

Bico, Inc.
3116 Valhalla Drive, Burbank, CA 91505
Tel. (818) 842-7179 – Fax (818) 842-7976
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BICO INC. CHIPMUNK JAW CRUSHER - TYPE VD

The Bico Chipmunk Jaw Crusher is designed to give long and efficient service. In order to secure the long life and excellent performance that your crusher is capable of delivering it is essential that the following directions for operation and maintenance be carefully observed.

MECHANICS OF ITS SUCCESSFUL DESIGN

The upper end of the jaw travels in a circular path driven by the eccentric shaft. The lower end oscillates through a short arc described by the toggle. The resultant jaw action is forward and downward motion relative to the stationary jaw that crushes the sample and forces its discharge.

The discharge opening between jaws can be adjusted to control crushed particle size by turning the hand wheel on the side of the crusher. The adjusting mechanism consists of steel wedge blocks operated by a screw. The wedge blocks transmit crushing forces from the jaw to the frame relieving all strain on the adjusting screw itself. The stationary jaw is simply lifted out of the frame to completely expose the inner parts for thorough brushing and cleaning. Dropping the cam-lock handle securely anchors the jaw.

Jaw plates are tough, thick steel and are reversible end for end for double wear. Heavy bronze bearings are sealed against dust and dirt and are lubricated by grease cups, so that no special greasing tools are required.

INSTRUCTIONS

The Flat Faced Pulleys on the VD and WD Crushers as run with V-Belts is a specially engineered arrangement for these machines. This combination has been in use for many years in the manufacture of this crushing equipment and has proven to be the very best arrangement for machines such as these. When equipment is confronted with a "SHOCK LOAD" condition, this v-belt/flat pulley arrangement allows just enough "give", thus preventing undue strain on the key, flywheel and eccentric shaft.

Manganese Steel plates are available on special order. It is recommended that only one plate, preferably the Stationary plate, be of this material. Two Manganese Steel plates will not reduce hard ores satisfactorily because there is insufficient "grab" between the surfaces. Manganese plates are wear hardened with impact and heating.

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INSTALLATION

Unpack your Crusher and set it on a platform in the desired location. Insert the mounting blocks under each side of Crusher to raise the unit and allow clearance for the ore pan. Securely bolt to platform. Check the alignment of v-belts from the grooved motor pulley to the flat-faced pulley. This alignment is critical as it is only the alignment that keeps the belts on the Flat-faced Drive Pulley. **ROTATION IS CLOCKWISE WHEN FACING THE DRIVE PULLEY.**

Connect the relay switch to your power source in accordance with the directions enclosed with the switch. Just above the junction box on the motor is a direction plate indicating the proper wiring for your current. Connect the Crusher to the relay switch in accordance with these directions. **AGAIN, ROTATION IS CLOCKWISE WHEN FACING THE DRIVE PULLEY.**

The magnetic starting switch has internal overload protection. This shuts off the current automatically should the Pulverizer jam through improper adjustment of the plates or the introduction of foreign matter into the grinding chamber. Should an overload occur, wait a few minutes to permit the relay to cool and then press the RESET button.

The jaws are preset at the factory to a gap of 1/32". Before starting the crusher for the first time, the gap should be checked to see that this space has not been altered in shipping or setting up the machine. A tighter gap could result in damage to the machine.

The crusher can be adjusted by loosening the jam nut and setscrew on the left hand side and turning the adjusting screw on the right side of the machine. Turning the flywheel located at the right side of the machine to the left or right will open or close the space between the lower parts of the jaw so as to give the required crushing size. **DO NOT SET THE JAWS TIGHTLY TOGETHER** as this will result in damage to the machine (minimum allowable opening is 1/32 inch on forward stroke of movable jaw).

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ADJUSTMENTS

Heavy bronze bearings are sealed against dust and dirt, and are lubricated by grease cups so that no special greasing tools are required. To tighten the bearings, loosen the two square headset screws (behind the cap) a fraction. Turn the four hex-head bolts down a fraction at a time. Check tightness by turning the pulley or flywheel by hand. There should be a very slight drag. To loosen, reverse the procedure. Bolts must be tight, but not too tight. **USE EXTREME CAUTION AS OVER-TIGHTENING THE SQUARE OR HEX HEAD SCREWS WILL BREAK THE CAPS.** The caps will radiate some heat, which is normal. Bearings should not be run loose or excessive wear will result on the bearing, shaft, etc. Check the bolts on a regular basis, as the machines vibration will have a tendency to loosen the various bolts.

MAINTENANCE

It is of the greatest importance that the crusher is kept properly lubricated at all times (use any good quality hi-temperature grease. We use a lithium-based grease). Turn down the grease cups 1/4 of a turn at least once a day, or more if the machine is in constant use. This will protect the bearings. Oil the adjusting blocks and toggle block approximately once a week. An oil cup is provided for this purpose at the front of the spacer casting and at the rear toggle block.

When the plates are worn to a point where readjustment is necessary, they can be adjusted. To do this simply insert the set of shims provided with each crusher between the jaw and jaw plate. This will compensate for wear.

For still further adjustment, and for resetting the adjusting blocks, loosen the small setscrew at the left side of the crusher. Turn hand wheel to the right, which will allow the adjusting block to move forward.

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RECOMMENDED SPARE PARTS FOR NORMAL ONE (1) YEAR OPERATION OF VD CRUSHER

- 2 ea. VD-65 Toggle
- 2 ea. VD-70A Right Hand Bearing Split Bushing
- 2 ea. VD-70B Left Hand Bearing Split Bushing
- 2 ea. VD-82 Plate for Stationary Jaw
- 2 ea. VD-82A Plate for Stationary Jaw/Manganese
- 1 ea. VD-84 Adjusting Screw
- 2 ea. VD-85 Cheek Plate
- 2 ea. VD-86 Plate for Movable Jaw
- 2 ea. VD-86A Plate for Movable Jaw/Manganese
- 2 ea. VD-87 Spring Rod w/Wing Nut
- 2 ea. VD-88 Spring
- 1 set VD-132 V-Belts/matched set of 4

NOTE: PLEASE GIVE SERIAL NUMBER OF UNIT WHEN ORDERING PARTS

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BICO INC. VD CHIPMUNK JAW CRUSHER SPARE PARTS
(PLEASE ADVISE SERIAL NUMBER WHEN ORDERING SPARE PARTS)

CATALOG #	DESCRIPTION	LBS/KG
VD-60	Movable Jaw Complete with Cap, Bushing, Jaw Plate & U-Hook	17/8
VD-61R	Cap for Movable Jaw	2/1
VD-62	Front Spacer	16/7
VD-63	Adjusting Block Complete with Wedge Block, Swivel Block, Pin & Key.	10/5
VD-63A	Adjusting Block with Swivel Block	6/3
VD-63B	Adjusting Wedge Block with Key	4/2
VD-63C	Swivel Block Pin	1/4
VD-64	Swivel Block (sold only with adjusting block)	
VD-65	Toggle	2/1
VD-66	Toggle Block	6/3
VD-67	Bearing Casting with Caps & Bushings	23/11
VD-68R	Right Hand Bearing Cap	3/1
VD-69R	Left Hand Bearing Cap	3/1
VD-70A	Right Hand Bearing Split Bushing	2/1
VD-70B	Left Hand Bearing Split Bushing	2/1
VD-71	Split Bushing for Movable Jaw	2/1
VD-72	Right Hand Frame Plate	18/8
VD-73	Left Hand Frame Plate	18/8
VD-74	Shaft-Single Pulley for V-Belt Drive (short)	8/4
VD-75	Shaft for Tight & Loose Pulley Drive (long)	8/4
VD-76	Flywheel	25/11

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CATALOG #	DESCRIPTION	LBS/KG
VD-77	Pulley-Crowned Right for Flat-Belt Drive 28/13	
VD-78	Pulley-Crowned Loose for Flat-Belt Drive	28/13
VD-79	Shaft Collar	1/.4
VD-80	Stationary Jaw Complete with Plate, Handle and Jaw Pin	12/6
VD-80A	Stationary Jaw Pin	1/.4
VD-81	Frame Stud for Stationary Jaw	1/.4
VD-82	Stationary Jaw Plate-Regular Steel	2/1
VD-82A	Stationary Jaw Plate-Manganese Steel	2/1
VD-82SS	Stationary Jaw Plate-Stainless Steel	2/1
VD-83	Handle for Stationary Jaw	2/1
VD-84	Adjusting Screw	1/.4
VD-84A	Hand Wheel for Adjusting Screw	1/.4
VD-85	Cheek Plate	2/1
VD-85SS	Cheek Plate-Stainless Steel	2/1
VD-86	Movable Jaw Plate-Regular Steel	3/1
VD-86A	Movable Jaw Plate-Manganese Steel	3/1
VD-86SS	Movable Jaw Plate-Stainless Steel	3/1
VD-87	Spring Rod with Wing Nut	1/.4
VD-88	Spring	1/.4
VD-89	Ore Pan	2/1
VD-90	Handle for Flywheel with Bolt for Hand Operation	1/.4

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CATALOG #	DESCRIPTION	LBS/KG
VD-91	Mounting Block-Plain	8/4
VD-91R	Mounting Block-Adjustable-Right Hand	9/4
VD-91L	Mounting Block-Adjustable-Left Hand	9/4
VD-93	Grease Cup	1/.4
VD-94	Oil Cup for Front Spacer & Toggle Block	1/.4
VD-95	Key for Shaft-Long or Short Pulleys	1/.4
VD-110	Key for Adjusting Block	1/.4
VD-112	Collar for Adjusting Screw	1/.4
VD-113	Dust Cover Plate	1/.4
VD-114	Dust Plate	1/.4
VD-115	Shims-16 Gauge-Wear Adjustment for Movable & Stationary Plate-Set of 2	1/.4
VD-116	Adjusting Hand Wheel for Spring Rod	1/.4
VD-117	Rear Spring Cup	1/.4
VD-118	Front Spring Cup	1/.4
VD-119	Pipe Spacer for Frame Stud	1/.4
VD-120	Upper Felt Gasket-3 15/16" Set of 2	1/.4
VD-121	Lower Felt Gasket 3/8" Set of 2	1/.4
VD-122	Fiber Dust Washer for Pulley and Flywheel	1/.4

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CATALOG #	DESCRIPTION	LBS/KG
VD-123	Cap Screw for Movable Jaw	1/4
VD-124	Cap Screw for Front Spacer	1/4
VD-125	Cap Screw for Toggle Block	1/4
VD-126	Cap Screw for Right Hand Bearing Cap	1/4
VD-127	Cap Screw for Left Hand Bearing Cap	1/4
VD-128	Bolt for Movable Jaw Plate	1/4
VD-129	Bolt for Bearing Casting	1/4
VD-129A	Bolt for Stationary Jaw Plate	1/4
VD-129B	Bolt for Cheek Plate	1/4
VD-130	Pulley-Special Flat Faced for V-Belt Drive Specially Engineered for Pressure Drive Combination	36/17
VD-131	4-Groove Pulley for Motor (Specify RPM, Keyway and Shaft Diameter)	5/3
VD-132	V-Belts - Set of 4	2/1
VD-133	U-Hook Bolt for Spring Rod for Movable Jaw	1/4
VD-136	Adjusting Screws for Mounting Block	1/4
VD-140	Belt Guard	60/27
VD-145	Flywheel Guard	60/27
VD-146	Hopper	36/17
VD-147A	Belt Guard - New Style	60/27
VD-147B	Flywheel Guard - New Style	60/27
VD-151	V-Belts, New Style (4 required)	5/3

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ADJUSTING THE CHIPMUNK JAW CRUSHER

Note: Steps 1 & 2 only need be completed if attempting to close the jaw gap beyond the factory setting, as when closing the gap to compensate for wear on the grinding plates.

1. Loosen the hex head jam nut, which is the nut against the crusher body (fig. 1)
2. Loosen the square head set screw. (fig. 2)
3. Turn the hand wheel (fig. 3) to the right to close/increase the jaw gap, or to the left to open/increase it. When the desired opening has been set reverse steps one and two.

NOTE: DO NOT SET JAWS TIGHTLY TOGETHER as this will result in damage to the machine. Minimum allowable gap is 1/32 inches on the forward stroke of movable jaw.