FT

ING. S. MAULE & C. S.p.A.

****

D I S P E R S I N G K N E A D E R

T Y P E G R - I I / 4 P C S

S E R I A L N U M B E R 2 2 2 1 / 0 1

****

THE LIFE OF THE MACHINE DEPENDS ON REGULAR CARE AND MAINTENANCE

RESPECT IT AND MAKE SURE THAT YOUR OPERATING AND MAINTENANCE PERSONNEL RECEIVE THIS OPERATING MANUAL

****

MACHINERY HAVING NOISE LEVEL < 90 DBA

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

I N D E X

****

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(0) CHARACTERISTICS OF THE MACHINE

CUSTOMER	:	BELOIT CORPORATION PITTSFIELD, MASS. U.S.A.
ORDER	:	No. 19036 (04/07/95)
NUMBER OF MACHINES	:	(1)
SERIAL NUMBER	:	No. 2221/01
DATE OF CONSTRUCTION	:	1995
DRAWINGS - NUMBER	:	42574-b - 26465 - 24339 - 22799
TECHNICAL DATA:		
- TYPE OF FURNISH	:	
- PRODUCTION RATE (T/24HRS)	:	12-15 T/24HRS
- MACHINE R.P.M.	:	48
- REDUCER GEAR RATIO	:	25:1
- REDUCER GEAR TYPE	:	C2-360
- POWER INSTALLED	:	200 HP
- DRIVE R.P.M.	:	1200

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(1) ERECTION

The arrangement of dispersing kneader is shown in our drawing n. ~~26903-a~~ 25936
~~The drive arrangement is shown in drawing n. 26904.~~

Check the position of the foundation holes against the drawings. ~~n. 269037a and 26904~~ 25936

Position the machine and the foundation guide bolts; screw the adjustment screws (packed separately) into the special threaded holes. As a general rule, the dispersing kneader is supplied with the two base guides already mounted: the guide on the reducer side is the one provided with reference pins; the guide on the other side is the one without them.
When the bolts have been mounted, check that the base guide on the side opposite to the reducer is as far away from the reducer as possible. This is to allow the body of the dispersing kneader to expand during hot operation).

Set iron plates on unfinished brickwork below the adjustment screws.

Level the machine by adjusting these screws and check with a spirit-level placed either on the end of the shaft or on the worked surface of the loading inlet.

Cement in the guides with quick-setting cement.

Proceed to assemble the couplings on shaft of the dispersing kneader, of the reducer and of the motor, if these components have been supplied with bare shafts.

Position the reducer and the electric motor together with their respective foundation bolts.

Insert shims between the adjustment screws and the concrete foundation and then tighten the screws.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

Check for perfect alignment of the faces of the half-couplings by inserting a feeler gauge at four 90° spaced points. Check the level of the dispersing kneader, reducer and motor with a spirit level at points that have been cleared of paint.

Cement in the reducer, check the position of the electric motor and then cement it in.

Leave a gap of about 10 mm between the faces of the half-couplings, linking the kneader shaft to the reducer slow-running shaft and about 5 mm between those linking the reducer fast-running shaft to the electric motor shaft.

The bolts locking the dispersing kneader to the base guide on the reducer side must be force-tightened; those on the other side must be set slackly so as to allow the dispersing kneader body to expand when operating at high temperature.

The lower part of the dispersing kneader is provided with two flanged connections, Ø 35 mm hole, outside flange Ø 150 mm (4 connection holes, threaded 1/2" UNC x 30 on Ø 88.9 mm), for steam intakes. Connect these intakes to the steam piping via the two separate regulating valves. Insert a regulating valve, set at 1÷1,3 ate, in the steam piping at a point near the dispersing kneader.

For all the rotating parts the suitable protection guards have to be provided.

Regarding the electric system foresee:
- the emergency stop push buttons close to the dispersing kneader and
- the proper grounding system of this machine.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(2) CONTROLS TO BE PERFORMED BEFORE STARTING

(a) Remove the kneader bearing cap on the reducer side.

(b) Check the condition of the grease; if it appears dry, clean out thoroughly and replace with MOBILUX N. 2 (Mobil Oil Italiana) or equivalent.

(c) Bring the level of the kneader discharge side (opposite to the reducer) bearing oil up to the mark provided with Medium Heavy Mobil D.T.E. (Mobil Oil Italiana) or equivalent.

(d) Bring the level of the reducer oil to the mark shown on level indicator with ESSO SPARTAN EP 220 (SEP VG 220) or equivalent type.

(e) Make the required electric connections.

(f) Insert an ammeter large enough to be read without difficulty by the operator from his normal working position.

(g) Get the water intake for watering down in the pulped furnish discharge hopper. Insert a shutting-off and regulating valve in this water piping.

(h) Connect to the compressed air's (6 kg/cm2) net the air device operating the discharge door and its control board (see drawing n. 42574/b), that includes gauge, pressure regulator and a three-ways valve. The connection to the air device has 3/8" gas diameter; those to the control board have 1/4" gas diameter. Placing a filter on the air pipe upstream of the control board is advisable.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(3) STARTING-UP PROCEDURE

(a) When starting the machine for the first time, keep the air pressure within the outlet door controlling device (Torpress) at its minimum value.

(b) Start-up the kneader drive.

(c) Feed in the stock and check that it flows regularly out of the kneader.

(d) Increase gradually the air pressure against the outlet door until the ammeter of the driving motor shows that about 70% of the rated power is taken-in.

(e) Open gently the steam valves so as to get the desired stock temperature at the kneader outlet.

(f) Steam addition and taken-in power will be adjusted to each other so as to obtain a complete fiberisation of the stock and a total dispersion of its thermosensitive contaminants.

(g) Take samples of treated stock to make laboratory sheets on which the attainment of these goals can be controlled.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(4) STOPPING THE MACHINE

In this case the procedure is the following one:

(a) Shut off the steam valves.

(b) Cut-off the supply of the stock to the kneader.

(c) Reduce to minimum the air pressure against the outlet door.

(d) Let the kneader get empty.

(e) Stop the drive.

When the stopping time exceeds 24 hours it is advisable to wash out with water the inside of the kneader.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(5) TEMPERATURE CONTROL

The stock temperature at the kneader outlet may be 20-25 °C higher than at its inlet, even without steam addition. It can be further increased by adding steam.

The terminal part of the kneader body is provided with a socket to which a thermometer can be applied to have a continuous indication of the stock temperature.

If the flow of stock throughout the kneader is variable, the added steam may occasionally form a pocket which blows-off when arriving at the outlet door.

To avoid this inconvenience, it is advisable to control the steam valve opening through the ammeter of the kneader driving motor.

If the flow of the stock throughout the kneader is variable, the added steam may occasionally form a pocket which blows off when it arrives at the outlet door.

To avoid this inconvenience it is advisable to set an ON-OFF valve on the steam piping (see drawing n. 26465), which is remotely controlled through the input of the motor driving the kneader.

As soon as the steam pocket starts to form, the motor input diminishes; when it gets below a pre-set value the above valve closes breaking off the steam flow.

Thus, the pocket steam can condense before getting to the outlet door.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(6) LUBRICATION AND MAINTENANCE
(see drawing n. 24339)

(a) EVERY 5000 WORKING HOURS

- change the grease in the reducer sidee kneader bearing;
- change the oil in the kneader bearing on the side opposite to the reducer;
- change the reducer oil.

NOTE: the first bearing and reducer oil change must be carried out after 500 hours

During the first month of operation

- weekly: check the bearing grease;
- daily: check the oil level in the reducer and in the kneader bearing (side opposite to the reducer).

(b) THEREAFTER

- every 3 months: check the grease in the kneader bearing;
- every month: check the oil level in the oil-lubricated bearing;
- weekly: (using a Tecalemit pump for re-greasing) check the bearing box of the door hinge;
  use MOBILUX N. 2 (Mobil Oil Italiana) or equivalent;
- monthly: check the oil level in the reducer.

During the first month of operation

Check the packing glands on both sides of the pulper daily: these glands must be checked when the machine is at its working temperature. If necessary, tighten the glands, but without forcing. If after several months of operation, it is found that these glands are not offering a perfect seal in spite of (not excessive) tightening, replace the packing using 18x18 mm greased asbestos cord.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(c) STELLITE COATINGS

- Every six months, check the wear on the fixed teeth and the stellite coatings on the external faces of the rotating arms;
  if considerable wear is found on the teeth, they must be replaced.

- The stellite coatings can be renewed; a new stellite coating can be applied by electric welding with the electrodes CASTOLIN 6256 or similar types.

- For the stellite adding instructions see drawing n. 24467/a of the following page.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(7) BEARINGS AND SEALING RINGS ON THE MACHINE

(1) bearing SKF ..... type 22232 CK/C3 + H 3132

(1) bearing SKF ..... type 29324

(1) bearing SKF ..... type 22222 C/C3

(2) bearings INA ..... type NA 4906-RS

(1) sealing ring ..... ANGUS MIM 120150 15
(bearing on the side opposite to reducer)

(1) GACO ring ..... type OR 81050
(bearing on the side opposite the reducer)

(8) BEARINGS AND SEALING RINGS ON THE REDUCER

Fast running shaft:	(2)	bearings SKF ..... type 32315
	(1)	sealing ring ANGUS . MIM 75110
Intermediate shaft:	(2)	bearing SKF ..... type 32322
Shaft-running shaft:	(2)	bearings SKF .... type 23036 C
	(1)	sealing ring ANGUS MIM 180210

(9) RECOMMENDED SPARE PARTS

(1) rotor complete of one shaft, feeding screw, helical spiders, bushes and stop nuts

(1) wear bush for packing gland (feeding side)

(1) wear bush for packing gland (discharging side)

(24) cast steel 304 pins teeth complete with stop nuts

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(10) DISASSEMBLY OF THE MACHINE
(see drawing n. 22799)

To disassemble the machine, first of all remove the pins (98) of the two half joints connecting the kneader shaft to the reducer shaft.

Then pull out the two pivots linking the discharging door (84) to the torpress (89).

The proceeding is, then, the following:

(a) Unscrew the bolts (65) joining the two halves of the kneader body.

(b) Unloose the screws (58) connecting the packing glands (67) to the body.

(c) By using the eyebolts, one lifts the top half body; this way, one can remove the fixed teeth (24) by loosening the nuts (25).

(d) Once the top half body has been displaced, the addition of hard material on the beating arms; by welding with electrodes CASTOLIN type 6256 (or equivalent), can be effected without removing the shaft from its seat;
by a slow rotation of the shaft, one can locate each arm so as to make the welding very easy.

(e) If the shaft (57) has to be removed from its seat, the top part of the two supports (31) and (74) must be lifted after unscrewing the bolts (35) and (104) and after removing the cap (47), that is linked to the support by the screws (48).

(f) Once the shaft has been taken off, it is possible to replace, if necessary, the fixed teeth (24) of the bottom half body by unscrewing the nuts (25).

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(g) The linings (93), (95) and (96) can be replaced only after having done what described at the items (a), (b), (c), (d) and (e).
Unloose screws (94) and replace the linings and their screws.

(h) Replacing of the wear bush (72) is performed this way:
- unscrewing the locking nut (107) and the washer (106), one pulls out the bearing (75) and its bush (105);
- one removes: the packing gland flange (69), the packing (56) and the packing gland (67);
- at this point, the wear bush (72) can be replaced by a new one; for the reassembling, the a.m. operations must be repeated in the opposite order.

(i) To replace the wear bush (55) one proceeds as follows:
- unloose the screws (46), remove the washer (45) and pull out the bearing (43);
- displace bearing (44) and ring (41) along the shaft approaching them to the packing gland so as to allow removal of the two halves ring (50);
- once the ring (50) has been removed, pull out ring (41), bearing (44) and the seal ring (52);
- pull out the two locking nuts (54), the flange (69), the packing (56) and the packing gland (67);
- remove wear bush (55) and replace it.

For reassembling, repeat the a.m. operations in the opposite order.

NOTE: replacing the packings can be carried out without disassembling the machine, simply by unscrewing nuts (71) and displacing flange (69) along the shaft, as much as to allow the extraction of the worn packing and the insertion of the new one.

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

(11) DENOMINATION OF THE PART OF THE MACHINE
(see drawing n. 22799)

When ordering the spare parts, please use the figure and the name reported below.

ITEM	DENOMINATION
(1)	foundation slides
(2)	screw M24 x 340
(3)	washer Ø 25 mm
(4)	hexagonal nut M24
(5)	screw M20 x 75
(6)	dowel Ø 20 x 155 mm
(7)	washer I.D. 17 mm
(8)	hexagonal nut M16
(9)	securing screw M27 x 140
(10)	hexagonal nut M27
(11)	dowel
(12)	elastic pin Ø 5 x 40 mm
(13)	feeding screw - 1st part in S.S. 304 casting
(14)	feeding screw - 2nd part in S.S. 304 casting
(15)	mixing arms I - III - V in S.S. 304 casting
(16)	mixing arms II - IV - VI in S.S. 304 casting
(17)	mixing arms VII in S.S. 304 casting
(18)	ending arm in electrowelded S.S. 304
(19)	teeth locking plate
(24)	fixed tooth
(25)	hexagonal nut M36
(26)	washer I.D. 19 mm
(27)	hexagonal nut M18
(28)	door
(29)	stud bolt M18 x 85
(30)	base
(31)	top half support on the discharging door
(32)	hexagonal head screw M24 x 140
(33)	hexagonal nut M24
(34)	washer I.D. 25 mm

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

ITEM	DENOMINATION
(35)	hexagonal head screw M22 x 130
(36)	hexagonal nut M22
(37)	washer I.D. 23 mm
(38)	hexagonal head screw M14 x 14
(39)	gasket
(40)	stop dowel M14 x 14
(41)	ring Ø 120/170 x 31,5
(42)	oil level gauge
(43)	bearing SKF 22222C/C3
(44)	bearing SKF 29324
(45)	washer Ø 128 x 12
(46)	hexagonal head screw M14
(47)	support cap
(48)	hexagonal head screw M14
(49)	gasket GACO OR 81050
(50)	two halves ring Ø 110/130 x 12
(51)	oil cap
(52)	seal ring MIM 120150
(53)	spring spiral Ø 8 mm f.l. 20 wire Ø 2 mm
(54)	locking nut KM 27
(55)	bush on discharging side
(56)	greased asbestos packing
(57)	shaft
(58)	shaft key 36 x 20 x 2680
(59)	socket head screw M8 x 25
(60)	key 36 x 20 x 290
(61)	top half body
(62)	eyebolt thread M30
(63)	bottom half body
(64)	hexagonal head screw M24 x 90
(65)	hexagonal head screw M24
(66)	nut M24
(67)	packing gland
(68)	socket head screw M14 x 35
(69)	packing gland

ASSEMBLY, STARTING-UP AND MAINTENANCE INSTRUCTIONS

DISPERSING KNEADER - TYPE GR-II/4PCS

ITEM	DENOMINATION
(70)	stud bolt M14 x 100
(71)	nut M14
(72)	gear side bush
(73)	stop dowel M12 x 20
(74)	top half support on gear side
(75)	bearing SKF 22232 CK/C3
(76)	hexagonal head screw M30 x 150
(77)	hexagonal nut M30
(79)	door pin support
(80)	pin
(81)	tecalemit 1/8" gas
(82)	socket head screw M16 x 40
(83)	bearing INA NA 4906-RS
(84)	door
(85)	split pin Ø 4 x 25
(86)	pin Ø 4 x 25
(87)	plate
(88)	plate
(89)	torpress 0 FR
(90)	torpress support
(91)	hexagonal head screw M12 x 45
(92)	control board
(93)	doors lining
(94)	flat socket head screw M12 x 30
(95)	top half body lining
(96)	bottom half body lining
(97)	coupling GEP 630
(98)	pin
(99)	nut
(100)	grower
(101)	semi-elastic sheath
(102)	washer
(103)	ring seeger
(104)	hexagonal head screw
(105)	bush H=3132, complete of
(106)	washer and
(107)	locking nut