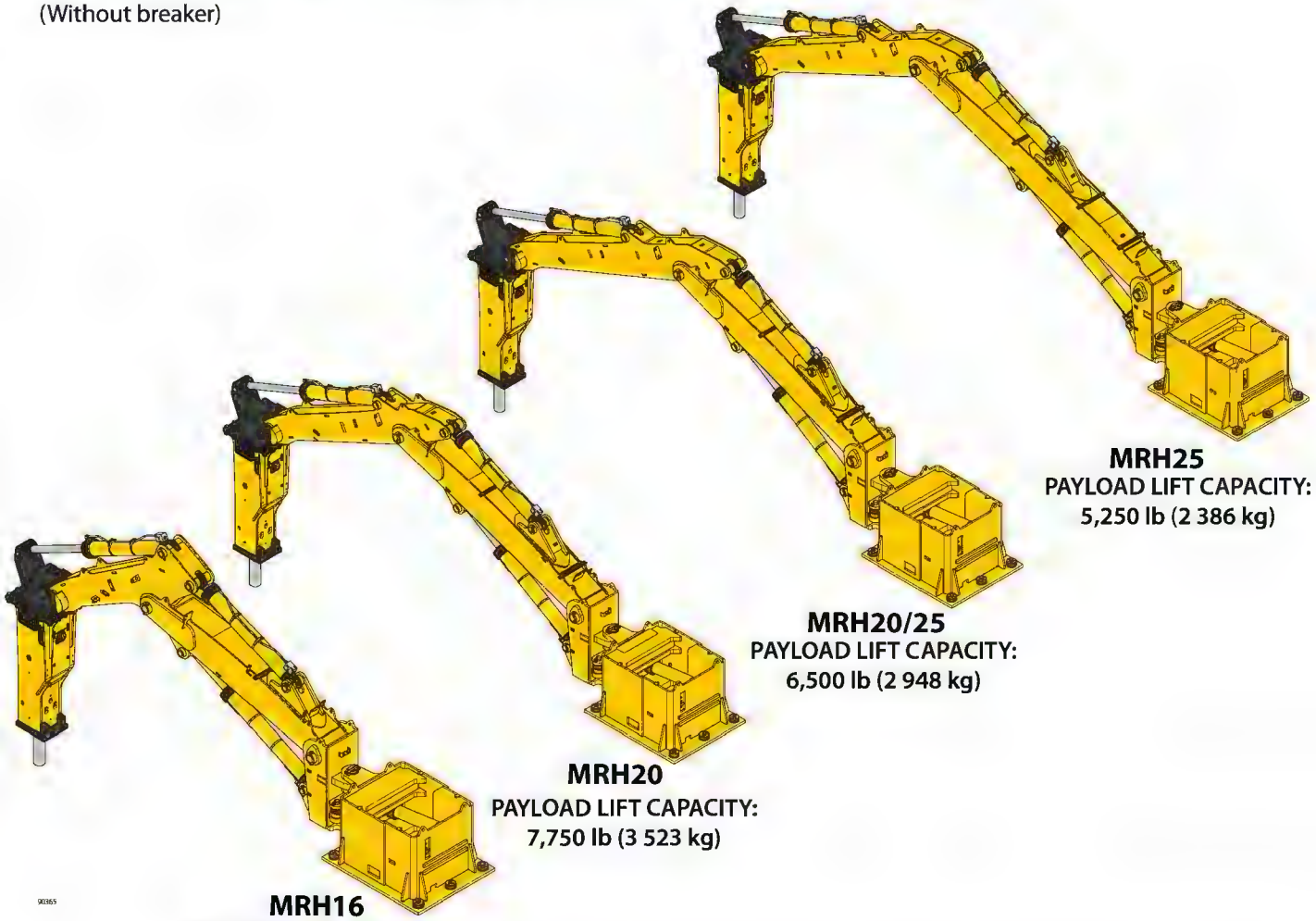
BOOM TO BREAKER MATING

MODELS	BX20 (50 HP)	BX30 (60 HP)	BX40 (100 HP)	BXR50 (100 HP)	BXR65 (125 HP)	BXR85 (150 HP)
MRH16	X	X	X	X	X	X
MRH20	X	X	X	X	X	
MRH20/25	X	X	X	X	X	
MRH25	X	X	X	X		

TECHNICAL SPECIFICATIONS

MRH SERIES PAYLOAD LIFT CAPACITY

(Without breaker)



MRH25
PAYLOAD LIFT CAPACITY:
5,250 lb (2 386 kg)

MRH20/25
PAYLOAD LIFT CAPACITY:
6,500 lb (2 948 kg)

MRH20
PAYLOAD LIFT CAPACITY:
7,750 lb (3 523 kg)

MRH16
PAYLOAD LIFT CAPACITY:
10,829 lb (4 922 kg)

WEIGHT lb (kg)

MODELS	PEDESTAL	INNER BOOM	OUTER BOOM	OVERALL WEIGHT
MRH16	7,600 (3 450)	2,575 (1 168)	1,695 (769)	11,870 (5 384)
MRH20	7,600 (3 450)	2,808 (1 274)	1,930 (875)	12,338 (5 596)
MRH20/25	7,600 (3 450)	2,808 (1 274)	2,250 (1 020)	12,658 (5 742)
MRH25	7,600 (3 450)	3,328 (1 510)	2,250 (1 020)	13,178 (5 977)

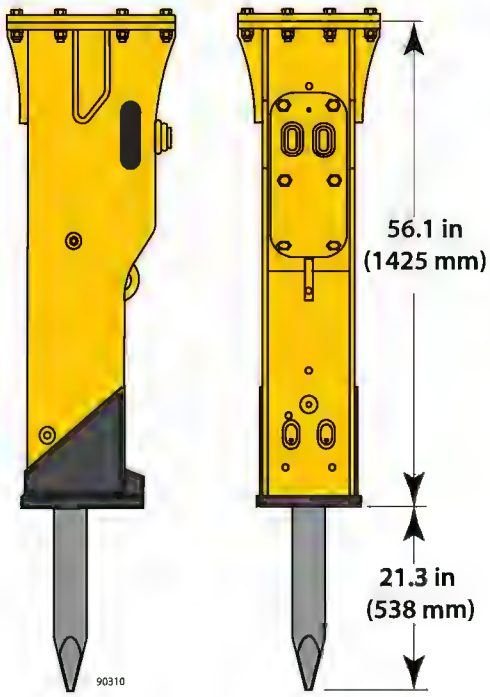
BOOM DIMENSIONS in (mm)

MODELS	OUTER BOOM HEIGHT – WIDTH	INNER BOOM HEIGHT – WIDTH	PIN TO PIN INNER BOOM	PIN TO PIN OUTER BOOM
MRH16	25¼ (640) –13⅟2 (343)	18½ (470) – 17½ (445)	114 (2 896)	$68^{13}/_{16}$ (1 747)
MRH20	$18^{3}/_{4}$ (475) – 13⅟2 (343)	$18^{1}/_{8}$ (461) – 17½ (445)	$133^{3}/_{4}$(3 398)	104 (2 642)
MRH20/25	20¼ (513) – 13⅟2 (343)	$18^{1}/_{8}$ (461) – 17½ (445)	$133^{3}/_{4}$ (3 398)	$128^{15}/_{16}$ (3 275)
MRH25	20¼ (513) – 13⅟2 (343)	$18^{3}/_{4}$ (475)– 17½ (445)	168 (4 267)	$128^{15}/_{16}$ (3 275)

TECHNICAL SPECIFICATIONS

BX / BXR SERIES HYDRAULIC BREAKER SPECIFICATIONS

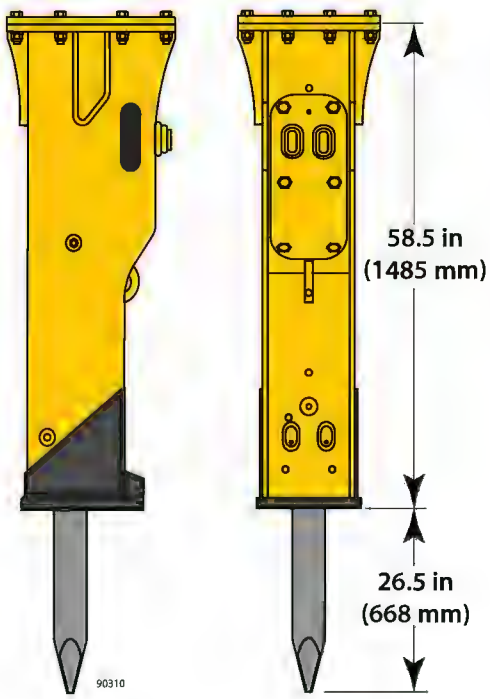
MODEL BX20



OPERATING SPECIFICATIONS	
Energy Class	2,000 ft•lb (2 700 joule)
Operating Weight	2,050 lb (930 kg)
Tool Diameter	4.1 in (105 mm)
Frequency (blows per min.)	Low 350–550 High 500–750
Flow Rate	24–29 gpm (90–110 Lpm)
Operating Pressure	1,740–2,300 psi (120–160 bar)
Hydraulic Hose Size	3/4 in (19 mm) #16 JIC 37°

OPTIONS & ACCESSORIES	
Remote Grease Connection	STD
Remote Air Breather Connect	STD
Manual Anti-Blank Blow Selector	STD
Manual Two Speed Control Selector	STD
Low Noise Box Housing	STD
Severe Duty Wear Kit	OPT

MODEL BX30



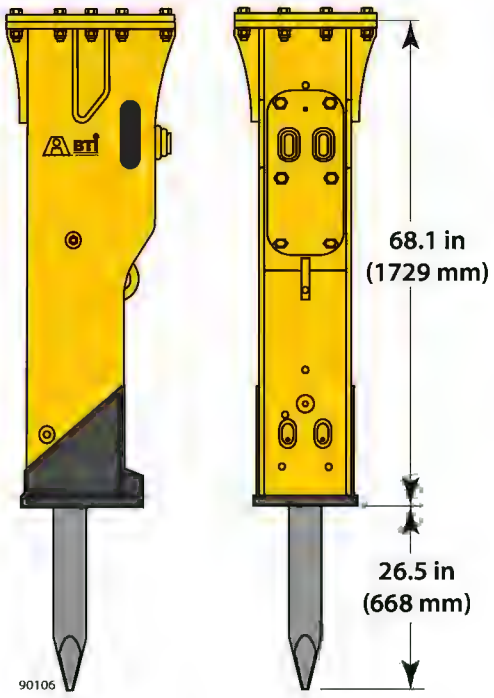
OPERATING SPECIFICATIONS	
Energy Class	3,000 ft•lb (4 100 joule)
Operating Weight	2,668 lb (1 210 kg)
Tool Diameter	4.7 in (120 mm)
Frequency (blows per min.)	Low 350–550 High 500–850
Flow Rate	27–37 gpm (100–140 Lpm)
Operating Pressure	1,740–2,450 psi (120–170 bar)
Hydraulic Hose Size	1 in (25 mm) #16 JIC 37°

OPTIONS & ACCESSORIES	
Remote Grease Connection	STD
Remote Air Breather Connect	STD
Manual Anti-Blank Blow Selector	STD
Manual Two Speed Control Selector	STD
Low Noise Box Housing	STD
Severe Duty Wear Kit	OPT

TECHNICAL SPECIFICATIONS

BX / BXR SERIES HYDRAULIC BREAKER SPECIFICATIONS

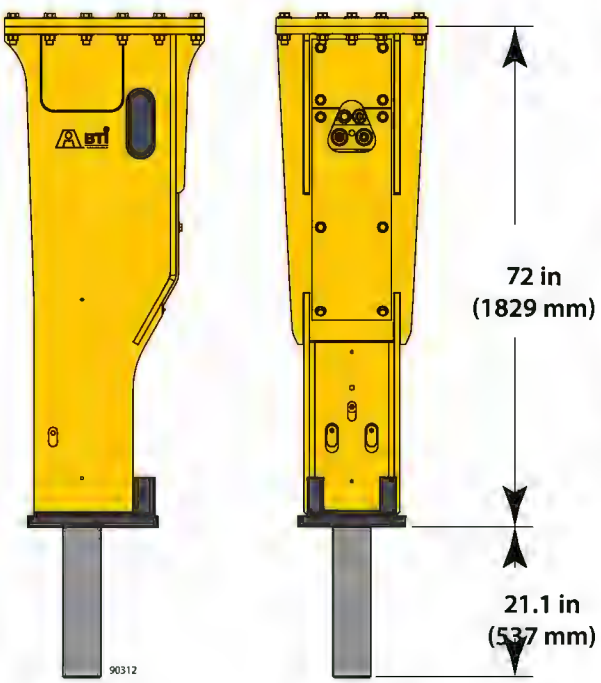
Model BX40



OPERATING SPECIFICATIONS	
Energy Class	4,000 ft•lb (5 400 joule)
Operating Weight	3,830 lb (1 740 kg)
Tool Diameter	5.3 in (135 mm)
Frequency (blows per min.)	350–500 / 450–600 bpm
Flow Rate	29–42 gpm (110–160 Lpm)
Operating Pressure	1,900–2,450 psi (130–170 bar)
Hydraulic Hose Size	1 in (25 mm) #16 JIC 37°

OPTIONS & ACCESSORIES	
Remote Grease Connection	STD
Remote Air Breather Connect	STD
Manual Anti-Blank Blow Selector	STD
Low Noise Box Housing	STD
Severe Duty Wear Kit	OPT

MODEL BXR50



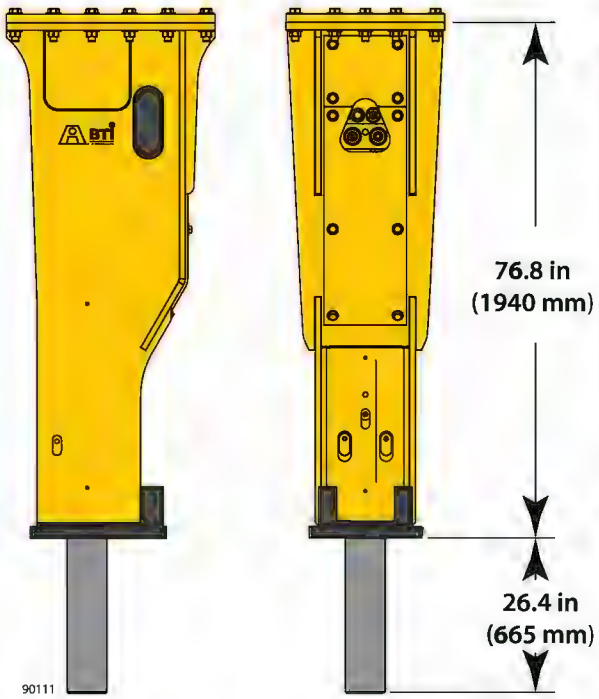
OPERATING SPECIFICATIONS	
Energy Class	5,000 ft•lb (6 800 joule)
Operating Weight	4,200 lb (1 905 kg)
Tool Diameter	5.5 in (140 mm)
Frequency (blows per min.)	387-589/445-804
Flow Rate	40-53 gpm (150–200 Lpm)
Operating Pressure	2,250–2,755 psi (155–190 bar)
Hydraulic Hose Size	1 in (25 mm) #16 JIC 37°

OPTIONS & ACCESSORIES	
Remote Grease Connection	STD
Remote Air Breather Connect	STD
Anti-Blank Blow	STD
Hydraulic Two Speed Control	STD
Low Noise Box Housing	STD
Severe Duty Wear Kit	OPT

TECHNICAL SPECIFICATIONS

BX / BXR SERIES HYDRAULIC BREAKER SPECIFICATIONS

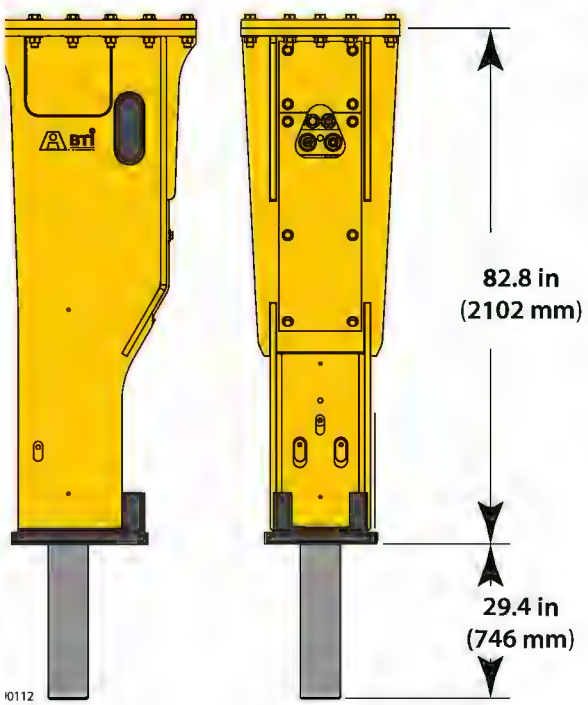
MODEL BXR65



OPERATING SPECIFICATIONS	
Energy Class	6,500 ft•lb (8 800 joule)
Operating Weight	4,880 lb (2 200 kg)
Tool Diameter	6.0 in (150 mm)
Frequency (blows per min.)	335–514 / 385–684 bpm
Flow Rate	46–55 gpm (160–210 Lpm)
Operating Pressure	2,250–2,755 psi (155–190 bar)
Hydraulic Hose Size	1 in (25 mm) #16 JIC 37°

OPTIONS & ACCESSORIES	
Remote Grease Connection	STD
Remote Air Breather Connect	STD
Anti-Blank Blow	STD
Hydraulic Two Speed Control	STD
Low Noise Box Housing	STD
Severe Duty Wear Kit	OPT

MODEL BXR85

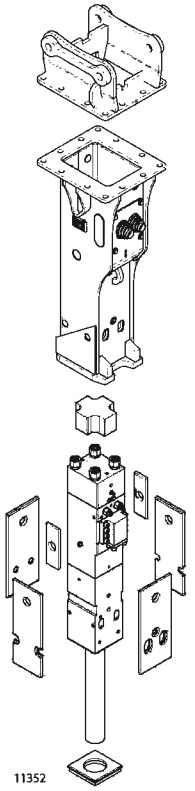


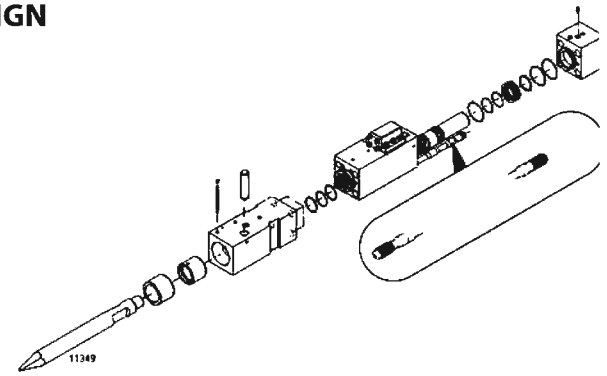
OPERATING SPECIFICATIONS	
Energy Class	8,500 ft•lb (11 524 joule)
Operating Weight	6,500 lb (2 948 kg)
Tool Diameter	6.3 in (160 mm)
Frequency (blows per min.)	285–435 / 328–578 bpm
Flow Rate	46–61 gpm (175–230 Lpm)
Operating Pressure	2,150–2,700 psi (150–190 bar)
Hydraulic Hose Size	1-1/4 in (32 mm) #20 JIC 37°

OPTIONS & ACCESSORIES	
Remote Grease Connection	STD
Remote Air Breather Connect	STD
Anti-Blank Blow	STD
Hydraulic Two Speed Control	STD
Low Noise Box Housing	STD
Severe Duty Wear Kit	OPT

TECHNICAL SPECIFICATIONS

BX HYDRAULIC BREAKER STRUCTURE & DESIGN

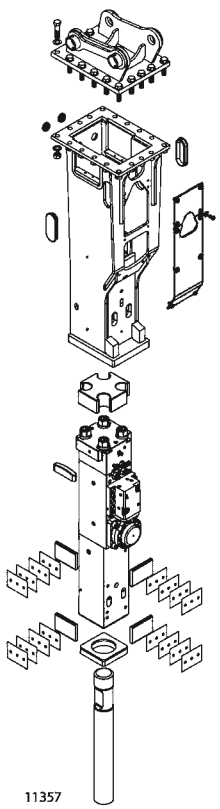


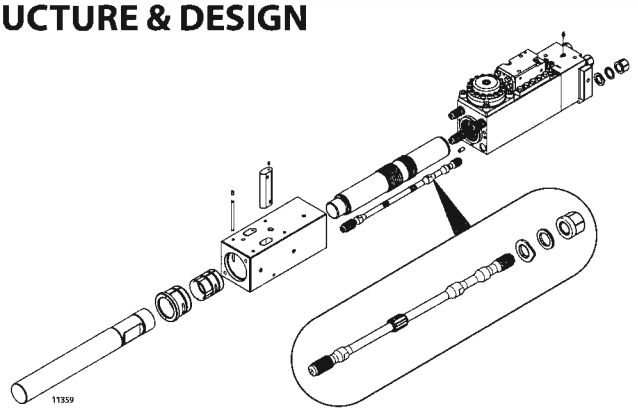


FEATURES & BENEFITS

- **High Strength alloy plate steel construction with abrasion resistant plating** allows continuous duty in harsh environment.
- **Noise dampening material through the breaker;** eliminates metal-to-metal contact.
- **Top and bottom isolators;** absorb recoil energy.
- **Narrow nose design;** allows improved visibility and minimal over-breaking in trenching applications.
- **Cryogenically enhanced, heat treated alloy pistons and precise tolerances;** provide high breaker efficiencies, while pressure balanced pistons optimize blows / minute and blow energy.
- **Short length, large diameter tie rods with integral vibration dampeners;** provide an exceptionally strong, re-buildable design.
- **Large tool diameters;** longer life and superior transmission of impact energy.

BXR HYDRAULIC BREAKER STRUCTURE & DESIGN



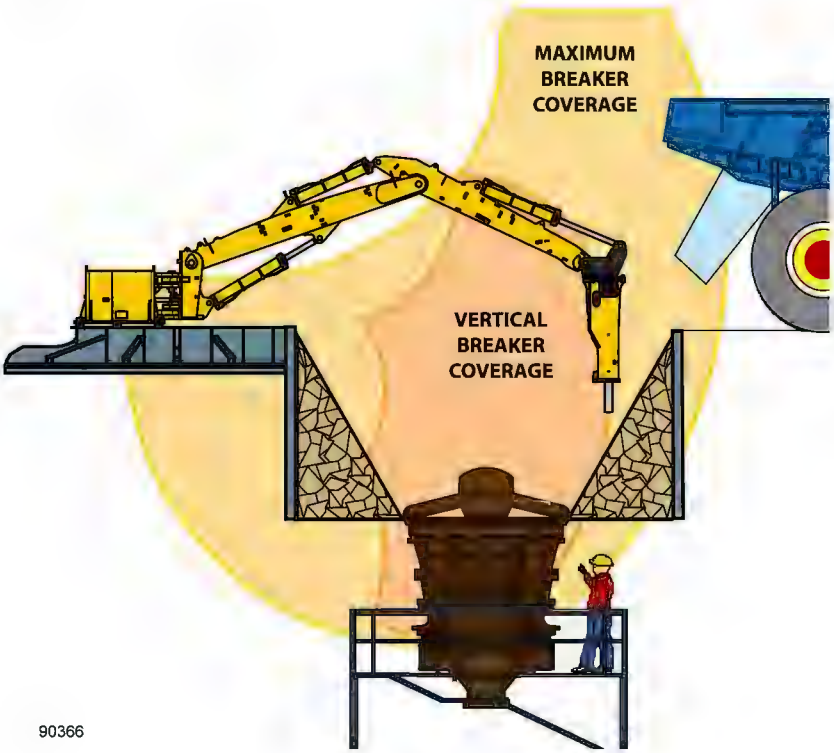


FEATURES & BENEFITS

- **The simple design** of the piston and control valve spool makes the **BXR** Series breakers more reliable and less expensive to repair.
- **Nitrogen filled Low Pressure Cushion Chamber** absorbs recoil energy and increases output energy.
- **Unique Heavy Duty Box Housing** eliminates tie rod loading for long tie rod life while absorbing recoil energy from the breaker, thus reducing noise.
- **The Long Piston design** provides positive alignment of the piston and the tool, so that every blow transmits the maximum energy with the least recoil.
- **BXR Series Breakers are equipped with two Replaceable Bushings** designed to maximize the life of the front claws that assist in manipulating the material for more effective breaking.

MRH APPLICATIONS

GYRATORY



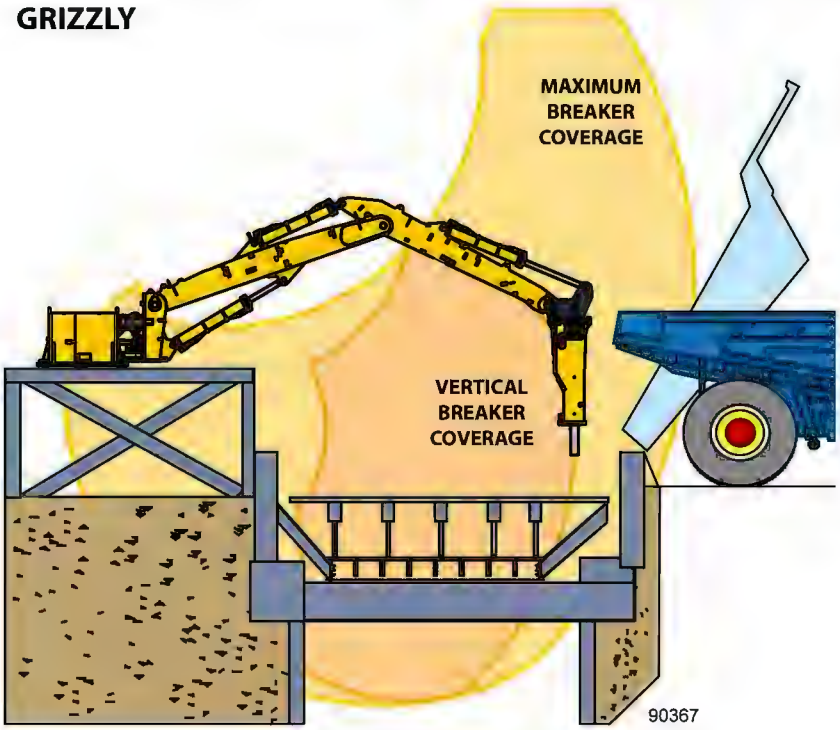
The gyratory crusher is the mainstay of medium to large duty crushing plants. Typically, material is brought to the crusher by large haulage trucks and dumped into a rock box. The gyratory crusher is located at the bottom of the rock box. Material is crushed between the eccentrically mounted rotating crushing cone and the fixed, tapered crushing throat.

The rockbreaker system is typically installed in line with the spider that supports the cone. This provides superior maneuverability of the rockbreaker boom within the gyratory throat.

The rockbreaker boom is typically sized to allow the full range of motion over the active area of the rock box. The reach should be deep enough to allow the hydraulic breaker to enter the gyratory for material breaking and liner plate removal applications.

The *Vertical Breaker Coverage* zone permits superior maneuverability and performance allowing the boom and breaker to operate without subjecting the boom to undue stress. The boom should be positioned and sized so the majority of breaking and raking operations can be done within the Vertical Breaker Coverage zone.

GRIZZLY

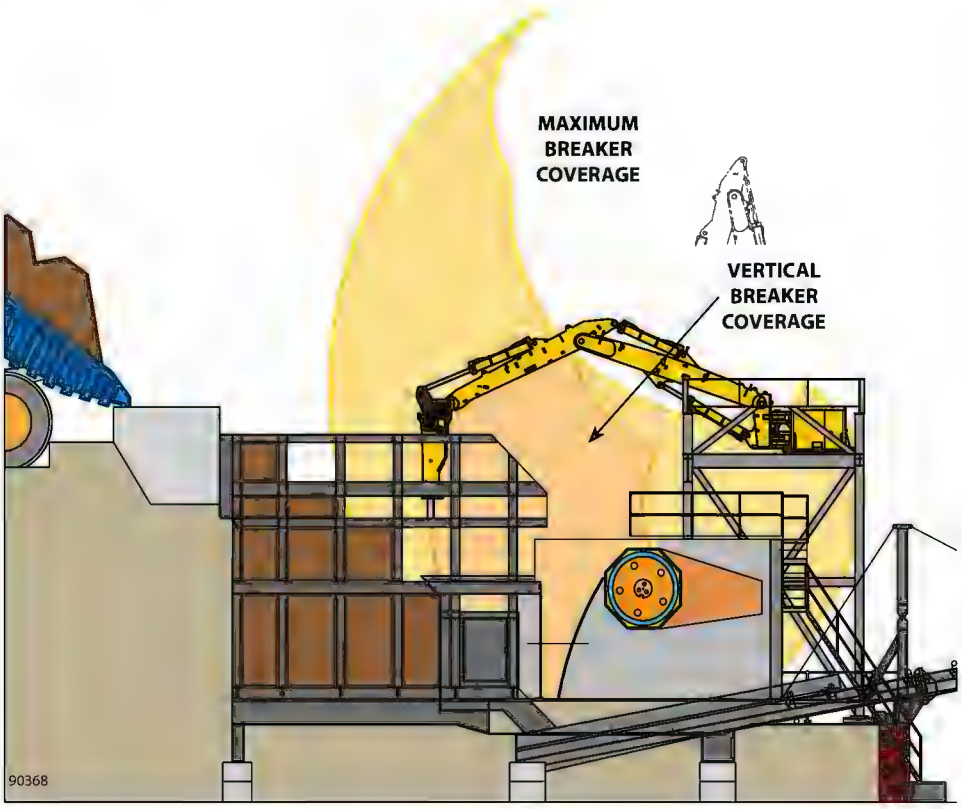


Oversize material that is too large cannot pass through the grizzly and is left on top to be broken by a rockbreaker system. The smaller material is allowed to pass through the grizzly down the ore pass. The rockbreaker boom should be sized to allow coverage of the tool over the grizzly with the tool in a vertical position over the main breaking area. The *Vertical Breaker Coverage* should be positioned well above the working height of the oversize material on the grizzly allowing for maximum maneuverability without subjecting the boom to undue stress.

BTI can supply the breaker in one of two different mounting configurations. The top-mounted version provides increased reach and maneuverability. The side-mounted version provides a lower profile in low headroom applications.

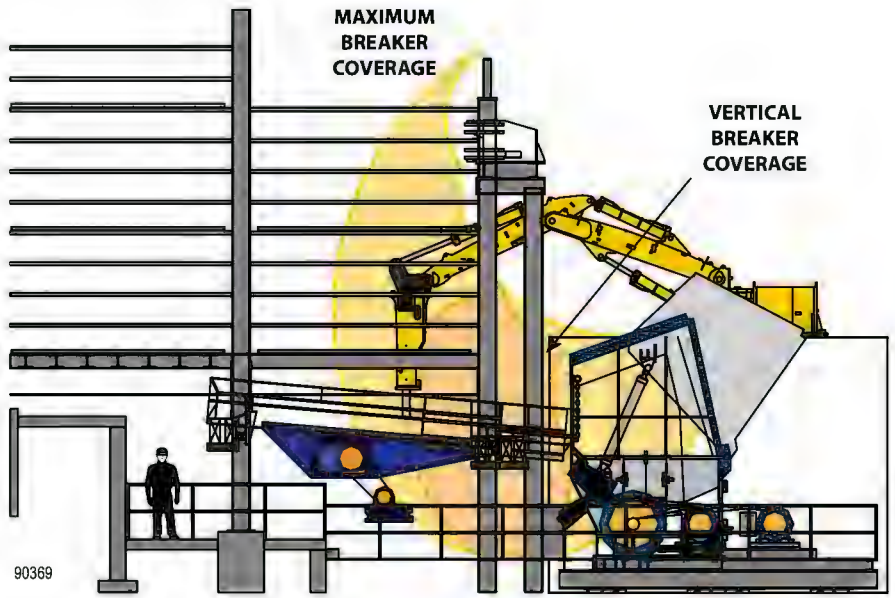
MRH APPLICATIONS

STATIONARY JAW CRUSHER



Jaw crushers are typically used in many medium duty primary crushing applications. A fixed jaw plate opposite and moving jaw plate size the material through as it passes from the top to the bottom of the crusher. The jaw crusher is typically fed from a rock box by a vibrating feeder. The Rockbreaker should be positioned to allow breaking in and over the crusher while having enough reach to assist material flow from the rock box and vibrating feeder to the jaw. Positioning the Rockbreaker in line with the jaw and vibrating feeder provides superior raking ability and is the preferred position. Mounting the Rockbreaker to the side of the jaw can allow for increased reach into the rock box but does not assist in material flow as well as the in-line position.

IMPACT JAW CRUSHING PLANT



When the rock falls into the feeding mouth of the impact crusher, the roller drives the toggled plate at high speed against the rock. The larger material is broken, allowing the smaller pieces to fall to the bottom of the impact crusher.

Typically the Breaker Tool should not extend into the mouth of the Impact Jaw. Rockbreakers are normally mounted in line with the opening of the impact crusher to allow raking of rock into the mouth.

MRH APPLICATIONS

SITE LOCATION

For maximum effectiveness, the rockbreaker boom must reach and cover all the problems areas. Proper location is one of the most crucial factors in the successful installation of a rockbreaker system. BTI addresses many variables in the process of sizing a rockbreaker system. Installation drawings are furnished showing the rockbreaker boom's position relative to the crushing site.

Typical questions:

What is the expected duty cycle of the boom and breaker?

Where does material bridge up or slow down?

Where is it practical to break oversize?

Where is the best location to assist material flow into the crusher?

Will the breaker be used to assist in the removal of liner plates in gyratory applications?

Will the boom location allow for positioning out of the way of haulage trucks or scoops?

Will the boom interfere with any structures?

Will the boom location allow safe access to the boom and breaker by maintenance and operation personnel?

SIZING THE BREAKER

The MRH series rockbreaker boom is designed to work with 2,000 – 8,500 ft•lb (2 700 – 11 500 joule) class hydraulic breakers. The breaker must be sized properly to correctly handle the oversize material's size, hardness, and quantity. A general guideline is listed below. Consult BTI for final sizing of the breaker to the application.

The **BX20** is a 2,000 ft•lb (2 700 joule) class breaker suitable for oversize pieces of ± 1 yd^3 (0,75 m^3) in size, depending on material hardness. This breaker works well in materials with a compressive strength of 10,000–20,000 psi (138 – 207 mPa). It is well suited for limestone and softer mineral rock applications on grizzlies up to 10 tph (tons per hour) of oversize,as well as jaw crushers with material production rates up to 1,000 tph.

The **BX30** is a 3,000 ft•lb (4 100 joule) class breaker suitable for oversize pieces of ± 2 yd^3 (1,5 m^3) in size, depending on material hardness. This breaker works well in materials with a compressive strength of 20,000–30,000 psi (138 – 207 mPa). It is well suited for limestone and softer mineral rock applications on grizzlies up to 15 tph of oversize, as well as jaw crushers with material production rates up to 1,000 tph.

The **BX40** is a 4,000 ft•lb (5 400 joule) class breaker suitable for oversize pieces of 2 – 3 yd^3 (1,5 – 2,3 m^3) in size, depending on material hardness. This breaker works well in materials with a compressive strength of 20,000–30,000 psi (138 – 207 mPa). It is well suited for limestone and softer mineral rock applications on grizzlies up to 20 tph of oversize, as well as small gyratorys with material production rates up to 2,000 tph.

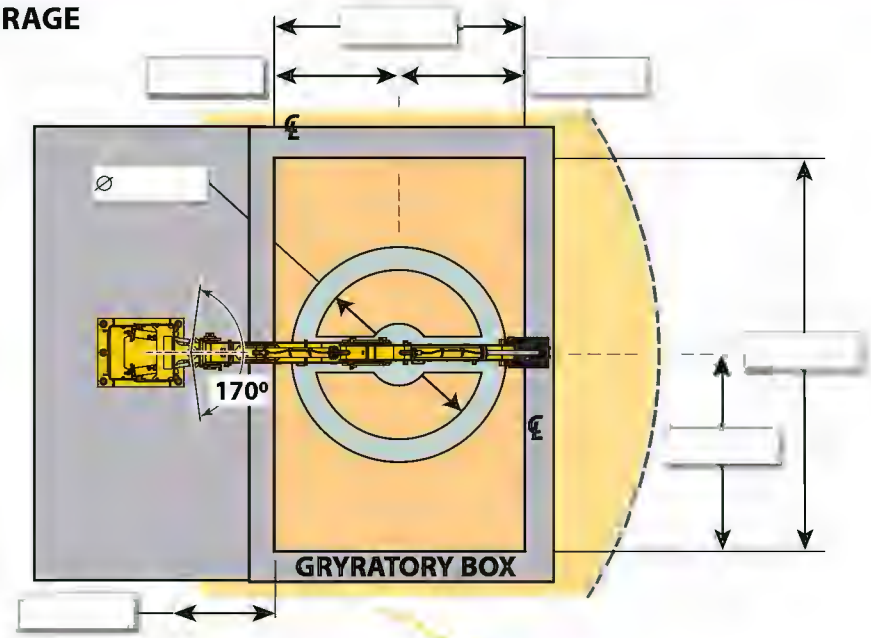
The **BXR50** is a 5,000 ft•lb (6 800 joule) class breaker suitable for oversize pieces of 2 – 3 yd^3 (1,5 – 2,3 m^3) in size, depending on material hardness. This breaker works well in materials with a compressive strength of 25,000 – 35,000 psi (172 – 241 mPa). It is well suited for limestone, granite and mineral rock applications on grizzlies with up to 25 tph of oversize, as well as mid-size gyratorys with material production rates up to 2,000 tph.

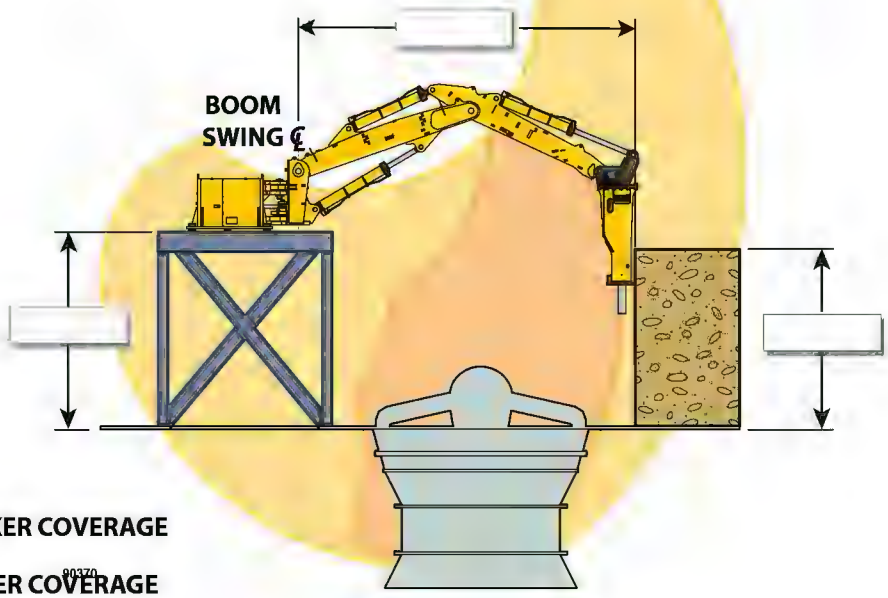
The **BXR65** is a 6,500 ft•lb (8 800 joule) class breaker suitable for oversize pieces of 3 – 4 yd^3 (2,3 – 3 m^3) depending on material hardness. This breaker works well in materials with a compressive strength of 30,000 – 40,000 psi (207 – 276 mPa). It is well suited for limestone, granite and mineral rock applications on grizzlies with up to 30 tph of oversize, as well as mid size gyratorys with material production rates up to 2,800 tph.

The **BXR85** is a 8,500 ft•lb (11 500 joule) class breaker suitable for oversize pieces of 4 – 6 yd^3 (3 – 4,6 m^3). This breaker works well in materials with a compressive strength of 35,000 – 50,000 psi (241 –345 mPa). It is well suited for granite and harder mineral rock applications on larger grizzlies with up to 35 tph of oversize, as well as large gyratorys with material production rates up to 3,500 tph.

MRH APPLICATIONS

TYPICAL GRYRATORY COVERAGE





MAXIMUM BREAKER COVERAGE

VERTICAL BREAKER COVERAGE

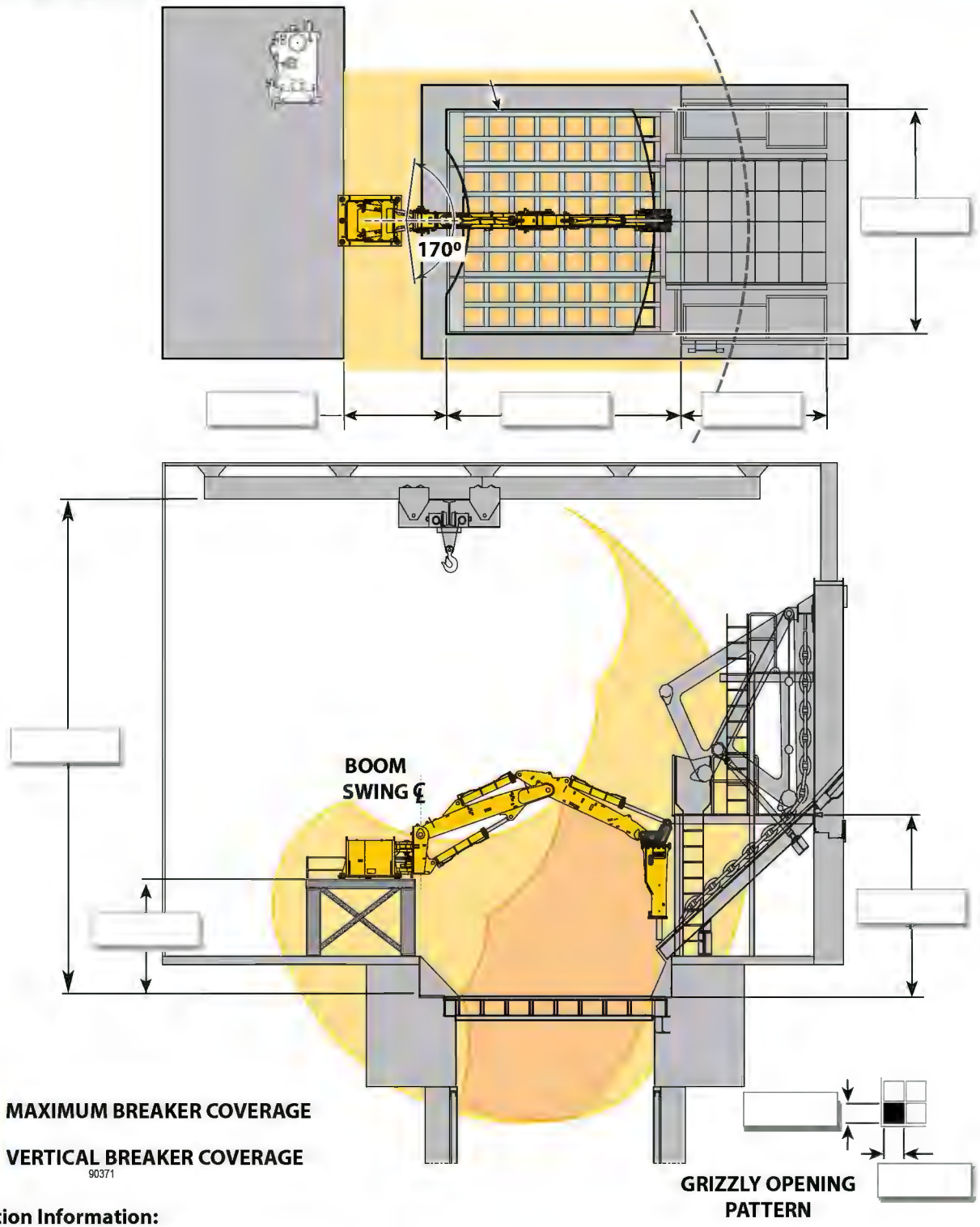
Evaluation Information:

1. All dimensions must be as accurate as possible.
2. Location of control room building structure, and overhead crane should be indicated if appropriate.
3. Breaking and/or raking areas should be marked.
4. Indicate whether pedestal is to be mounted in line with the dump area or to the side.
5. Locate dump areas.
6. Breaker can reach and operate within arcs as shown. However superior maneuverability is achieved when the breaker works in a vertical position.

NOTE: BTI is not responsible for the design of the supporting structure. Configuration shown is for reference only.

MRH APPLICATIONS

TYPICAL GRIZZLY COVERAGE



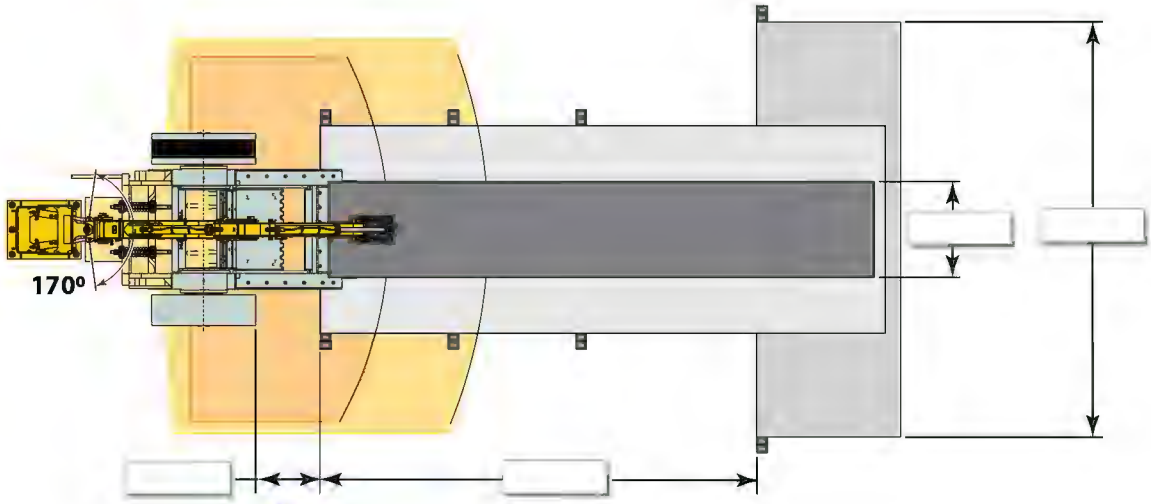
Evaluation Information:

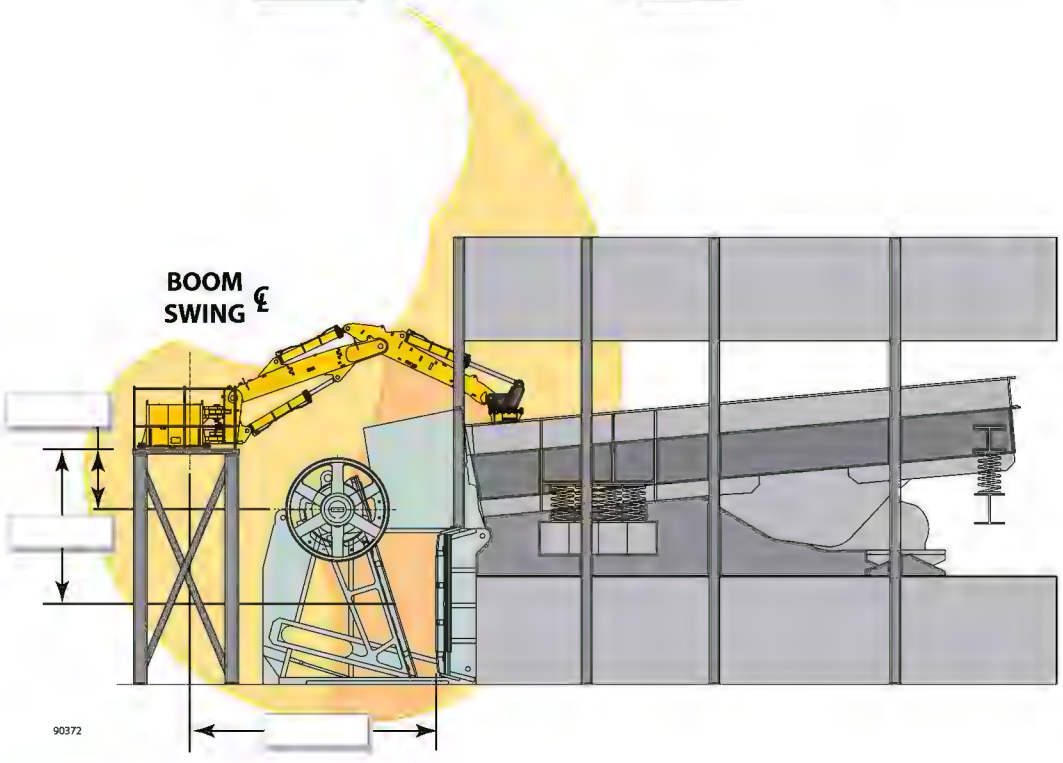
1. All dimensions must be as accurate as possible.
2. Location of control room and ore passes should be indicated if appropriate.
3. Areas where breaking and/or raking will be required should be marked.
4. Please locate and indicate whether pedestal is to be mounted in line with the dump area or to the side.
5. Breaker can reach and operate within arcs as shown. However superior maneuverability is achieved when the breaker works in a vertical position.

NOTE: BTI is not responsible for the design of the supporting structure. Configuration shown is for reference only.

MRH APPLICATIONS

TYPICAL JAW CRUSHER with IN LINE COVERAGE





MAXIMUM BREAKER COVERAGE

VERTICAL BREAKER COVERAGE

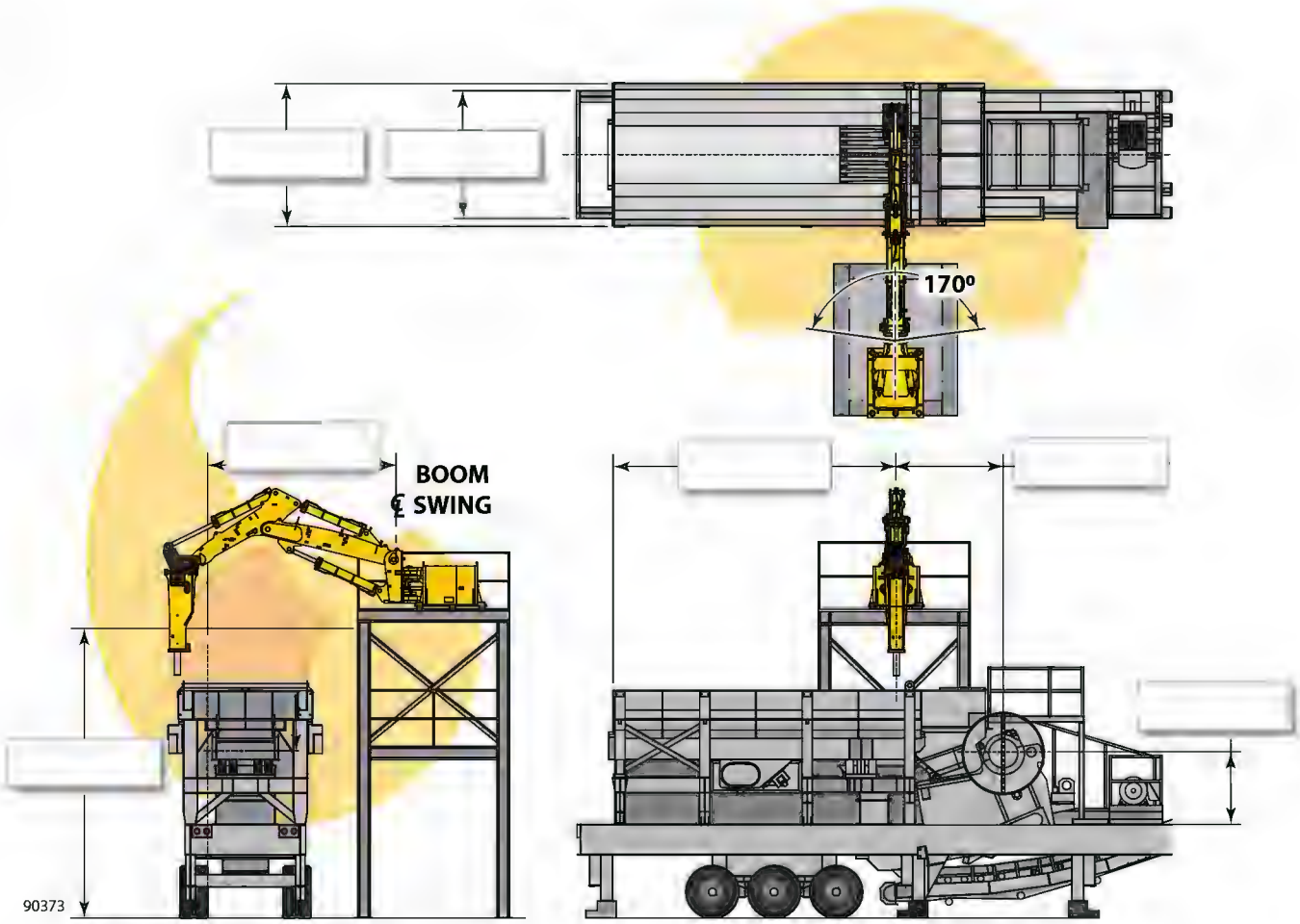
Evaluation Information:

1. All dimensions must be as accurate as possible.
2. Location of control room and ore passes should be indicated if appropriate.
3. Areas where breaking and/or raking will be required should be marked.
4. Please locate and indicate whether pedestal is to be mounted in line with the dump area or to the side.
5. Breaker can reach and operate within arcs as shown. However superior maneuverability is achieved when the breaker works in a vertical position.

NOTE: BTI is not responsible for the design of the supporting structure. Configuration shown is for reference only.

MRH APPLICATIONS

TYPICAL SIDE MOUNTED JAW CRUSHER



MAXIMUM BREAKER COVERAGE

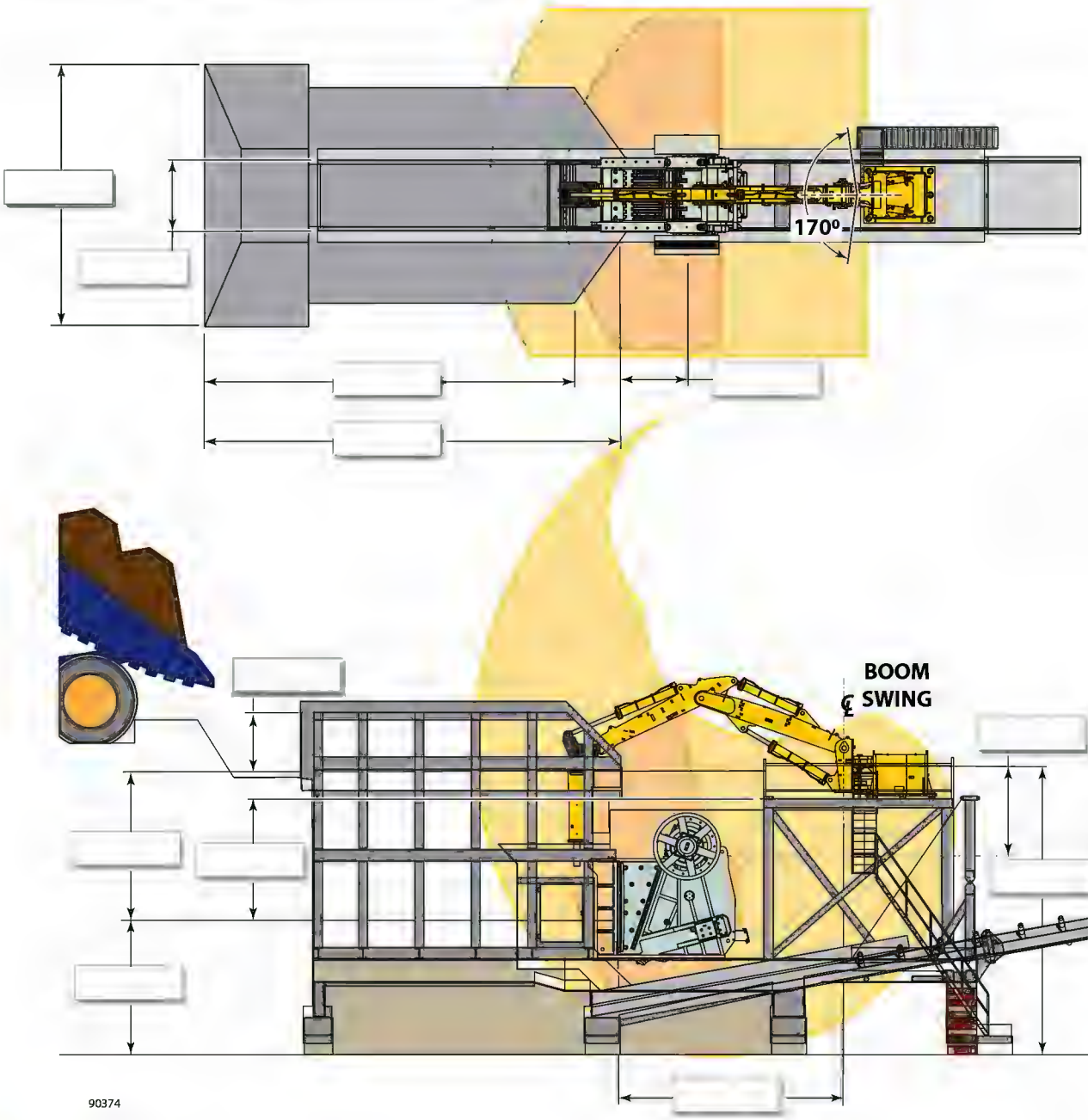
VERTICAL BREAKER COVERAGE

Evaluation Information:

1. All dimensions must be as accurate as possible.
2. Location of control room and ore passes should be indicated if appropriate.
3. Areas where breaking and/or raking will be required should be marked.
4. Please locate and indicate whether pedestal is to be mounted in line with the dump area or to the side.
5. Breaker can reach and operate within arcs as shown. However superior maneuverability is achieved when the breaker works in a vertical position.

NOTE: BTI is not responsible for the design of the supporting structure. Configuration shown is for reference only.

TYPICAL IN LINE JAW CRUSHER COVERAGE



MAXIMUM BREAKER COVERAGE

VERTICAL BREAKER COVERAGE

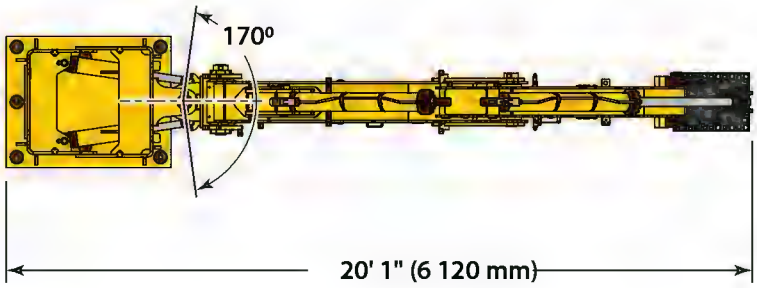
Evaluation Information:

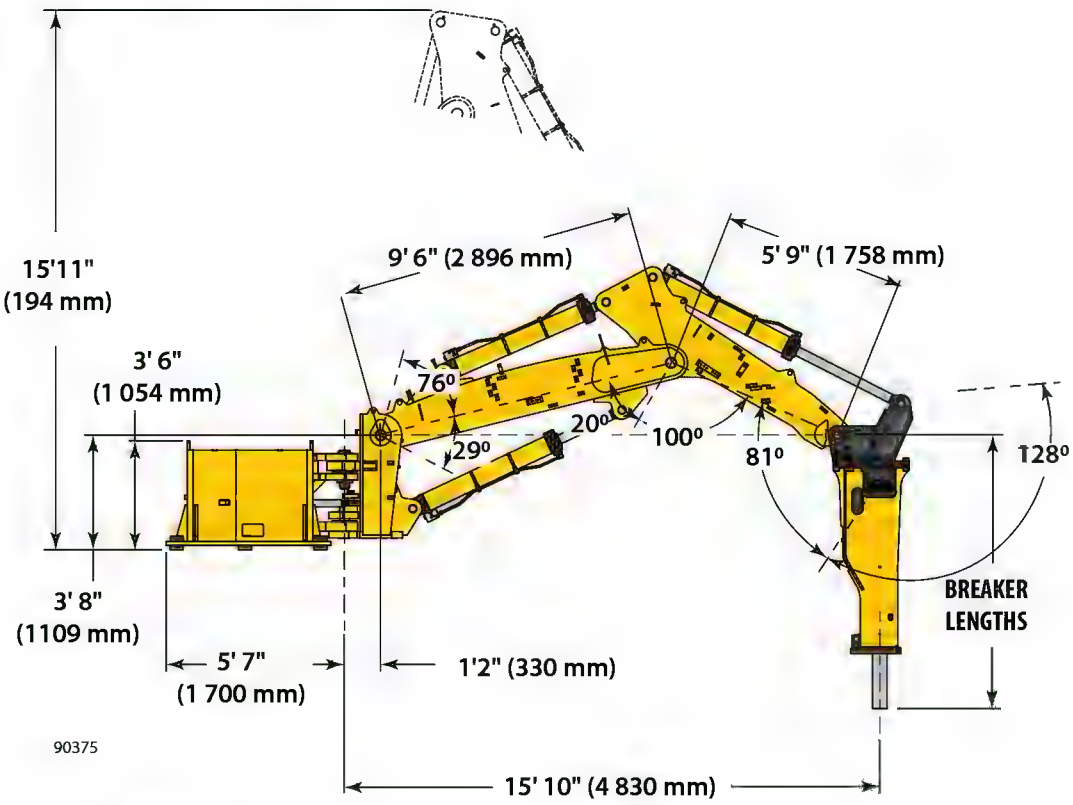
1. All dimensions must be as accurate as possible.
2. Location of control room and ore passes should be indicated if appropriate.
3. Areas where breaking and/or raking will be required should be marked.
4. Please locate and indicate whether pedestal is to be mounted in line with the dump area or to the side.
5. Breaker can reach and operate within arcs as shown. However superior maneuverability is achieved when the breaker works in a vertical position.

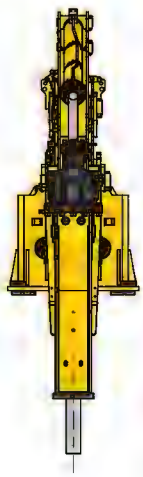
NOTE: BTI is not responsible for the design of the supporting structure. Configuration shown is for reference only.

MRH16 ASSEMBLY

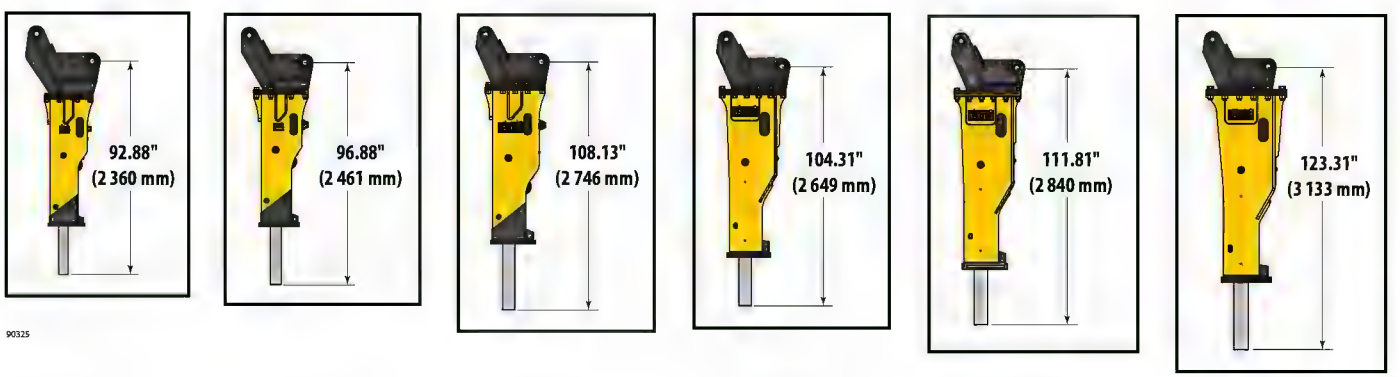
* *ASSEMBLY SHOWN WITH BXR50*







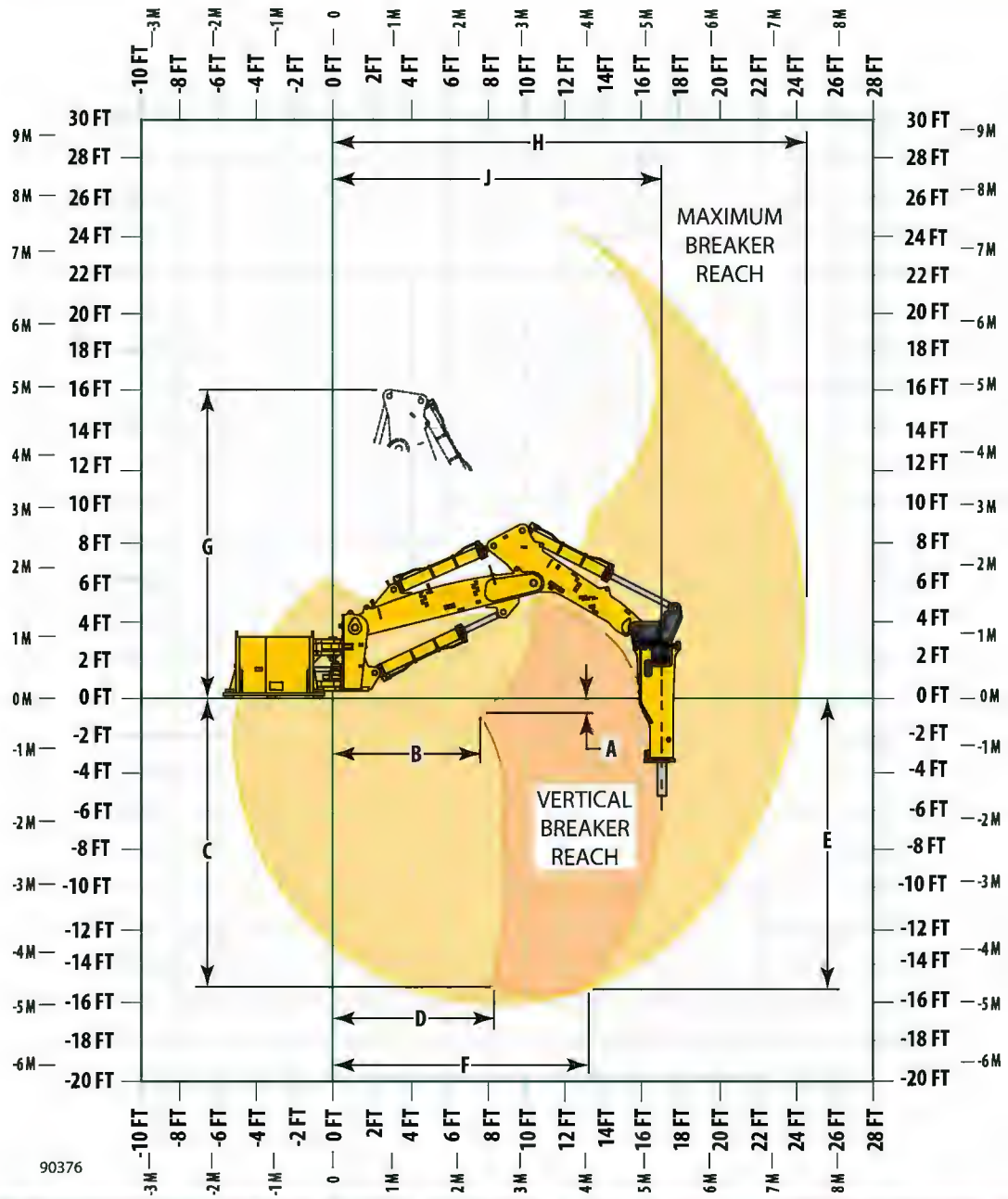
Breaker Lengths



BX20 | BX30 | BX40 | BXR50 | BXR65 | BXR85

MRH COVERAGE

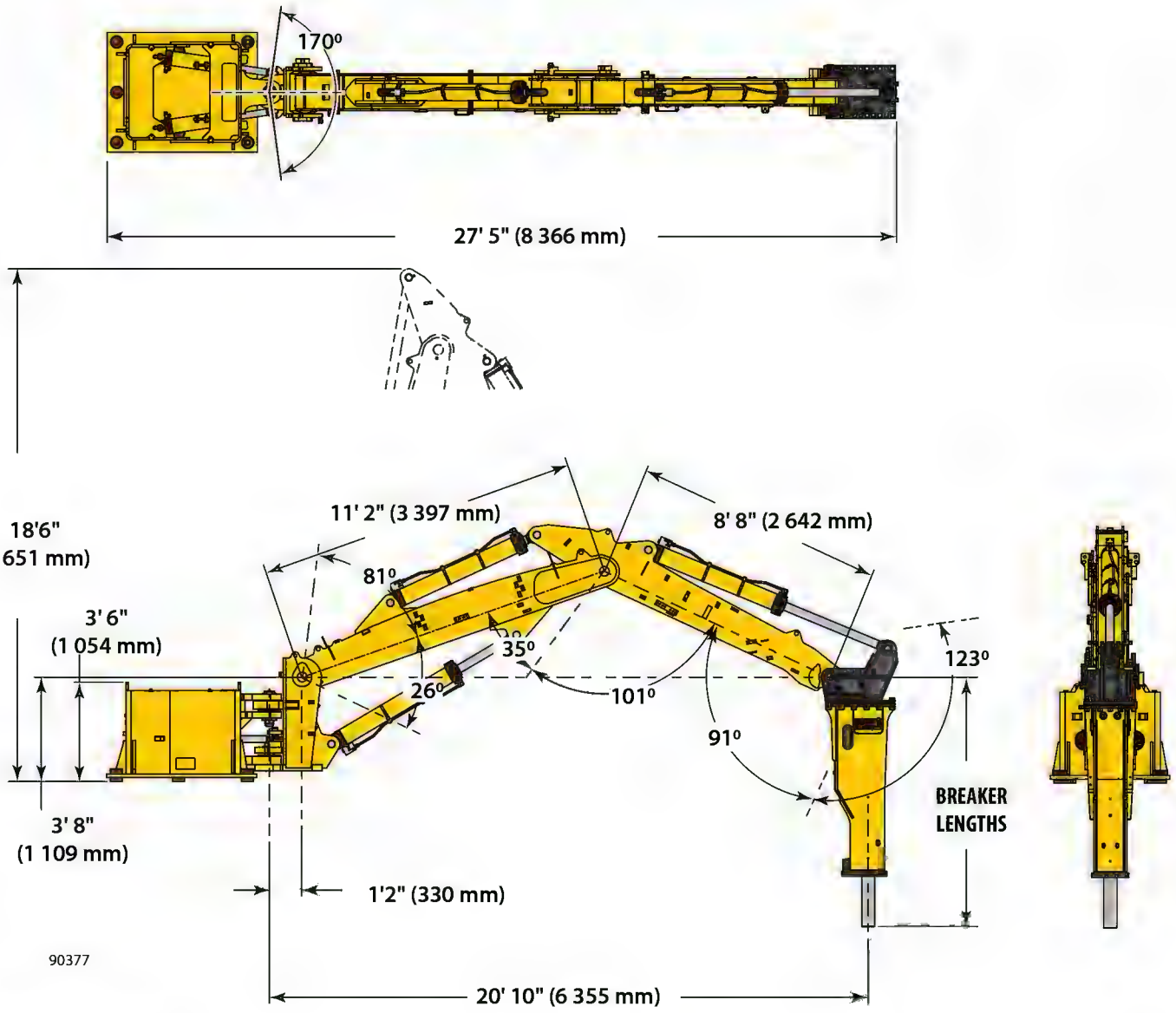
* *COVERAGE SHOWN WITH BXR50*



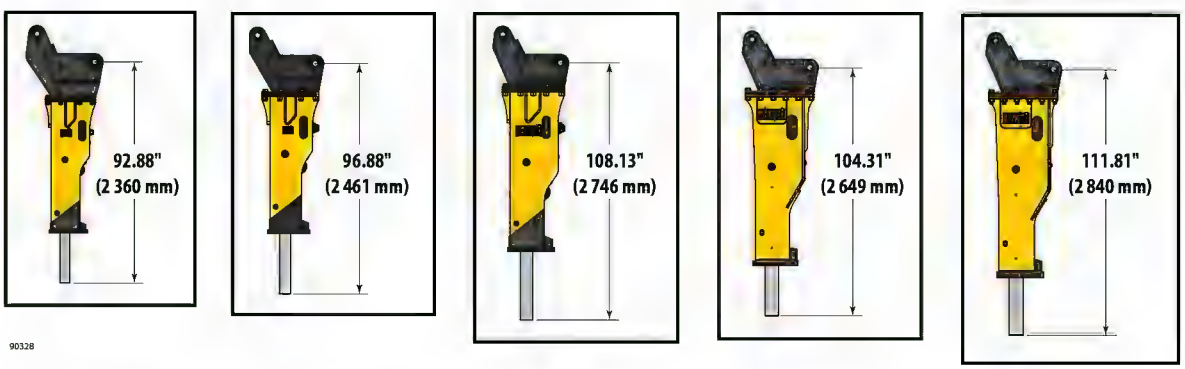
BREAKERS	BX20	BX30	BX40	BXR50	BXR65	BXR85
A	10" (0.4 m)	2" (0.3 m)	1'10" (0.3 m)	10" (0.3 m)	1" 5" (0.4 m)	2' 5" (0.7 m)
B	7' 7" (2.3 m)	7' 7" (2.3 m)	7' 7" (2.3 m)	7' 7" (2.3 m)	7' 7" (2.3 m)	7' 7" (2.3 m)
C	13' 11" (4.2 m)	14' 3" (4.3 m)	15' 2"(4.6 m)	14' 10" (4.5 m)	15' 5" (4.7 m)	16' 5" (5.0 m)
D	8' 3" (2.5 m)	8' 3" (2.5 m)	8' 3" (2.5 m)	8' 3" (2.5 m)	8' 3" (2.5 m)	8' 3" (2.5 m)
E	14' (4.2 m)	14' (4.2 m)	15' 3" (4.6 m)	14' 11" (4.6 m)	15' 7" (4.7 m)	16' 6" (5.0 m)
F	13' 1" (4.0 m)	13' 1" (4.0 m)	13' 1" (4.0 m)	13' 1" (4.0 m)	13' 1" (4.0 m)	13' 1" (4.0 m)
G	16' (4.9 m)	16' (4.9 m)	16' (4.9 m)	16' (4.9 m)	16' (4.9 m)	16' (4.9 m)
H	23' 5" (7.1 m)	23' 5" (7.1 m)	24' 8" (7.5 m)	24' 4" (7.4 m)	24' 11" (7.6 m)	25' 11" (7.9 m)
J	15' 10" (4.8 m)	15' 10" (4.8 m)	15' 10" (4.8 m)	15' 10" (4.8 m)	15' 10" (4.8 m)	15' 10" (4.8 m)

MRH20 ASSEMBLY

* ***ASSEMBLY SHOWN WITH BXR50***



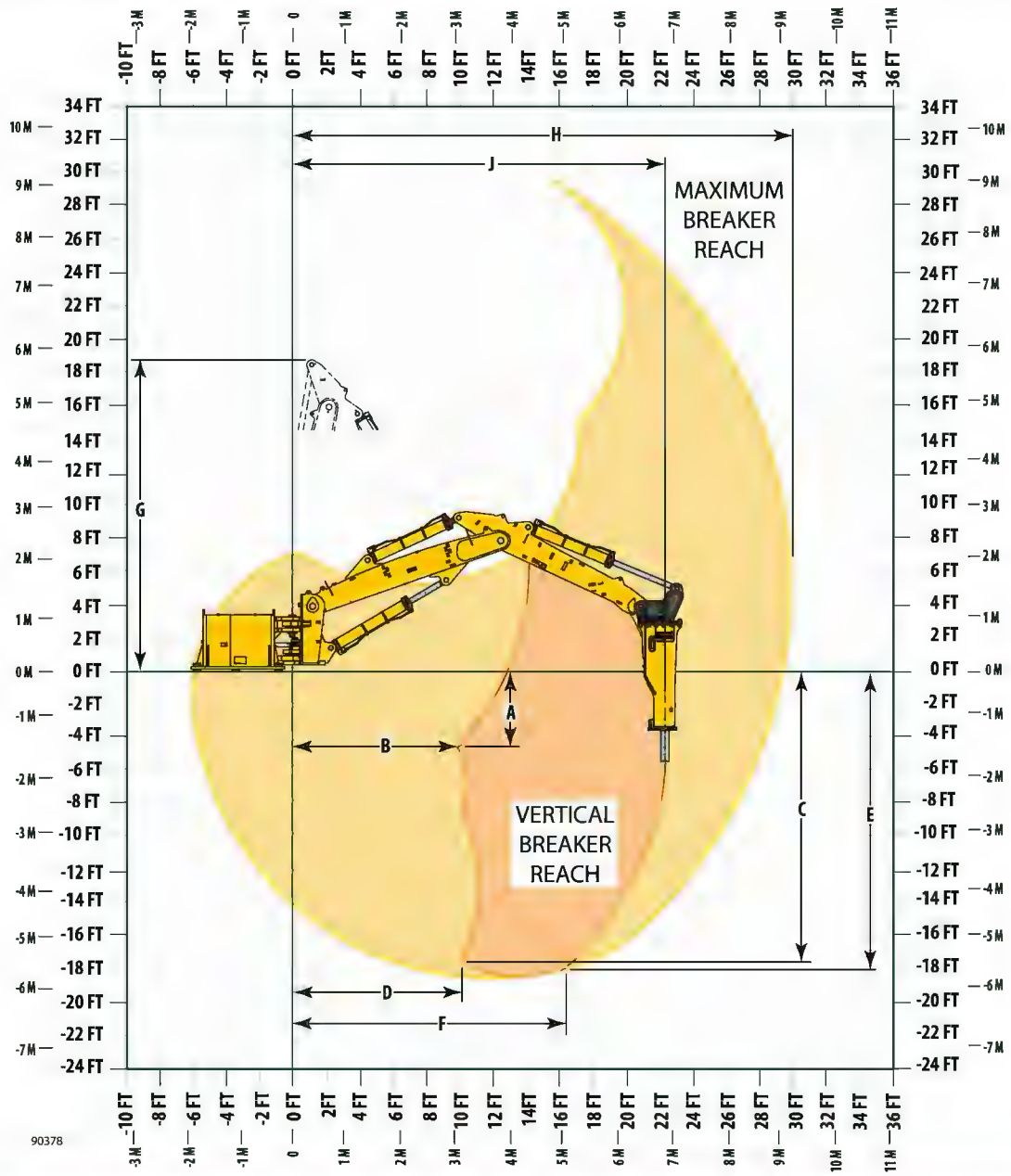
Breaker Lengths



BX20 **BX30** **BX40** **BXR50** **BXR65**

MRH20 COVERAGE

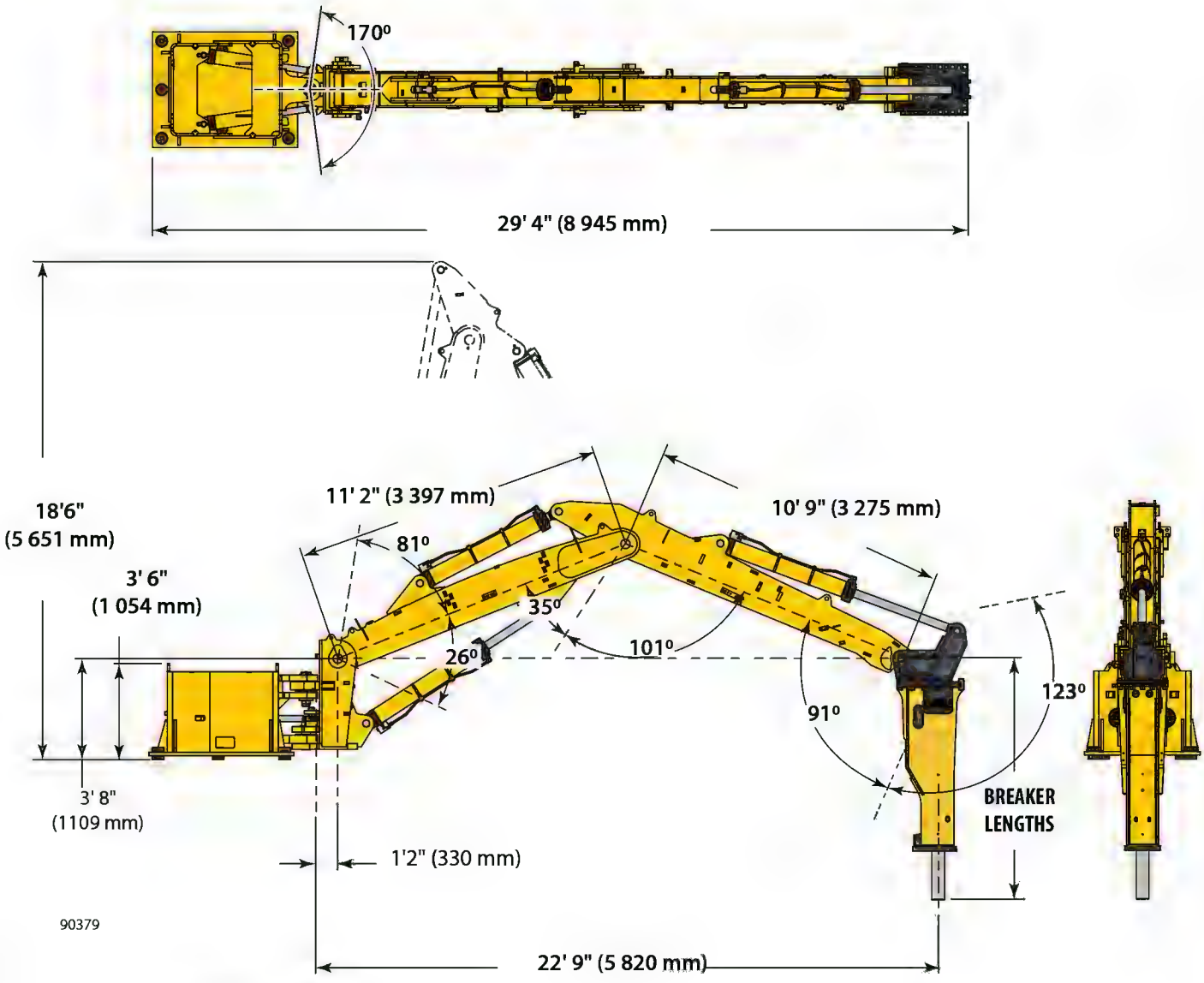
** COVERAGE SHOWN WITH BXR50*



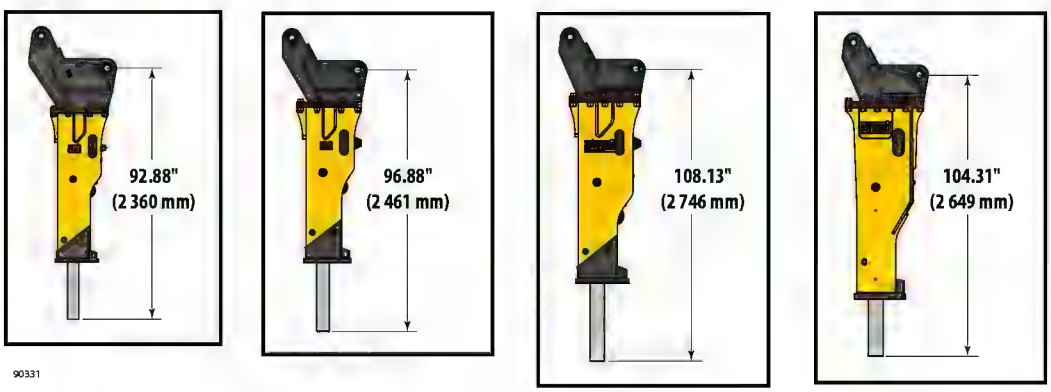
BREAKERS	BX20	BX30	BX40	BXR50	BXR65
A	5' 8" (1.7 m)	6' (1.8 m)	1' 2" (0.3 m)	6' 7" (0.2 m)	7' 3" (2.2 m)
B	8' 11" (2.7 m)	8' 11" (2.7 m)	8' 11" (2.7 m))	8' 11" (2.7 m)	8' 11" (2.7 m))
C	18' 1" (5.5 m)	18' 11" (4.5 m)	15' 2" (4.6 m)	19' (5.8 m)	19' 7" (6.0 m)
D	9' 1" (2.7 m)	9' 1" (2.7 m)	9' 1" (2.7 m)	9' 1" (2.7 m)	9' 1" (2.7 m)
E	18' 5" (5.6 m)	18' 9" (5.7 m)	15' 3" (4.6 m)	19' 4" (5.9 m)	20' (6.1 m)
F	14' 11" (4.6 m)	14' 11" (4.6 m)	14' 11" (4.6 m)	14' 11" (4.6 m)	14' 11" (4.6 m)
G	18' 6" (5.6 m)	18' 6" (5.6 m)	18' 6" (5.6 m)	18' 6" (5.6 m)	18' 6" (5.6 m)
H	27'4" (8.3 m)	27' 8" (8.5 m)	24' 8" (7.5 m)	28' 4" (8.6 m)	28' 11" (8.8 m)
J	20' 10" (6.4 m)	20' 10" (6.4 m)	20' 10" (6.4 m)	20' 10" (6.4 m)	20' 10" (6.4 m)

MRH20/25 ASSEMBLY

** ASSEMBLY SHOWN WITH BXR50*



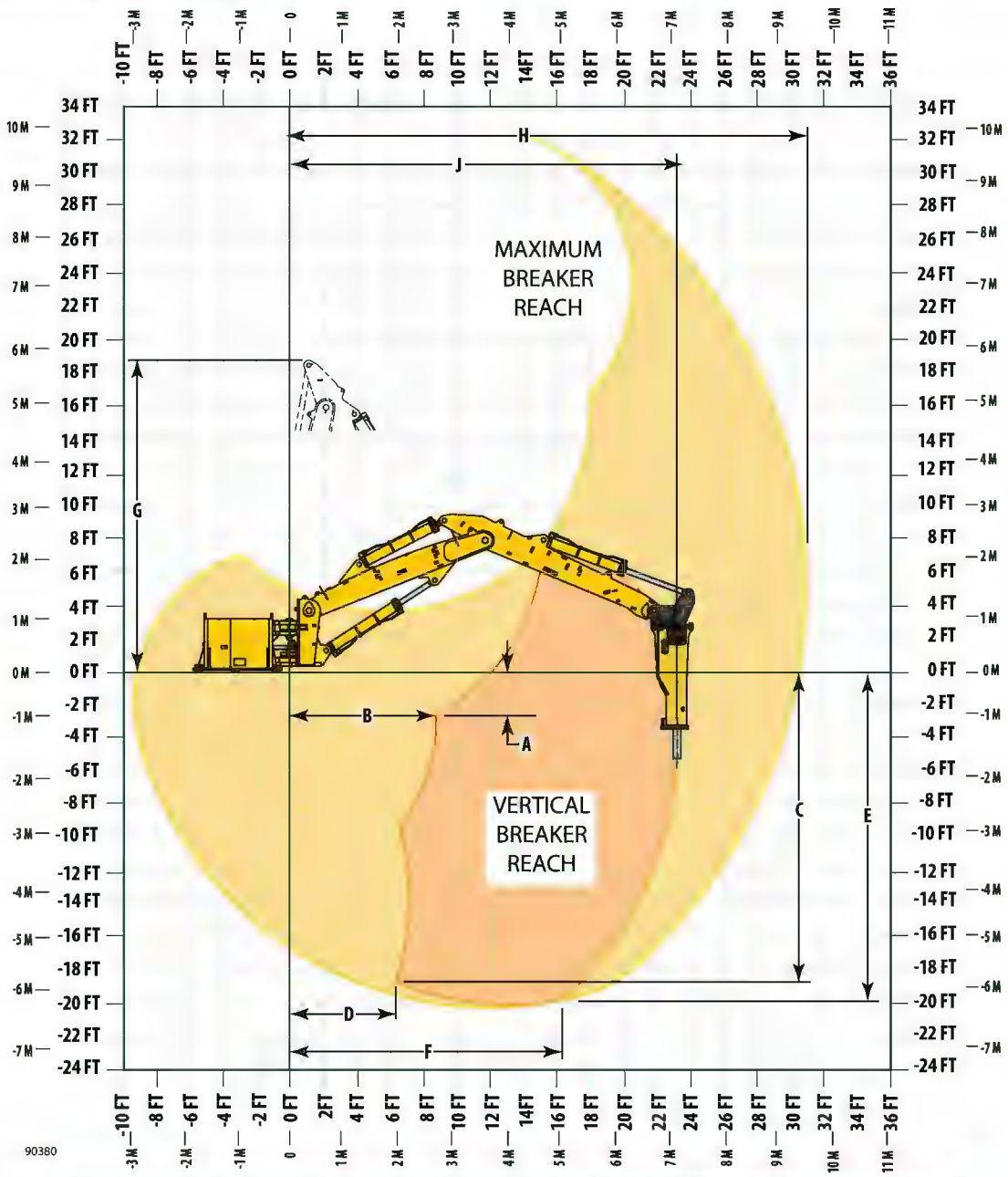
Breaker Lengths



BX20 BX30 BX40 BXR50

MRH20/25 COVERAGE

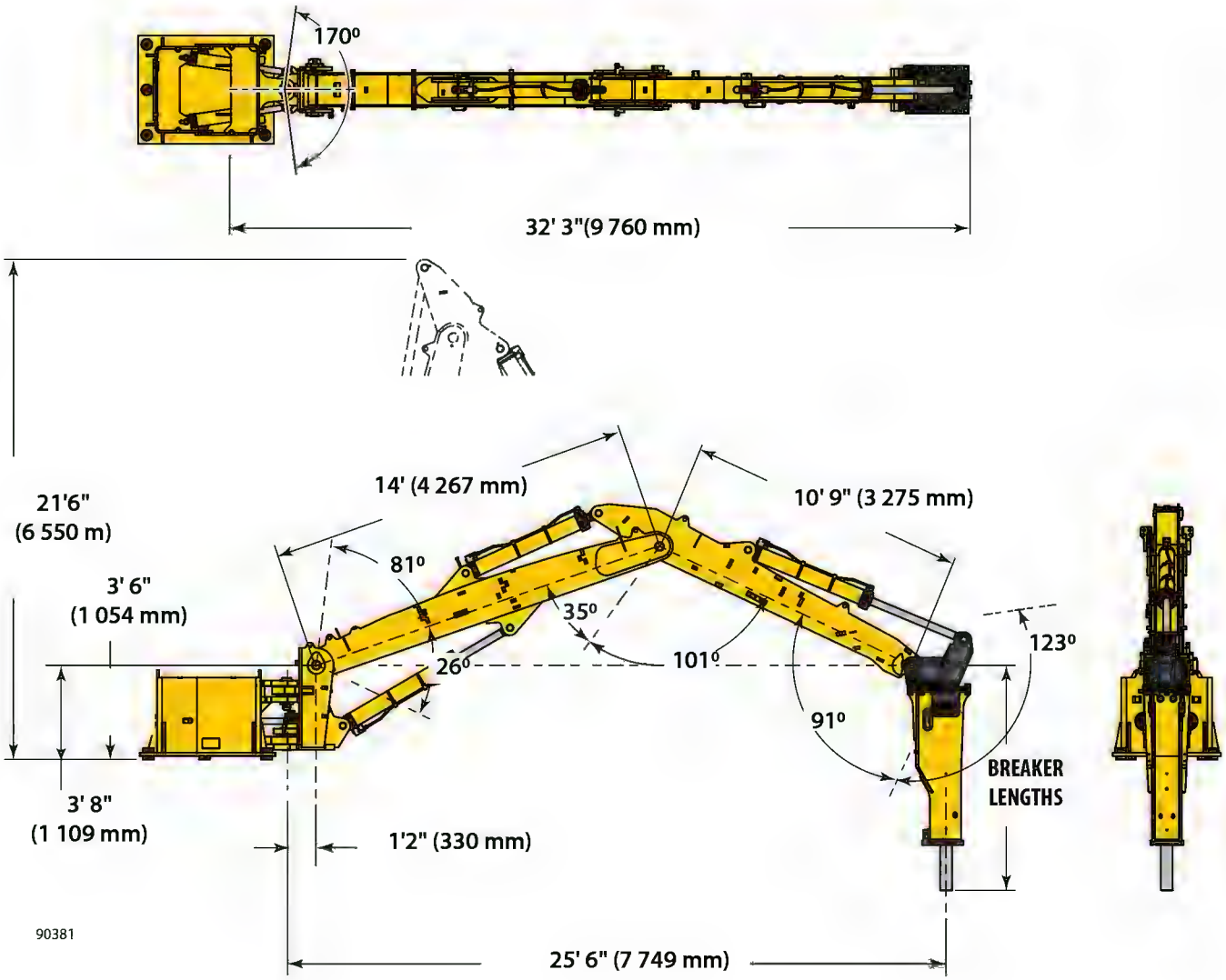
* *COVERAGE SHOWN WITH BXR50*



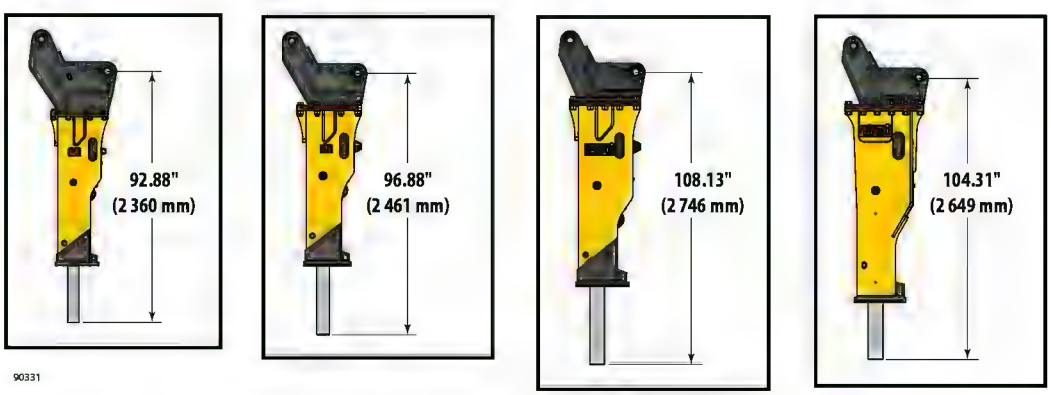
BREAKERS	BX20	BX30	BX40	BXR50
A	3'11" (1.2 m)	4' 4" (1.3 m)	5' 3" (1.6 m)	4' 11" (1.5 m)
B	9' (2.7 m)	9' (2.7 m)	9' (2.7 m)	9' (2.7 m)
C	19' 2" (5.8 m)	19' 6" (5.9 m)	20' 5" (6.2 m)	20' 1" (6.1 m)
D	6' 8" (2.0 m)	6' 8" (2.0 m)	6' 8" (2.0 m)	6' 8" (2.0 m)
E	20' 3" (6.2 m)	20' 7" (6.3 m)	21' 6" (6.5 m)	21' 2" (6.5 m)
F	16' 2" (4.9 m)	16' 2" (4.9 m)	16' 2" (4.9 m)	16' 2" (4.9 m)
G	18' 6" (5.7 m)	18' 6" (5.7 m)	18' 6" (5.7 m)	18' 6" (5.7 m)
H	29' 3" (8.9 m)	29' 7" (9.0 m)	30' 6" (9.3 m)	30' 2" (9.1 m)
J	22' 9" (6.9 m)	22' 9" (6.9 m)	22' 9" (6.9 m)	22' 9" (6.9 m)

MRH25 ASSEMBLY

* *ASSEMBLY SHOWN WITH BXR50*

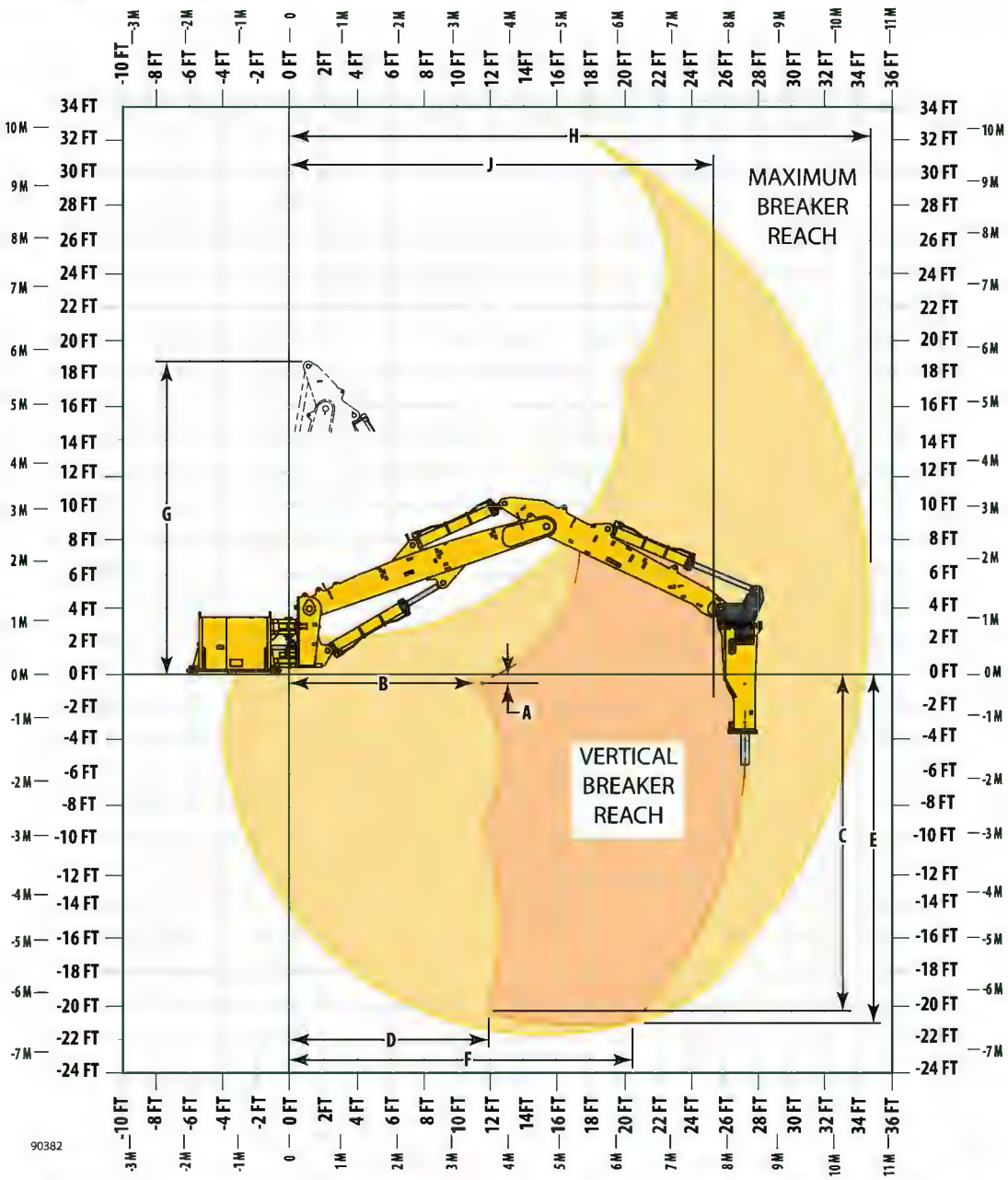


Breaker Lengths



MRH25 COVERAGE

** COVERAGE SHOWN WITH BXR50*



BREAKERS	BX20	BX30	BX40	BXR50
A	1' 1" (0.3 m)	1' 6" (0.4 m)	2' 5" (0.7 m)	2' 1" (0.6 m)
B	9' 6" (2.9 m)	9' 6" (2.9 m)	9' 6" (2.9 m)	9' 6" (2.9 m)
C	20' 10" (6.4 m)	21' 3" (6.5 m)	22' 2" (6.7 m)	21' 10" (6.6 m)
D	10' 1" (3.0 m)	10' 1" (3.0 m)	10' 1" (3.0 m)	10' 1" (3.0 m)
E	21' 5" (6.5 m)	21' 9" (6.6 m)	22' 9" (7.0 m)	22' 5" (6.8 m)
F	18' 9" (5.7 m)	18' 9" (5.7 m)	18' 9" (5.7 m)	18' 9" (5.7 m)
G	21' 4" (6.5 m)	21' 4" (6.5 m)	21' 4" (6.5 m)	21' 4" (6.5 m)
H	32' (9.8 m)	32' 4" (9.9 m)	33' 3" (10.1 m)	32' 11" (10.0 m)
J	25' 5" (7.7 m)	25' 5" (7.7 m)	25' 5" (7.7 m)	25' 5" (7.7 m)

INSTALLATION

TYPICAL ROCKBREAKER SYSTEM & OPTIONS

MRH Booms are shipped unassembled. The Rockbreaker system's serial number is located on the rear corner of the pedestal. The shipment includes:

- Pedestal
- Electric Hydraulic Power Pack
- Hydraulic Breaker
- Outer Boom (or Stick Boom), with Tilt Cylinder installed
- Inner Boom, with Dipperstick Cylinder installed
- Hoist Cylinder

If the breaker is not to be installed immediately, store it indoors standing up. Refer to 'Breaker Removal and Storage' section in the Hydraulic Breaker Owner's Manual.

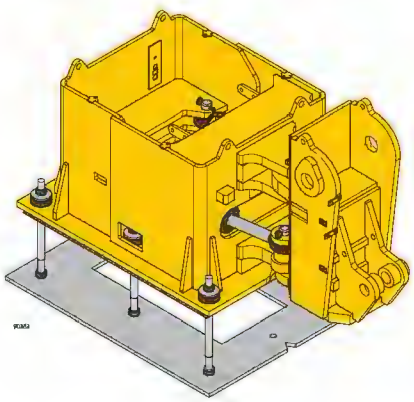
BTI pedestal mounted rockbreaker booms are installed on two different types of sub-structure—structural steel and reinforced concrete. BTI can suggest configurations, however customers must determine which is appropriate.

Threaded Tie Rods must be within 1/8" (3 mm) tolerance of dimensions shown on installation diagrams. They should be torqued in a dry condition to 850–900 ft•lb (1 152–1 220 N•m).

Nylon Mounts sandwiched between the pedestal base and substructure help absorb the transmission of shock from the boom to the support structure.

Shims—1/8" and 1/4" (3 mm and 6 mm) supplied with the bolt kit, eliminate irregularities between the two surfaces.

MRH SITE PREPARATION



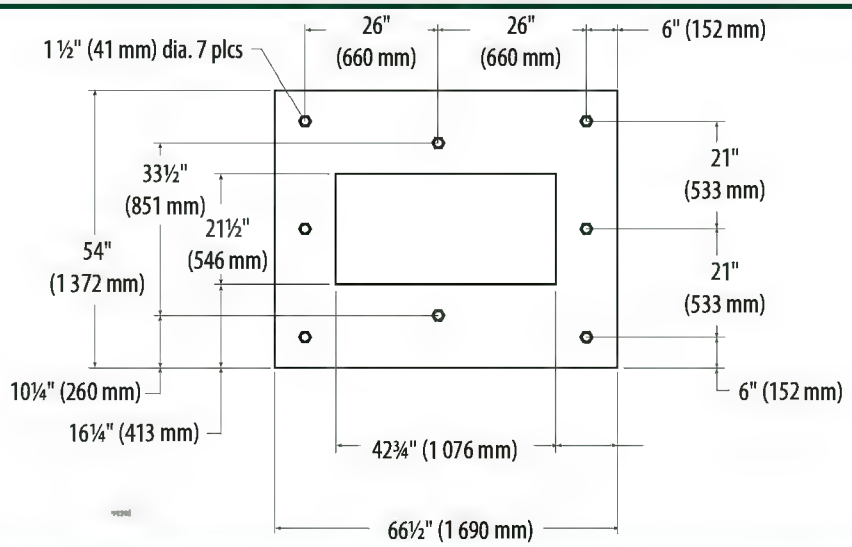
REINFORCED CONCRETE INSTALLATION

The reinforced concrete pad should be configured to resist the overturning moments and dynamic forces of the stationary Rockbreaker system. Breaker Technology recommends that all foundations be reviewed by a Civil / Structural engineer and conform to good building practice, local building codes and site conditions.

The foundation mounting plate is imbedded in the reinforced concrete. When installing the foundation mounting plate insure that all tie rods are vertical, in line, and within 1/8" of the dimensions shown in the following diagram. Breaker Technology supplies a plywood template with an optional foundation base plate to assist in the positioning of the tie rods.

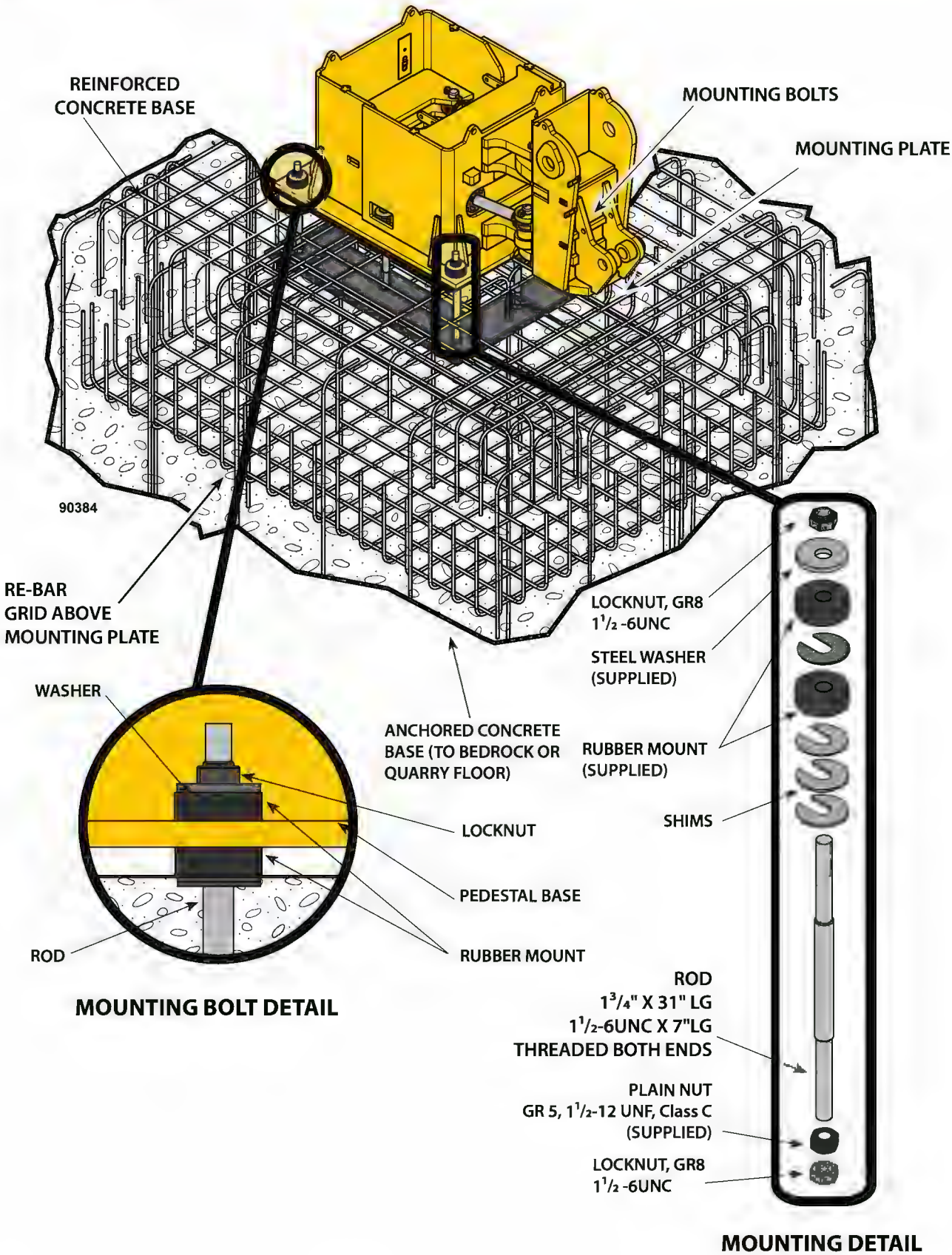
NOTE: Breaker Technology is not responsible for the design of the rockbreaker support structure.

PEDESTAL FOOT PRINT



MRH SITE PREPARATION

INSTALLATION IN CONCRETE



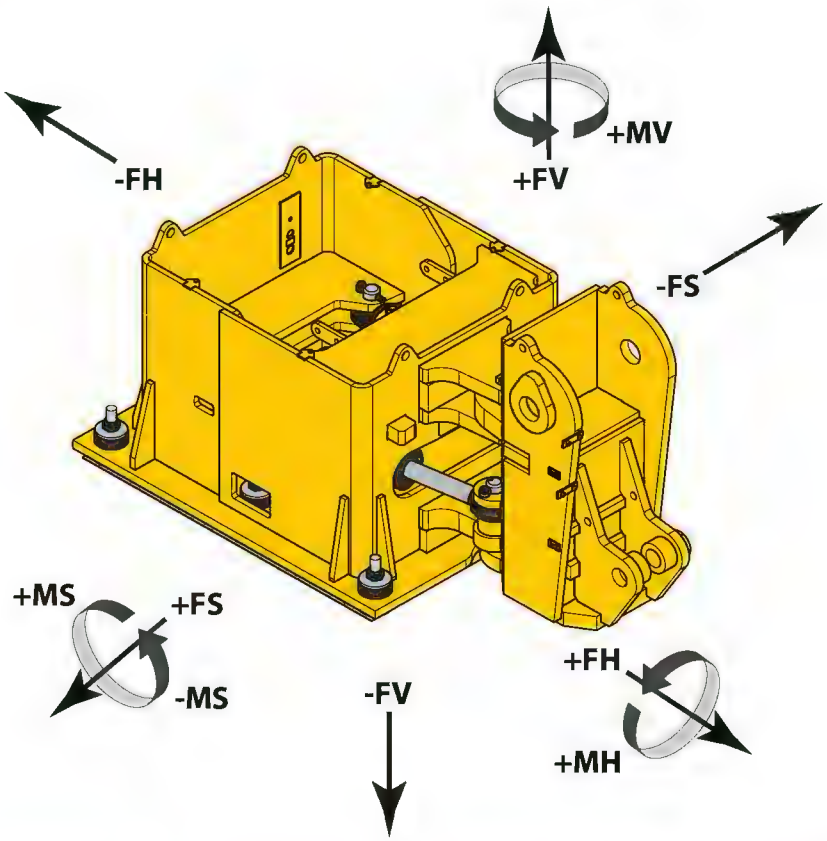
MOUNTING BOLT DETAIL

MOUNTING DETAIL

INSTALLATION

FORCE & MOMENT DIAGRAM

MRH 16, 20, 20/25, 25



MOMENTS (ft-lb)	+	−
M		
MS	272,058	0
MV	29,356	29,356
MH	272,058	272,058

MOMENTS (kN•m)	+	−
M		
MS	369	0
MV	40	40
MH	369	369

LOADS (lbs)	+	−
L		
FS	10,105	10,105
FV	0	23,363
FH	10,105	10,105

LOADS (kN•m)	+	−
L		
FS	449	449
FV	0	1,039
FH	449	449

NOTE:

1. **Maximum Static Loads and Moments.** (Dynamic values are estimated to be 2 times static values)
2. **FS** or **FH** and **MH** or **MS** are results of the boom swing from **S** to **H** and do ***NOT*** happen simultaneously.
3. **FV** equals rockbreaker weight plus maximum lift.

SWING TORQUE = 29,356 ft•lb (40 kN•m)

MRH SERIES CONFIGURATIONS

NOTES:

POWER PACK STANDARD EQUIPMENT

- Premium efficiency TEFC Electric motor configured to match the required boom and breaker size as well as local voltage and frequency requirements
- High pressure hydraulic swash plate piston pump and final displacement to match boom and breaker flow requirements
- Pump drive is through flex coupling
- 100 US gallon (378 liter) elevated reservoir with heavy duty construction and with integrated legs
- Drip tray
- Provision for optional immersion heater
- Provision for optional high / low temperature interlock
- Top mounted reservoir clean out cover
- Oil level sight glass
- Visual temperature gauge
- Pressurized filter cap with strainer and filtered air breather
- Suction strainer with 250 mesh screen and flow shut off
- Ball valve drain
- Full flow pressure filter with visual clogging indication
- Full flow in tank return filter with visual clogging indication
- Low oil level shutdown interlock
- High capacity air over oil cooler
- ½ kW TEFC electric motor for oil cooler fan drive
- Oil cooler thermocouple
- Pressure, return, load sense control and drain line hydraulic hoses for control valve brought to a common termination point
- 10 ft (3 m) Power Pack to boom hydraulic hoses for pressure, return, load sense control and drain line

POWER PACK OPTIONAL EQUIPMENT

- ▲ Immersion heater (3 phase of same voltage as electric motor, 2 kW)
- ▲ Oil filling hand pump through return filter
- ▲ High altitude hydraulic pump impeller charging kit
- ▲ Electric motor deration for altitude
- ▲ Electric motor terminal blocks
- ▲ Electric motor space heaters
- ▲ Power pack to pedestal hose lengths
- ▲ High low temperature interlock
- ▲ Ansul fire suppression system (LT-101 or LVS) in Manual, Auto-Manual or Checkfire configurations

MRH SERIES CONFIGURATIONS

NOTES:

MOTOR STARTER PANEL STANDARD EQUIPMENT

- Base motor starter panel
- Lockable master disconnect switch
- Motor starter
- Local start / stop control
- Circuit breakers for pump drive motor and cooler motor
- Control transformer
- Low oil shut down relay
- Remote control panel for starter panel

MOTOR STARTER PANEL OPTIONAL EQUIPMENT

- ▲ Immersion heater circuit breaker and contactor
- ▲ Factory installation of motor starter panel to hydraulic power pack
- ▲ Factory wiring of starter panel to power pack
- ▲ Dry contact connection for customers control system

GREASING SYSTEM STANDARD EQUIPMENT

- Hydraulic driven (from main power pack) Lincoln automatic centro-matic lubrication system for boom
- 120 lb imperial size grease pail complete with timers and interlocks
- 24 volt injector pump with 17 lb (8 kg) container for single point greasing of hydraulic breaker integrated into the breaker firing circuit

GREASING SYSTEM OPTIONAL EQUIPMENT

- ▲ Manual lubrication system with individual grease lines for boom and breaker brought to a common bulkhead
- ▲ Hydraulic auto lubrication system for boom and breaker driven (from main power pack) Lincoln automatic centro-matic lubrication system for boom system complete with hydraulic pump to fit a 120 lb imperial container
- ▲ Hydraulic auto lubrication system for boom and breaker driven (from main power pack) Lincoln automatic centro-matic lubrication system for boom system complete with 55 kg metric size grease pail with timers and interlocks
- ▲ Pneumatic driven (customer is responsible for air supply) Lincoln automatic centro-matic lubrication for boom system complete with 120 lb imperial container or 55 kg metric size grease pail with timers and interlocks

MOUNTING SYSTEMS (OPTIONAL)

- Foundation mounting plate for concrete installation complete with mounting hardware and plywood installation template
- Hardware supplied for mounting on steel framework

● Standard ▲ Optional

MRH SERIES CONFIGURATIONS

NOTES:

CONTROL SYSTEM STANDARD EQUIPMENT

- ● Stand-mounted electro-hydraulic joystick control station
- ● 24 volt solenoids standard
- ● 3-phase TEFC electric motor to meet most local voltage requirements (please specify voltage, frequency and altitude at time of order)
- ● Linear power supply for 220 V to 120 V input – 12 V output
- ● Joystick power button
- ● Joystick power indicator light
- ● Continuous oil circulation between pump valve and oil cooler
- ● High / low temperature shutdown
- ● 30 ft (9 m) of control cable
- ● Danfoss PVG32 five spool closed center electro-hydraulic proportional control valve with main inlet relief valve, individual port reliefs, individual load sense pressure control, manual override handles for boom functions
- ● Danfoss PVG120/32 five spool closed center electro-hydraulic proportional control valve with main inlet relief valve, individual port reliefs, individual load sense pressure control, manual override handles for boom functions

CONTROL SYSTEM OPTIONAL EQUIPMENT

- ▲ Secondary portable joystick control pendant with multi-pin connector
- ▲ Secondary stand mounted joystick control station with multi-pin connector
- ▲ Additional joystick control cable lengths. ***Consult factory*** prior to determining length
- ▲ Hand-held radio remote control c/w dual axis proportional joystick transmitter control console c/w emergency stop, receiver and battery charger. Single line of sight with a maximum distance of 328 feet (100 meters).Supplied in place of standard stand-mounted electro-hydraulic joystick control station
- ▲ Secondary radio remote joystick control pendant / transmitter with emergency stop, receiver and battery charger. For single line of sight control to a maximum distance of 328 ft (100 m)
- ▲ Secondary radio remote joystick control pendant / transmitter with emergency stop, receiver and battery charger. For single line of sight control to a maximum distance of 1,500 ft (457 m)
- ▲ Ergonomic suspension seat c/w arm rest mounted joysticks (in lieu of standard stand mounted joystick control station)
- ▲ Two breaker speed control
- ▲ Boom swing safe stops
- ▲ Boom anti-lunge, hydraulic interlock protection
- ▲ Two Speed BPM control for BXR series breaker (Not available on BX series breakers)
- ▲ Load drop counterbalance valves with transfer on swing, hoist up, dipper stick and tilt functions

MRH SERIES CONFIGURATIONS

NOTES:

OPERATORS CABIN OPTION BASE EQUIPMENT

- ▲ Medium Cab - 56" wide x 56" deep x 80" tall (1.4 m x 1.4 m x 2 m) heavy gauge steel construction complete with ½" (12 mm) Lexan impact resistant windows, 1 ¼" (32 mm) polyurethane insulation, one door with latch and window, one side window one front window, steel floor and operator's set
- ▲ Large Cab - 71" wide x 71" deep x 80" tall (1.8 m x 1.8 m x 2 m) heavy gauge steel construction complete with ½" (12 mm) Lexan impact resistant windows, 1 ¼" (32 mm) polyurethane insulation, one door with latch and window, one window one front window, steel floor and operator's set

OPERATORS CABIN OPTION, OPTIONAL EQUIPMENT

- ▲ 1500 watt forced air electric heater
- ▲ 3000 watt forced air electric heater
- ▲ Air conditioning
- ▲ Cabin air filtration and pressurization
- ▲ Additional doors
- ▲ Additional windows
- ▲ Explosion proof window covers

BREAKER / ATTACHMENT OPTIONAL EQUIPMENT

- ▲ Two speed (long / short piston stroke) control of hydraulic breaker
- ▲ Side mounted hydraulic breaker
- ▲ Tool type: blunt, moil or chisel
- ▲ Concave removal tool
- ▲ Extreme duty kit
- ▲ Mechanical quick coupler
- ▲ Hydraulic quick coupler
- ▲ Cylinder driven side angle positioner
- ▲ Heavy duty rock bucket in pin-on or quick coupler configuration

COLD WEATHER APPLICATION OPTIONS

- ▲ Main control valve insulated shrouding, insulated pedestal.
- ▲ It is recommended that the power pack be located within a heated enclosure. BTI can supply these power pack enclosures which are listed separately.

Applications Ranging to -22 °F to -49 °F (-20 °C to -45 °C)

Quantity of 2—2 kW heaters (If starter panel is supplied by BTI then two Immersion Heater Circuit Breaker and Contactors are required.)

- ▲ Main control valve insulated shrouding, insulated pedestal.
- ▲ Space heaters located in the boom pedestal to warm swing cylinders or slew motors, auxiliary control valves and the main directional control valve. Wired to junction box mounted to pedestal.

● Standard ▲ Optional

MRH SERIES CONFIGURATIONS

NOTES:

▲ Heat trace lines from the power pack to the main control valve and back on the pressure and return lines, load sense control lines etc. that run between the main directional control valve and the power pack. Heat trace control panel c/w ambient sensing thermostat. Consult factory for longer heat trace lines.

Note: Insulating of the hydraulic lines between the power pack and the valve are the responsibility of the customer.

▲ 3 HP oil circulation pump to provide a continuous flow of oil from the reservoir to the control valve while the main hydraulic pump is turned off.

▲ Continuous oil circulation system between control valve and breaker to provide a supply of warm oil to the breaker from either the main pump or the 3 HP circulation pump.

▲ Extreme cold temperature hose specification for operation hose down to -70 °F (-57 °C).

Note: all BXR breakers with cold weather packages are supplied with the energy regeneration system set to lock out mode.

▲ It is recommended that the power pack be located within a heated enclosure.

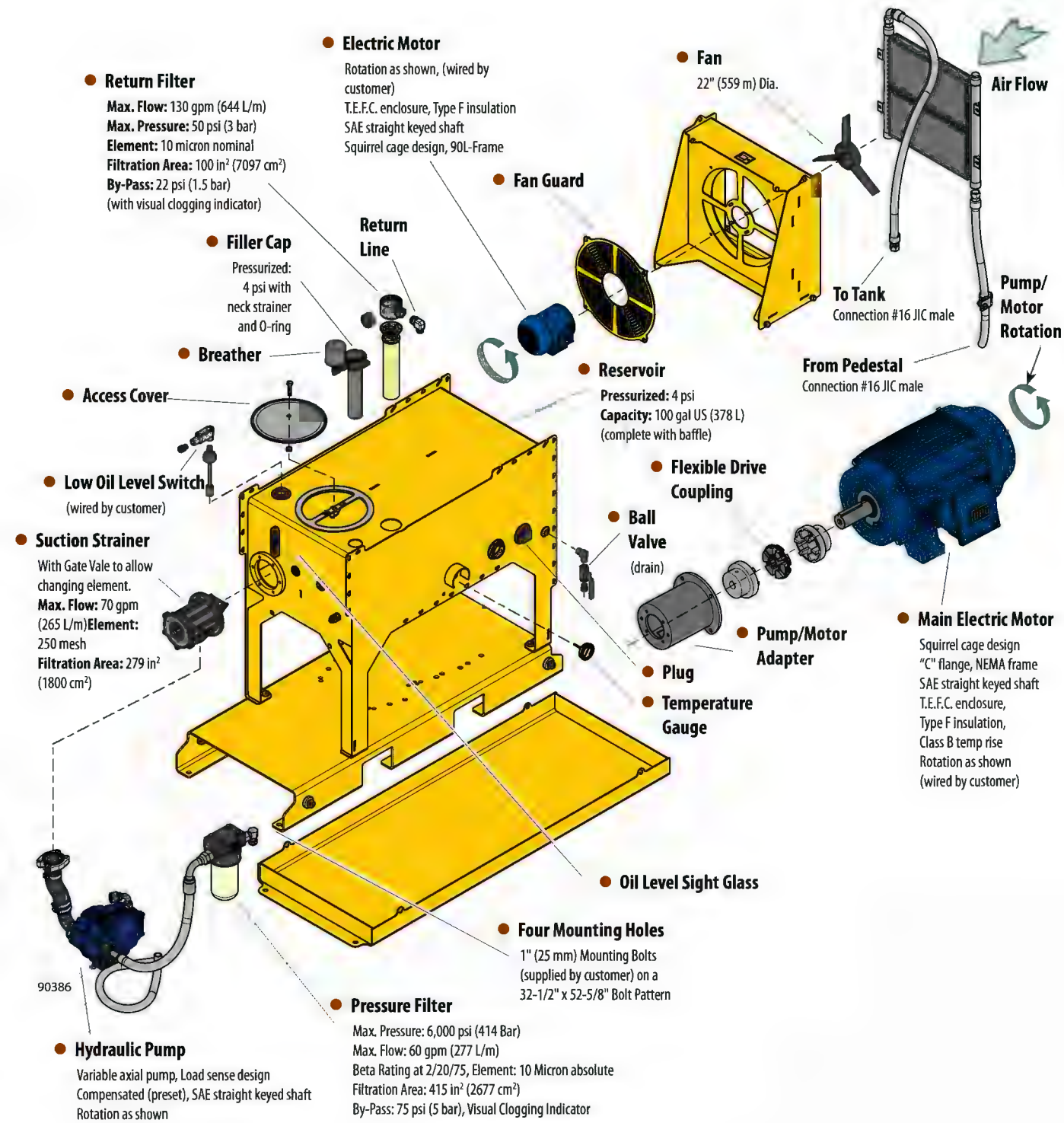
▲ This system is too be used in conjunction with Arctic grade / low viscosity hydraulic oils - consult BTI for recommendations.

LOW TEMPERATURE PLATE STEEL OPTION

▲ Upgrade WT grade Category four, charpy tested to 20 lbf at -50 °F (89 N at -46 °C)

NOTES:

MRH POWER PACK FEATURES



MRH POWER PACK FEATURES

POWER PACK SPECIFICATIONS

When the pedestal site is determined, choose a power pack location that is convenient for repair and operator access. The area should not be exposed to flying rock, dust and dirt. The unit can be placed against a wall leaving one side and end open for plumbing connections and service.

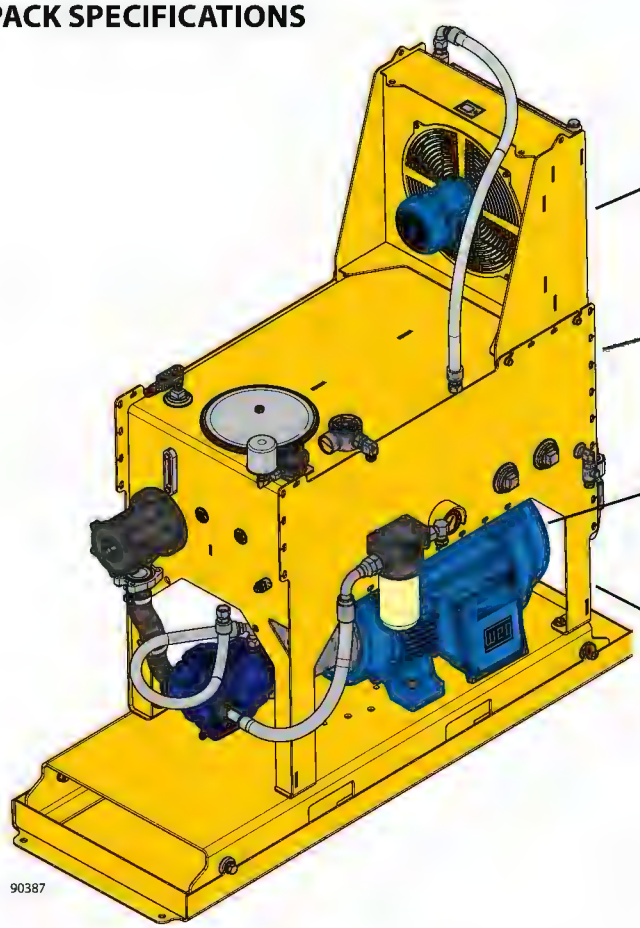
BTI supplies standard 10 ft (3 m) hydraulic hoses to connect the power pack to the pedestal. Optional hoses are available in lengths of 15 ft (4.5 m) to 30 ft (6 m). The length required must be specified at the time of order. Please consult BTI if the power pack is to be located greater than 30 ft (6 m). If possible, locate the power pack at the same elevation as the pedestal.

The standard power pack is supplied without electrical wiring. Electric motor starters, control panels, and circuits are the customer's responsibility. This allows the installation to be tied into an existing set-up or control panel.

HYDRAULIC POWER PACKS	PP100-40 BX20	PP100-50 BX20	PP100-60 BX30	PP100-100 BX40–BXR65	PP100-125 BXR50–BXR85
OIL COOLER	Standard	Standard	Standard	Standard	Standard
TYPE	2 Pass Air/Oil	2 Pass Air/Oil	2 Pass Air/Oil	2 Pass Air/Oil	2 Pass Air/Oil
CAPACITY (kW)	12	12	12	12	12
HYDRAULIC PUMP					
TYPE	Variable	Variable	Variable	Variable	Variable
Flow Max gpm (Lpm)	26 (98)	29 (110)	37 (140)	54 (204)	58 (220)
Pressure Max psi (bar)	3600 (250)	3600 (250)	3600 (250)	4200 (290)	4200 (290)
Compensator psi (bar)	3000 (207)	3000 (207)	3000 (207)	3800 (262)	3800 (262)
PRESSURE LINE FILTER					
Max Pressure Rating psi (bar)	5075 (350)	5075 (350)	5075 (350)	5075 (350)	5075 (350)
Flow Capacity gpm (Lpm)	48 (180)	48 (180)	48 (180)	48 (180)	48 (180)
Filtration micron	10	10	10	10	10
By-Pass psi (bar)	75 (5)	75 (5)	75 (5)	75 (5)	75 (5)
Clogging Indicator	Visual	Visual	Visual	Visual	Visual
RETURN LINE FILTER					
Flow Capacity gpm (Lpm)	130 (490)	130 (490)	130 (490)	130 (490)	130 (490)
Filtration (micron)	10	10	10	10	10
Filtration Area in^2 (cm^2)	1100 (7100)	1100 (7100)	1100 (7100)	1100 (7100)	1100 (7100)
By-Pass psi (bar)	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
Clogging Indicator	Visual	Visual	Visual	Visual	Visual
HYDRAULIC RESERVOIR					
Type	Pressurized	Pressurized	Pressurized	Pressurized	Pressurized
Vent Pressure Relief psi (bar)	4 (0.28)	4 (0.28)	4 (0.28)	4 (0.28)	4 (0.28)
Capacity gal (liter)	100 (353)	100 (353)	100 (353)	100 (353)	100 (353)
POWER PACK ASSEMBLY					
WEIGHT (LESS OIL) lb (kg)	2,000 (910)	2,300 (1 045)	2,400 (1 090)	2,480 (1 128)	3,000 (1 364)

MRH POWER PACK FEATURES

POWER PACK SPECIFICATIONS

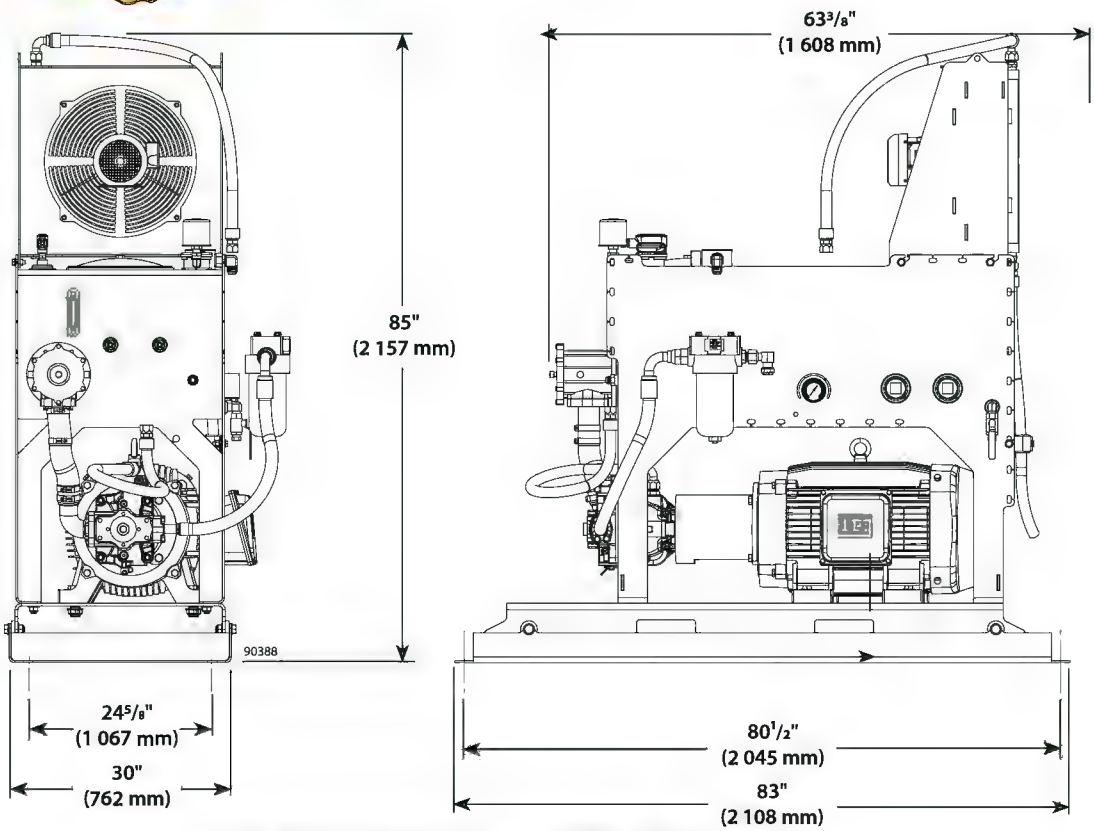


Oil Cooler:
50 hp
Power Packs:
Standard

Hydraulic Reservoir:
100 US gallon (378 L)
(complete with flooded inlet)

Pump & Electric Motor:
Pump: direct drive thru flex coupling (complete with variable displacement)
Electric Motor: 3-phase TEFC

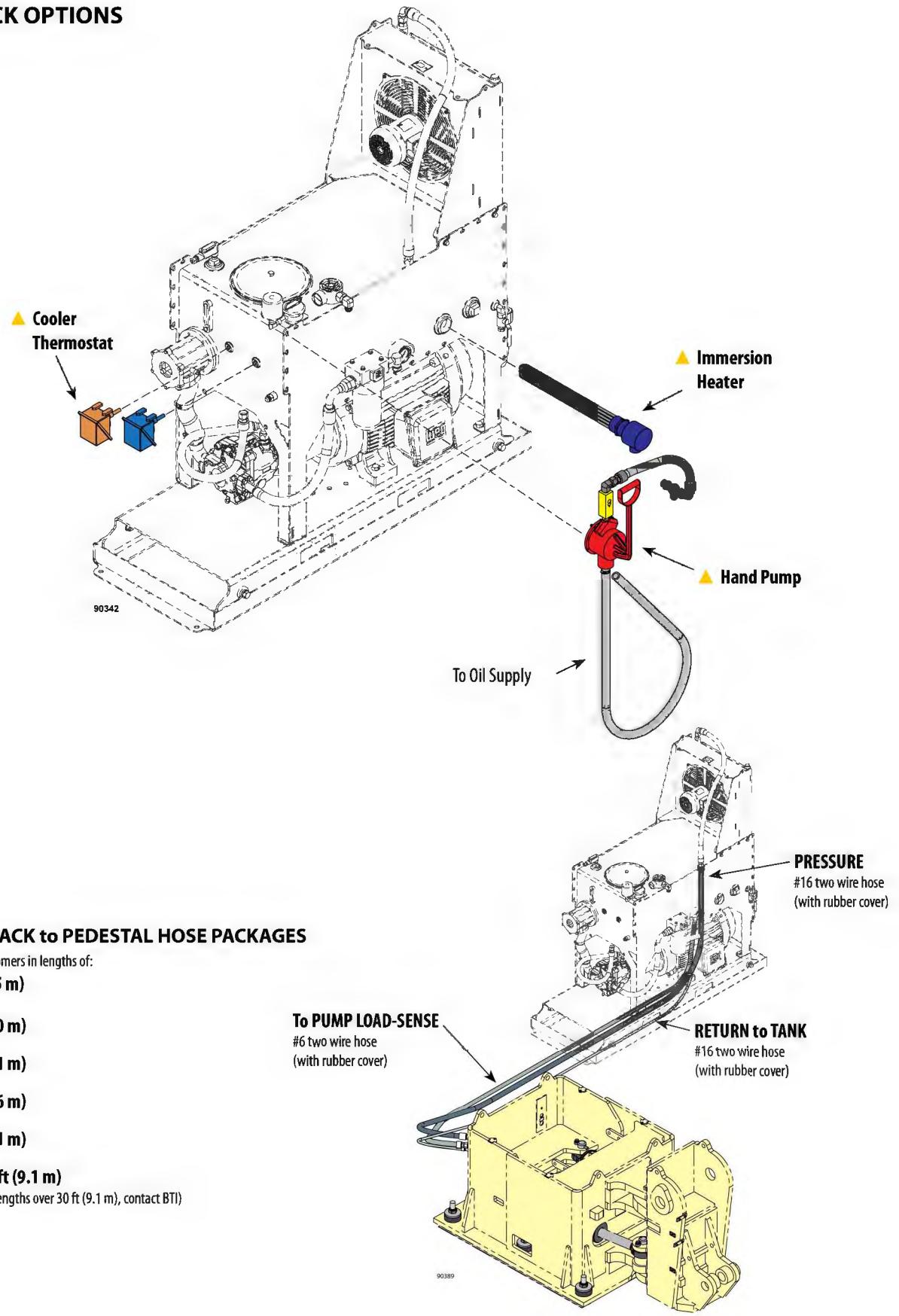
Power Pack Frame



● **Standard Power Pack Arrangement (BX20 – BXR85)**

MRH CONTROL FEATURES

POWER PACK OPTIONS



POWER PACK to PEDESTAL HOSE PACKAGES

Stocked for customers in lengths of:

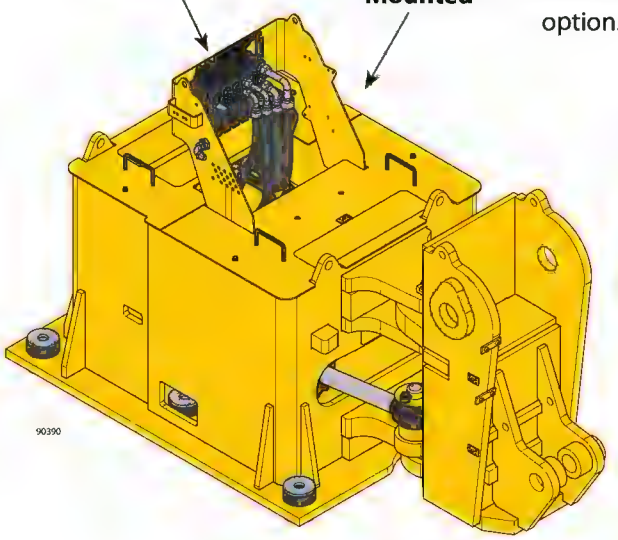
- ● **10 ft (2.5 m)**
- ▲ **15 ft (3.0 m)**
- ▲ **20 ft (6.1 m)**
- ▲ **25 ft (7.6 m)**
- ▲ **30 ft (9.1 m)**
- ▲ **Over 30 ft (9.1 m)**
  (NOTE: for lengths over 30 ft (9.1 m), contact BTI)

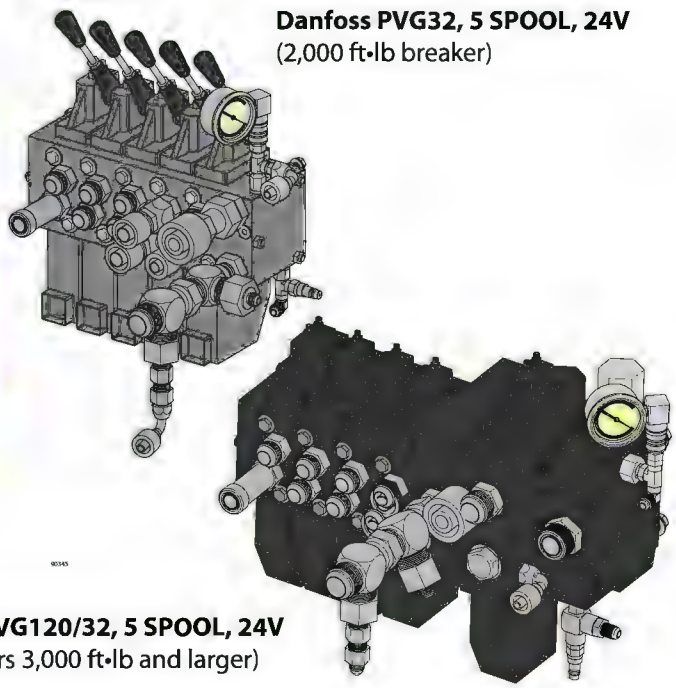
MRH CONTROL OPTIONS

● Pedestal Mounted Control Valve

The main control valve is mounted on the pedestal.

These valves are spring return to neutral hydraulic control valves, manually operated with five levers. Each lever provides independent control of all boom functions. The breaker fire control is electric, giving positive (instant) control of the breaker. This is used in conjunction with the selected joystick option.

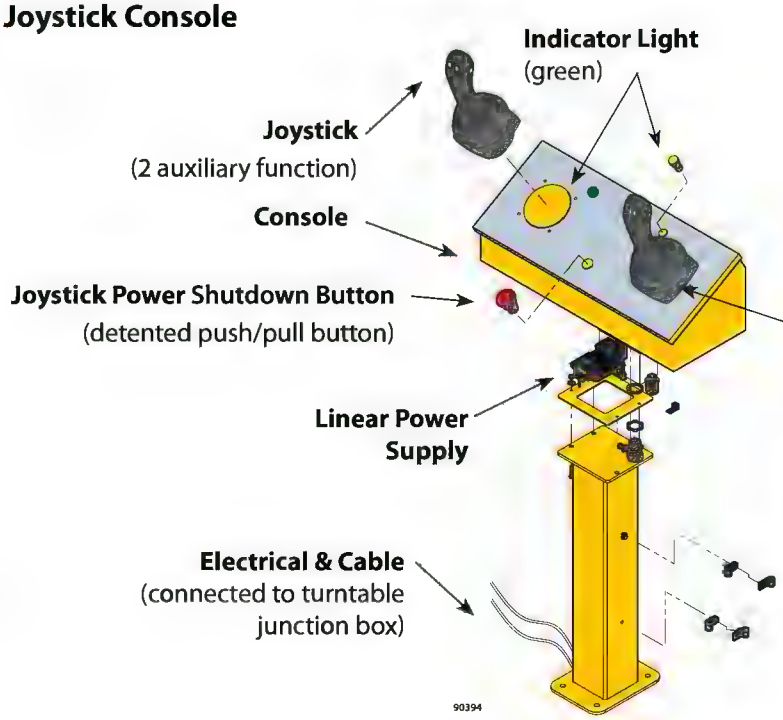




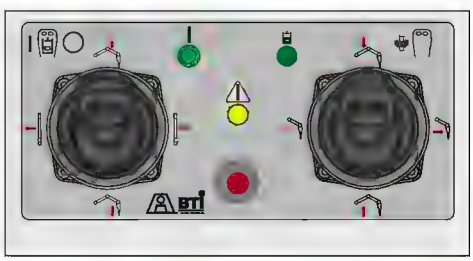
Danfoss PVG32, 5 SPOOL, 24V
(2,000 ft•lb breaker)

Danfoss PVG120/32, 5 SPOOL, 24V
(for breakers 3,000 ft•lb and larger)

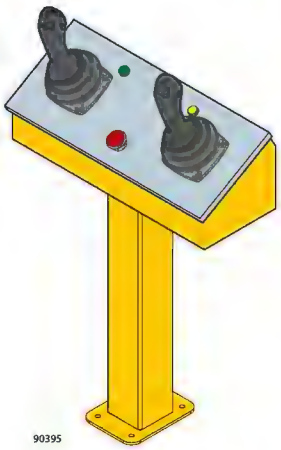
● Joystick Console



Joystick
(Bidirectional Joystick controls with Breaker Fire switch)



MRH CONTROL OPTIONS



▲ Remote Electro/Hydraulic Joystick Stand (Standard)

This system consists of two dual axis joystick controls with a right-hand thumb switch for breaker fire. The controllers are mounted on a compact control stand making it easy to locate in a crusher control room or other convenient area. An indicator "on" light and an joystick power shutdown button (shutting down power to control valve only) are located on the stand between the controller.

The main control valve is located on the Rockbreaker pedestal and allows manual override of all functions.

The joystick controller signal travels through a multi conductor cable to an electrical activating module on each spool of the boom control valve. These modules provide sensitive control for the movement of valve spools giving smooth, positive control of all boom functions.

The power supply for the main control valve solenoids is inside the controller stand. The 120 V to 240 V power "in" and the cable to the power supply are customer supplied. The 24 V cable (30 ft included to maximum 100 ft) from the control stand to the pedestal control valve is supplied by BTI. The length required should be determined at the time of order.

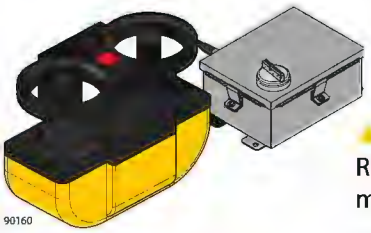


▲ Portable Electro/Hydraulic Joystick

This portable system consists of two dual axis joystick controls with a right-hand thumb switch for breaker fire. Controllers are mounted in a compact control box allowing operation from any position. An "on" light indicator and joystick power shutdown button (shutting down power to the central valve only) are located between the controllers.

The main control valve is located on the Rockbreaker pedestal and permits a manual override on all functions.

The signal from the joystick controller is fed through a multi conductor cable to an electrical activating module on each spool of the boom control valve. These modules provide sensitive control for the movement of spools through an internal pilot circuit giving smooth, positive control of all boom functions



▲ Radio Remote Control System

Radio controls allow the operator to work safely from a distance with an approximate maximum sight line distance of 330 ft (100 m).

Optional long distance remote.



▲ Ergonomic Seat with Joystick Controls

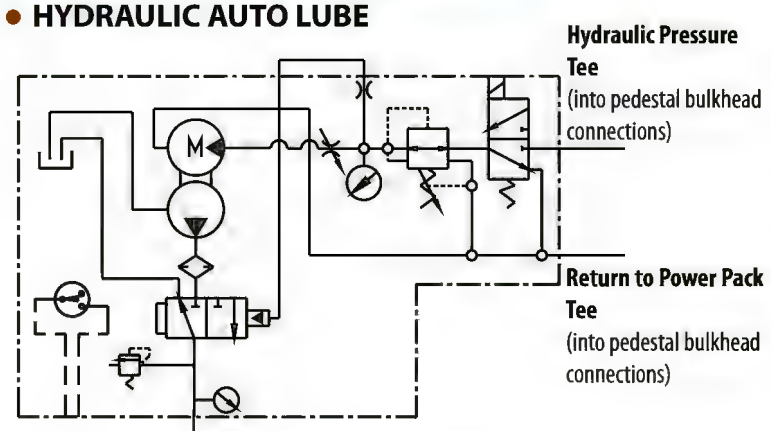
This option combines an ergonomic seat designed for the operator's comfort, with the same smooth operation of the Rockbreaker system in the previous options.

The seat can be placed in an existing control room or enclosure

The power supply is remotely located and has only 120 V to 240 V supply to the controllers. The 24 V cable from seat to pedestal is supplied by BTI. The length required should be determined at the time of order.

MRH AUTO GREASE OPTIONS

● HYDRAULIC AUTO LUBE

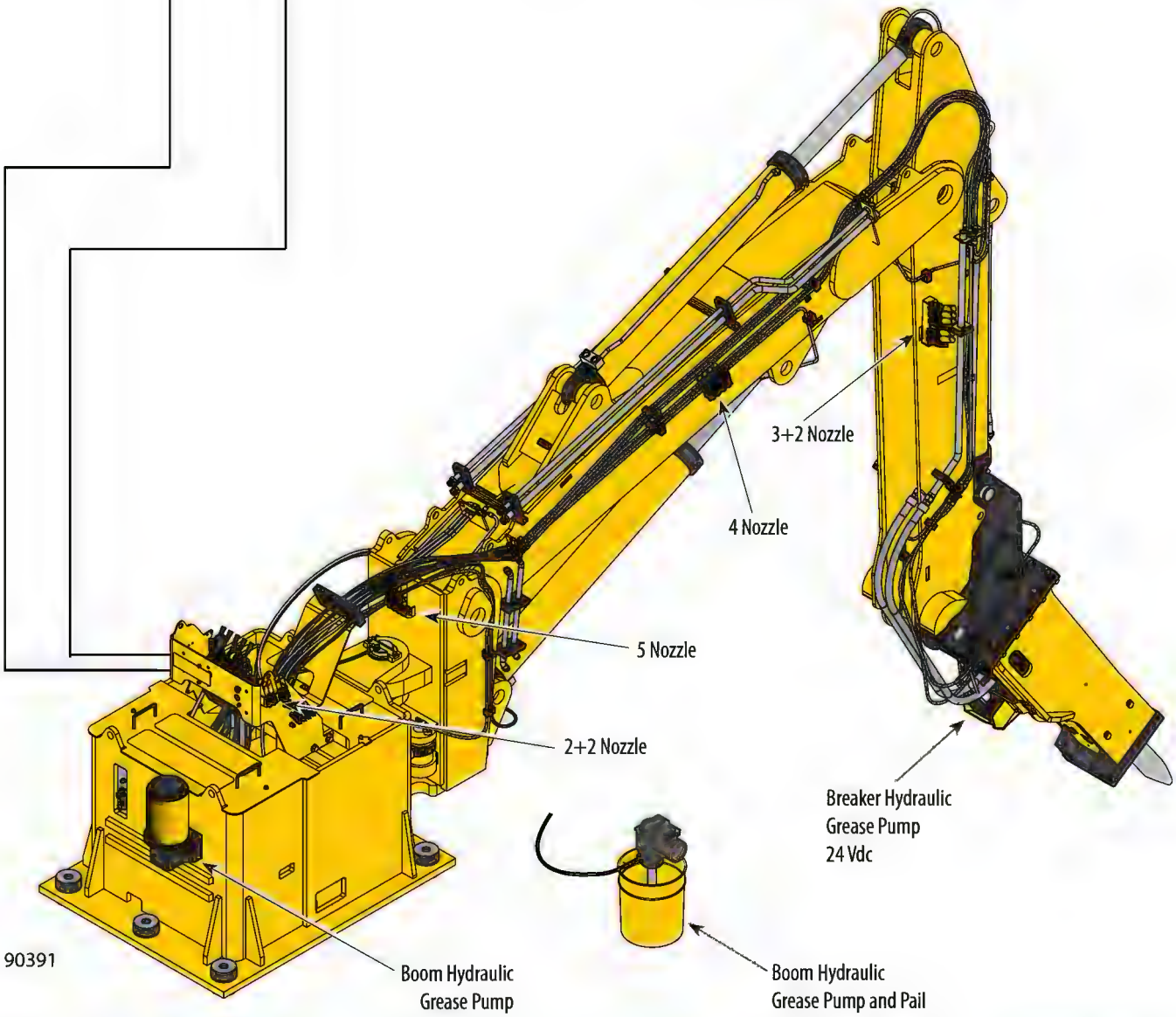


Hydraulic Auto Lubrication System for MRH Rockbreaker (powered from Power Pack hydraulics)

Lincoln Centro-matic systems come complete with a hydraulic pump and a 120 lb (55 kg) container. The breaker is lubricated from a separate electric driven 24 V, 17 lb grease pump.

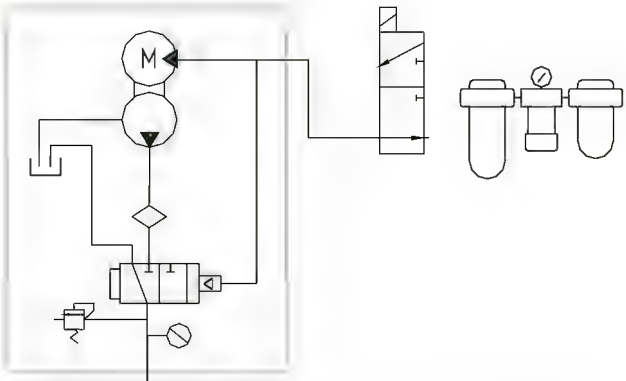
This hydraulically powered pumping unit for centralized lubrication of individual MRH booms utilizes the existing hydraulic pressure system.

When all injectors have cycled, the pump shuts off automatically and vents lubricant pressure. All models are hydraulic operated, positive displacement pumps delivering a maximum volume with a single stroke of the pump. All pumps are designed to deliver grease to single-line injectors, and include a special high volume refill fitting.



MRH AUTO GREASE OPTIONS

PNEUMATIC AUTO GREASE



Electric Grease Pump For Breaker Lube

Hydraulic Auto Lubrication System for MRH Rockbreaker (powered from Power Pack hydraulics)

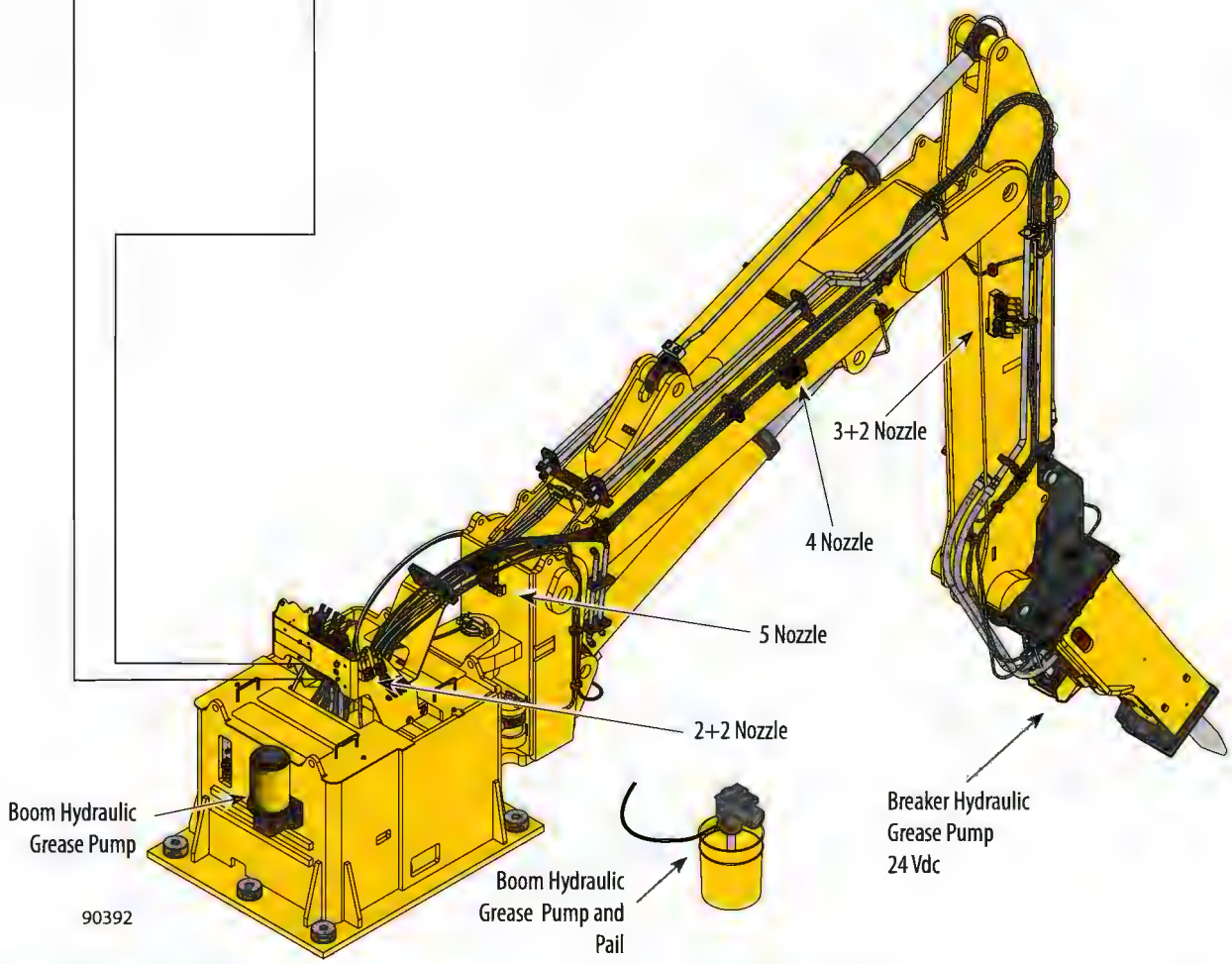
Pneumatic Auto Lubrication for MRH boom and breaker requires outside air source.

Lincoln Centro-matic design complete with pneumatic pump to fit either a 120 lb or 55 kg container.

Regulations blocks for boom functions, installed and with separate electric driven 24V, 17 lb lubrication pump for breaker also installed. Actuated automatically by compressed air at various pre-determined intervals.

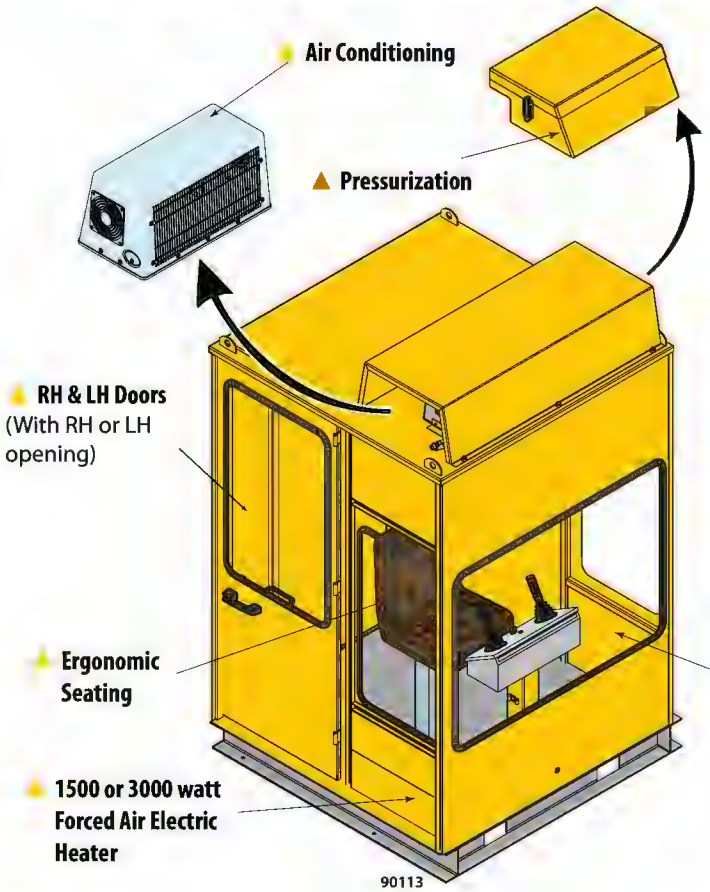
An air-operated pump delivers lubricant to the injectors. When all injectors have cycled, the pump shuts off automatically and vents lubricant pressure.

All models are air-operated, positive displacement pumps delivering a maximum volume by means of a single stroke of the pump. All pumps are designed to deliver grease to single-line injectors, and include a special high volume refill fitting.



● Standard ▲ Optional

MRH CAB OPTIONS



▲ CAB OPTIONS

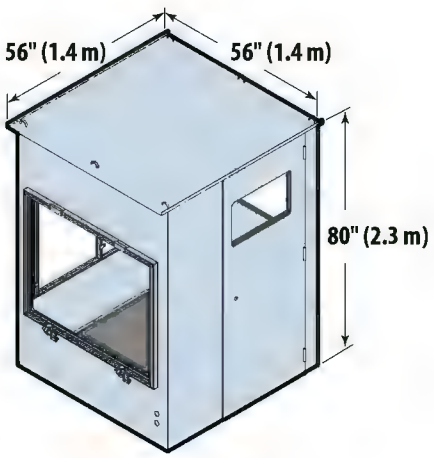
- All operator's cabs are insulated, have a single door and 3 windows. There are many optional arrangements available.
- Cabs are constructed with heavy gauge steel. They come complete with 1/2" (12 mm) Lexan windows, and cab insulation is 1" (25 mm) thick or 1 1/4" (32 mm) thick polyurethane for Medium Cab, and R12 Fiberglass for Large Cab.
- Standard features include- one latched door with window, a front window, a side window, a remote cab base, and a standard chair.

● Medium Cab:

- Heavy gauge steel construction
- Safety glass windows complete with ½" (12 mm) Lexan™
- Polyurethane insulation - 1.25" (32 mm) thick, with additional sound-proofing barrier
- One latched door with window, one front window, one side window
- Remote cab base complete with standard seat

▲ Medium Cab Options:

- Additional door complete with window
- Additional side window
- Explosion-proof window coverings – 11 gauge steel

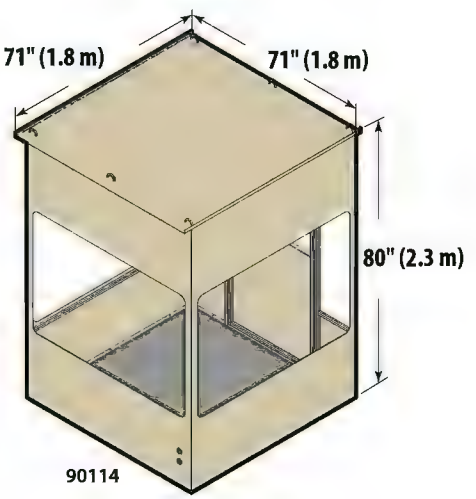


● Large Cab:

- Heavy gauge steel construction
- Safety glass windows complete with ½" (12 mm) Lexan™
- R12 fiberglass insulation
- One latched door with window, one front window, one side window
- Remote cab base complete with standard seat

▲ Large Cab Options:

- Additional doors
- Additional windows



MRH OTHER OPTIONS

▲ COLD WEATHER INSTALLATION PACKAGES

For Applications Ranging from -15 °F to -30 °F (-26 °C to -34 °C) c/w

- Qty. 2—2 kW heaters (If starter panel is supplied by BTI ,then two Immersion Heater Circuit Breaker and Contactors are required)
- Continuous oil circulation from pump to valve
- Main control valve insulated shrouding
- Space heaters located in the boom pedestal to warm slew motors, auxiliary control valves and the main directional control valve. Wired to junction box mounted to pedestal.
- Heat trace lines from the power pack to the main control valve and back on the main suction, pressure and return lines, load sense control lines and etc. that run between the main directional control valve and the power pack. Heat trace control panel c/w ambient sensing thermostat included and mounted to pedestal.

It is recommended that the power pack be located within a heated enclosure. BTI can supply these power pack enclosures.

Note: Insulating of the hydraulic lines between the power pack and the valve are the responsibility of the customer.

Note: By-pass of energy recovery system in BXR series breakers only.

It is recommended that the power pack be located within a heated enclosure. BTI can supply these power pack enclosures, which are listed separately.

Note: Insulating of the hydraulic lines between the power pack and the valve are the responsibility of the customer.

Note: By-pass of energy recovery system in BXR series breakers only

▲ COMMISSIONING*

- Services of a BTI service representative are required for installation supervision or start-up and commissioning (flow and pressure checks, operation and maintenance training).

1. The customer is responsible to make arrangements to have 2 laborers, 1 welder, and a suitable crane with operator, to work with the BTI service representatives.
2. The customer is responsible for the electrical installation.
3. The customer is responsible for proper site preparation, and installation hardware per the BTI installation manual.

* Regular time hourly rate. Overtime rate applies after 8 hours/day and weekends. Expenses are additional.

MRH BREAKER OPTIONS

▲ CONCAVE REMOVAL TOOL

Tool Assembly consists of:

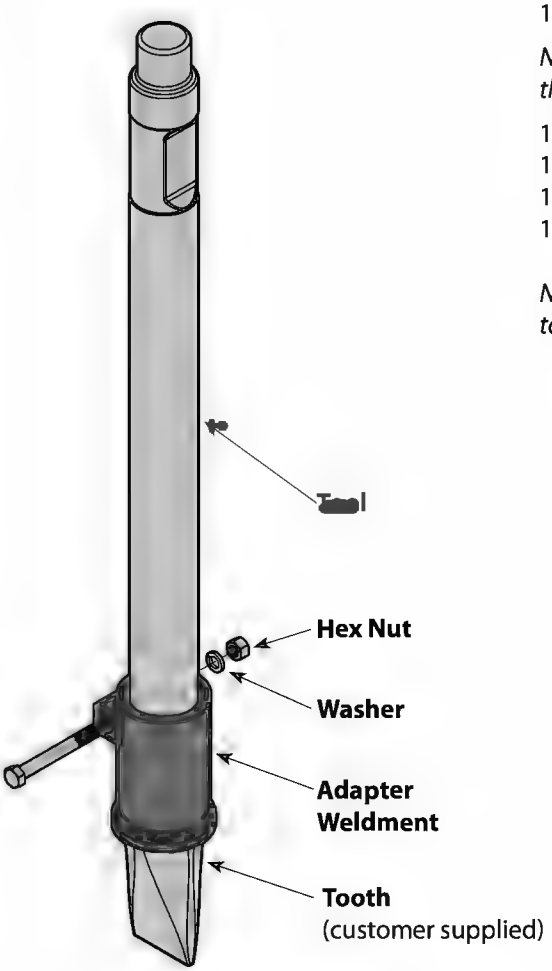
1 – 72" (1829 mm) long tool.

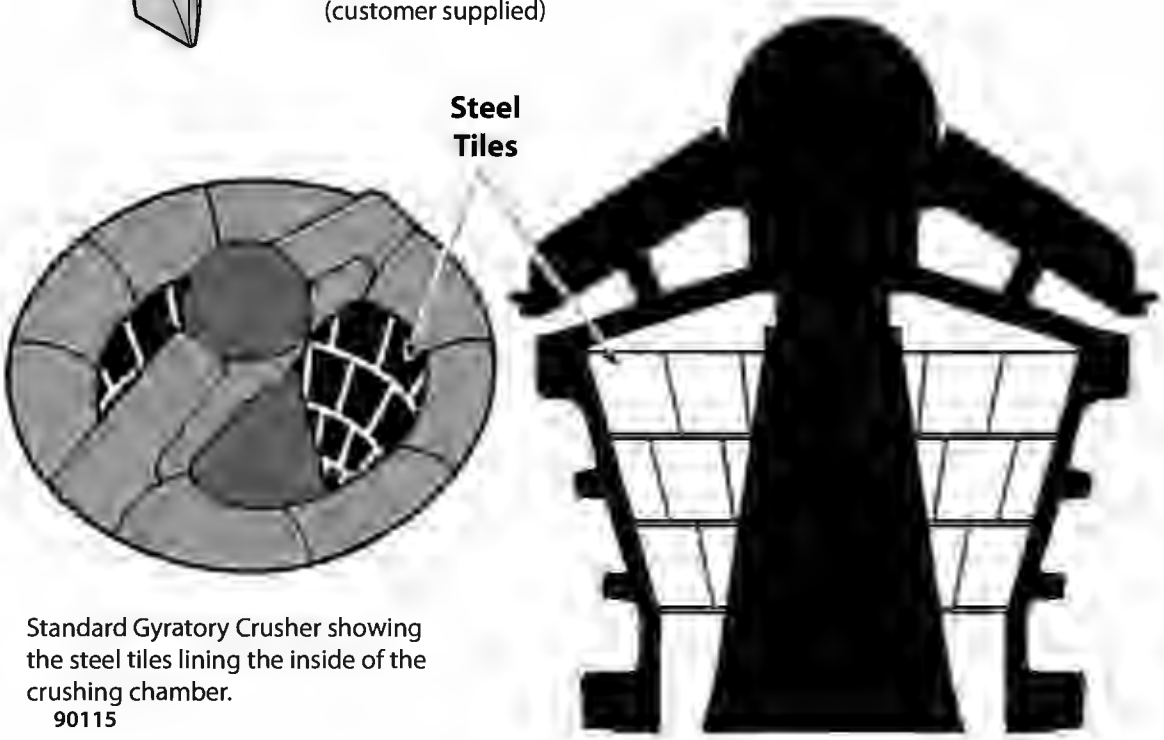
Note: this is the maximum length that a tool can be heat treated, and is therefore the same length regardless of breaker size.

1 – **Adapter Welded Assembly** used for mounting the Tooth to the tool.
1 – **Bolt,** 3/4" X 7" (178 mm) long
1 – **Hex Nut,** 3/4"
1 – **Washer,** 3/4" dia (to lock assembly in place)

Note: Customer is responsible for supplying the Tooth and welding the Tooth to the Adapter Welded Assembly.

- The Adapter Welded Assembly can be purchased separately, however the tool is only sold with an Adapter.
- The **Concave Removal Tool** is used in Gyratory Crushers to remove the steel liners from inside the crushing chamber.
- Mounting the tool to the breaker replaces the need for laborers to enter the chamber and manually scrape and pry damaged steel tiles from the sides.
- Using the BTI Concave Removal Tool provides a much safer and more economical way to accomplish this task.





Standard Gyratory Crusher showing the steel tiles lining the inside of the crushing chamber.
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MRH BREAKER OPTIONS

▲ TOOL CONFIGURATIONS

BTI has a choice of tools and lengths for it's hydraulic breakers. The blunt tool end is recommended for most applications.

Please consult the factory for tool lengths.

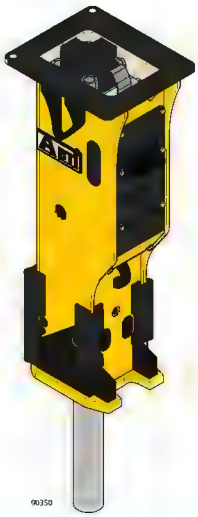
Blunt

Chisel

Moil



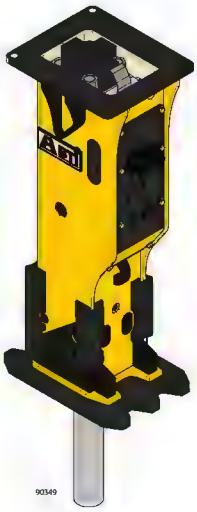
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▲ WEAR BAR KIT

Factory application of cast abrasion strips and wear resistant plate.



90349

▲ EXTREME DUTY KIT

Factory application of cast abrasion strips and wear resistant plate complete with rock claws if ordered with a new unit.



▲ QUICK COUPLER

Pin on Pin Configuration

▲ BUCKET ATTACHMENT

Pin on Pin Configuration



Quick Coupler



90352

NOTES:

ISO 9001:2008
ISO 14001:2004

All dimensions and specifications are subject to change without notice.

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