QUINN PROCESS EQUIPMENT CO.

QUINN BALL-ROD MILL

Bulletin QPEC M-001

24” Ball-Rod Mill x 64” with safety cage and 1” vertical sand pump

Applications

For use in primary or regrind circuits in mineral, chemical, or industrial pilot plants or small commercial size applications. Flexible for wet or dry grinding in open or closed circuit as a rod, ball, or pebble mill.

Typical grinding applications include: copper, lead-zinc, fluorspar, uranium, molybdenum, etc.; ore processing pilot plants; high grade industrial materials to liberate values prior to recovery by subsequent processing; grinding of chemicals or material such as limestone for use as reagents.

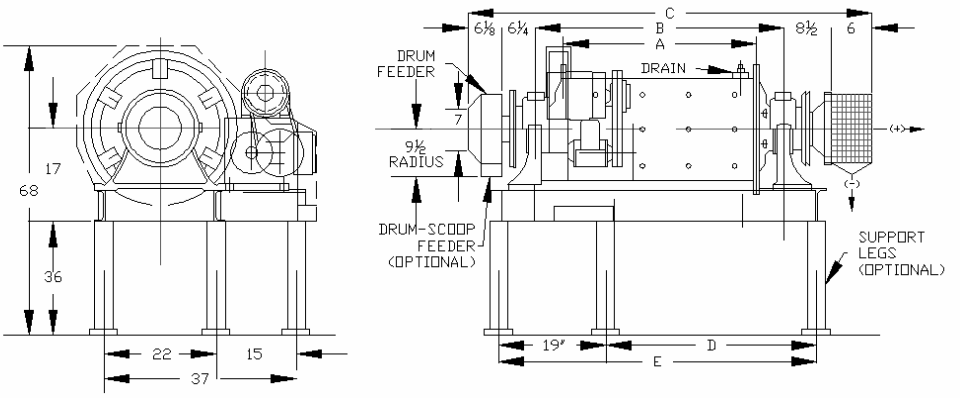
Advantages

Quinn grinding units are designed for 24-hour day continuous abrasive duty. They offer a great deal of flexibility. As standard or with minor adaptation, they may be operated

a. as a rod, ball, or pebble mill.
b. in open or closed circuit with cyclone or spiral classifier.
c. as a wet or dry mill.
d. as an overflow, grate, or peripheral discharge mill.
e. available in various lengths as shown in table.
f. in a variable speed range of approximately 67% to 80% of critical speed.

(Dimensions and specifications on reverse side.)

3400 Brighton Blvd., Denver, Colorado 80216 Phone: (303) 295-2872 Fax (303) 295-2706
Email: quinnproc@aol.com Website: http://www.quinnprocess.com



Diam x Length	Dimensions, inches A	B	C	D	E	F	G	hp H	Rod-Ball Charge No.	*Approximate Capacity lb/hr
16"×16"	17-½	28-⅝	55-½	20-¾	39-¾	17	53	2	250	100
16"×32"	33-½	44-⅝	71-½	36-¾	55-¾	17	53	3	500	200
16"×48"	49-½	60-⅝	87-½	52-¾	71-¾	17	53	5	750	300
24"×32"	35-½	46-⅝	73-½	30	49	19	60	7-½	900	500
24"×48"	51-½	62-⅝	89-½	46	65	19	60	10	1350	750
24"×64"	67-½	78-⅝	105-½	62	81	19	60	10	2100	1000

*Capacity based on wet grinding medium ore to 65-mesh.

Specifications

Shell: Heavy rolled steel, bolted machined flanges template drilled with interlocking surface. Liner bolt holes and drain coupling. Standard lengths are as shown. Available 16" length sections if desired for flexibility.

Liners: Replaceable lifter bars with recessed bolt holes of 475 Brinnel white iron with approximately 2% Cr, 0.60% Si, 0.75 Mn, and 3.25% C. Shell liners of rubber covered steel.

Liner bolts: Square head standard bolts, nuts, metal and fabric reinforced rubber washers.

Heads: High grade ductile iron, bolted machined flanges template drilled, with interlocking surface. Trunnion surface ground and polished.

Trunnion hearings: Are of babbitted construction for waste packed oil or block grease lubrication.

Feeder: Drum type is standard. Combination drum/scoop is available (closed circuit operation).

Gear: Reversible cut-tooth of close grained cast iron. Template drilled and bolted to head.

Pinion: Reversible, cut-tooth steel.

Gear guard: Solid steel, OSHA type.

Reducer: Enclosed running-in-oil with double reduction.

V-belt drive: Vari-pitch V-belt drive with speed range approximately 68% to 80% of critical.

Drive guard: Solid steel, OSHA type.

Motor: Totally enclosed, fan cooled for 3 ph, 60 Hertz, 230/460 volt operation (or other standard).

Structural base: Fabricated common steel base for mounting mill and motor drive. Support legs optional.

Mill discharge: Trunnion overflow type is standard. Grate discharge or peripheral discharge optional.

3400 Brighton Blvd., Denver, Colorado 80216 Phone: (303) 295-2872 Fax (303) 295-2706
Email: quinnproc@aol.com Website: http://www.quinnprocess.com

INSTALLATION AND OPERATING INSTRUCTIONS
FOR
QUINN BALL/ROD MILLS

1. The mill is shipped fully assembled with the ball and/or rod charge packed separately.

2. Check the shipment to be certain that components have not been damaged in shipment. If damage has occurred, file claim with the carrier.

3. Holes are provided in the leg pads for securing the unit to the floor. Level the top of the support base by shimming under the leg pads, grout and secure as necessary.

4. Check lubrication of gear reducer, depending on the size of the mill, the unit may be shipped from the factory with oil. If the unit is empty, or low on oil, follow the enclosed lubrication instructions.

5. Apply Texaco crater gear compound, or equal, to pinion gear and to bull gear. After start up, lubricate as necessary, generally add gear compound every 24-48 hours of operation. Every 3 months, the gears should be washed with an appropriate solvent to remove dirty dust laden grease, as the dust and other foreign particles will reduce gear life. If gears become worn, they are designed to be reversed for additional life.

6. The journal bearings (babbitted trunnion bearings) can either be lubricated from a drip oiler over waste packing or by the insertion of brick grease (similar to #43 Keystone Lubricating Co. in Philedelphia, Pennsylvania). A starter brick of grease was included with the shipment. The advantages to using brick grease is that there is no drippage of oil on the floor.

7. Check direction of rotation. Pinion should rotate such that it lifts up on the bull gear during operation.

8. The unit is furnished with a variable pitch v-belt drive. As shipped a rod mill will be set at the slowest speed possible, a ball mill at approximately 30-40% of the adjustable speed range (generally 68-80% of critical speed). Adjust speed accordingly to suit application.

9. Mills are normally operated at 40% mill volume ball or rod charge. The amount of charge will depend on the length of the mill being operated. Balls or rods weigh approximately 280# per cubic foot. The initial mill charges should consist of equal surface areas of the various selected sizes of rods or balls.

10. Rods can be loaded into the mill by insertion through the discharge cone. Balls can be hand fed into the mill through the feed drum, fed through a funnel through the drain outlet, or fed into the mill by removing the discharge grate. An additional 10% of the supplied grinding charge was shipped with the mill in a separate container. Utilize this to make-up for loss of charge due to wear as necessary.

11. Trunnion, head and liner wear should be inspected periodically for wear.

Quinn Process Equipment Company

PRODUCT INFORMATION

Brick Grease 42

Sodium Brick Grease

Applications

- Ball & Pebble Mills – Abbe, Marcy, Patterson & other types
- Cement Mills – Jack Shaft Bearings
- Crushers – Water Jacketed
- Rolling Mill Bearings – Flour
- Rubber Mill – Drive Shaft Bearings

Benefits

- High melting points prevent “drip” spoilage of goods in process
- Last Longer
- Eliminates danger of dry bearings
- Reduces lubrication costs
- Applies perfect film to shaft
- Good heat resistance

Method of Application

- Open Well Top Feed

Note: Cut pieces of brick small enough to allow free movement, and prevent “bridging” or jamming.

Properties

Product Code#:	**800273**
Soap Base Type:	Sodium Stearate
Penetration, Unworked::	60-95
Application Range, °F:	0 - 250
Oil Viscosity , SUS, 104ºF:	380 - 405
Dropping Point, ºF, Min.:	340
Appearance:	Amber Waxy Block

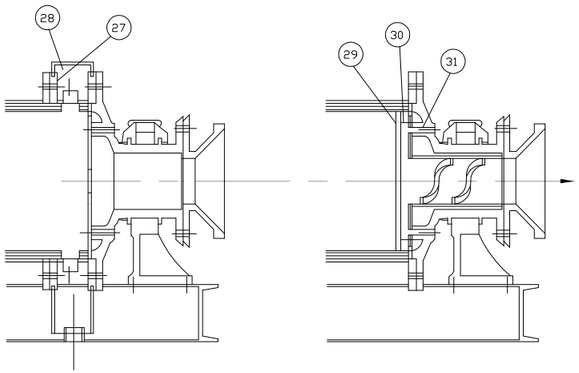
Revised 10/06 WHC

TOTAL Lubricants USA, Inc.

Linden, NJ 07036
5 North Stiles Street
908.862.9300 800.526.4127

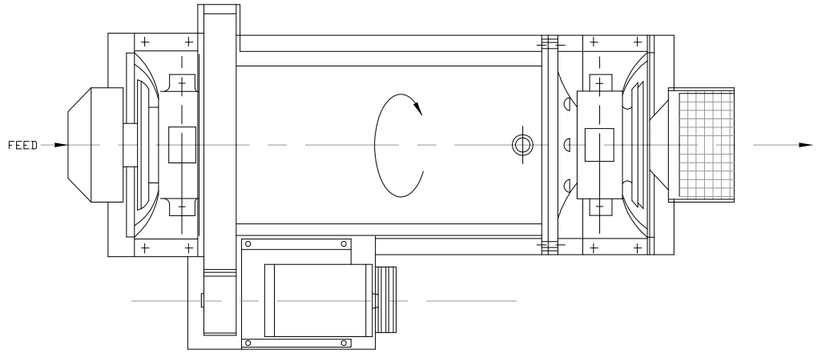
Rockingham, NC 28379
709 Airport Road
800.323.3198

Knoxville, TN 37914
3315 Riverside Drive
800.323.3198

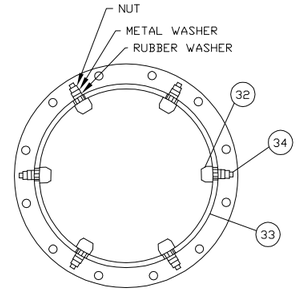


PERIPHERAL DISCHARGE

OVERFLOW DISCHARGE

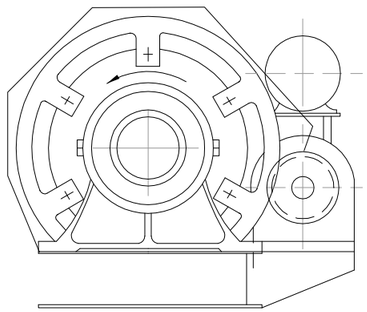


PLAN VIEW

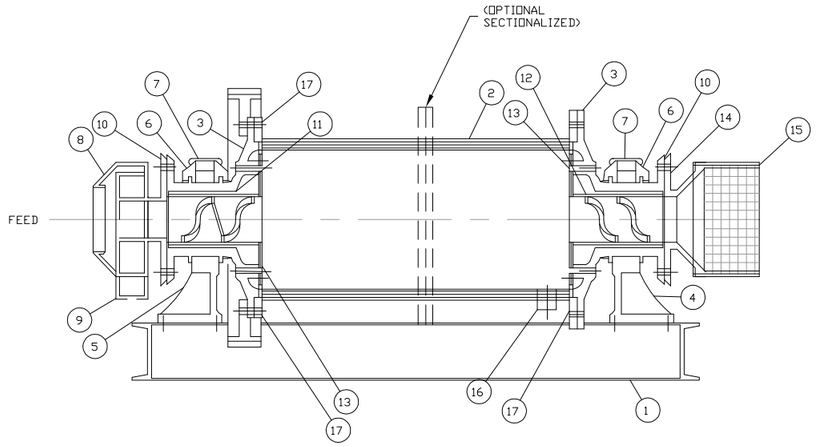


LINER
ASSEMBLY

ITEM NO.	DESCRIPTION	REQD NO.
1	STRUCTURAL STEEL BASE	1
2	SHELL	1
3	MILL HEAD	2
4	TRUNNION BEARING BASE (FLOATING)	1
5	TRUNNION BEARING BASE (FIXED)	1
6	TRUNNION BEARING CAP	2
7	LUBRICATION COVER	2
8	DRUM FEEDER	1
9	DRUM SCOOP FEEDER (OPTIONAL)	1
10	GASKET/BALL GRATE	2
11	FEED END TRUNNION LINER	1
12	DISCHARGE END TRUNNION LINER	1
13	TRUNNION LINER BOLTS, NUTS, WASHER	12
14	DISCHARGE END BELL	1
15	TROMMEL SCREEN	1
16	RUBBER DRAIN PLUG	1
17	HEAD BOLTS, NUTS, WASHERS	24
18	BULL GEAR	1
19	PINION GEAR	1
20	GEAR GUARD	1
21	GEAR REDUCER	1
22	DRIVEN SHEAVE	1
23	V BELTS	2
24	MOTOR SHEAVE	1
25	V BELT DRIVE GUARD	1
26	MOTOR	1
27	PERIPHERAL DISCHARGE SECTION (OPTIONAL)	1
28	PERIPHERAL DISCHARGE HOUSING (OPTIONAL)	1
29	GRATE DISCHARGE PLATE (OPTIONAL)	1
30	GRATE DISCHARGE SPACER RING (OPTIONAL)	1
31	GRATE DISCHARGE BOLTS, NUTS, WASHERS (OPTIONAL)	6
32	SHELL LIFTER BAR (MILL SIZE) 16" X 16" 24 X 32 & 16" X 32" 24 X 48 & 16" X 48" 24 X 64	6 12 18 24
33	SHELL LINER (MILL SIZE) 16" X 16" 24 X 32 & 16" X 32" 24 X 48 & 16" X 48" 24 X 64	6 6 6 6
34	SHELL LIFTER BOLTS, NUTS, WASHERS (MILL SIZE) 16" X 16" 24 X 32 & 16" X 32" 24 X 48 & 16" X 48" 24 X 64	6 12 24 36 48



END VIEW



ELEVATION VIEW
OVERFLOW DISCHARGE

REVISION	DATE

QPEC QUINN PROCESS EQUIPMENT COMPANY
3400 BRIGHTON BLVD. – DENVER, COLORADO 80216

XXXXXXXXXX
XXXXXXXXXXX

24"–16 QROD–BALL MILL
PARTS AND ASSEMBLY DRAWING

SCALE: NTS
DRAWN BY: PGQ
CHECHED BY: JEQ
APPROVED BY: RCQ

DATE: 3/28/78
PROJECT NO.: KNOWN
SHEET NO.: 1 OF 1
DRWG. NO.: QPEC–BM–110