Service Manual with pertinent information for

SHOWER,C-51,OSCILLATING

MIKE SENCIC
U. S. GYPSUM COMPANY
1255 RARITAN ROAD
CLARK, NJ 07066

YOUR PURCHASE ORDER NO. 449124
OUR SHOP ORDER NO. 2406175

IMPORTANT - DO NOT DESTROY

Model 50/51 Brush Shower
Installation, Operation and Maintenance Instructions

Form CC154, Issue 2, 23Mar05

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Table of Contents

1. Introduction

The Kadant AES Model 50/51 Shower is a precision piece of equipment. As such, effective and dependable operation requires that the shower is properly specified and sized for the application, properly installed and periodically maintained.

Caution: The **maximum allowable** shower water pressure rating is listed on the shower drawing. Precautions should be taken to prevent the shower pipe from seeing water pressures that exceed the value listed. Field modifications, repairs, or damage may negatively affect pipe integrity and reduce the maximum allowable pressure rating. Consult with Kadant AES prior to using the shower pipe for applications other than that listed on the shower drawing.

If, after reviewing this manual, you have any questions or problems, call your Kadant AES Sales Engineer, or Kadant AES.

2. Specification and Sizing

Kadant AES can provide information and recommendations concerning nozzle size, spacing, stroke, flow rates and pressures required to handle individual cleaning applications.

2.1 Shower Pipe Diameter

Shower size required to handle a specific application depends upon the shower span, water pressures and flow rates required. Kadant AES will provide a print of the Model 50/51 shower designed for your particular requirements.

3. Installation

Care should be exercised to protect the shower during handling and placement. If the shower is allowed to strike the frame, damage to the nozzles and bases may result.

Following the procedure below should ensure a trouble free start up.

3.1 Dimensional Check - Model 51

Place the shower on the floor with the universal brackets/bearings in the position illustrated on the shower print; i.e., with the oscillator in the retracted position. In this position, the oscillator end bearing should be 1"-2" from the inside edge of the more highly polished slide bearing area of the pipe. The distance between the mounting holes in the two slide bearings should correspond to the dimension on the shower installation drawing.

3.2 Mounting the Shower

If special mounting pads are required, they should be in place before positioning the shower. Regardless of the mounting configuration used, the position of the slide bearings in relation to the polished area of the pipe should be as described in the section above.

Before bolting the shower to the frame, be sure that the shower is square with the showered surface and level across the machine.

3.3 Nozzle Direction

After the shower is bolted into position, adjust the direction of the nozzles by loosening the guide yoke clamps and rotating the shower to the desired position as specified in the shower print. Retighten clamps. Note: Shower nameplate should be in the 12 o'clock position if the shower is oriented properly.

Caution:

If the shower must be oriented in a direction which varies more than ~20° from that for which the shower was designed, consult with your Sales Engineer, or Kadant AES for instructions on recrowning the shower.

3.4 Flexible Hose Connection (*Reference Form CC161*)

Before connecting the shower to the supply line, flush all piping. The major cause of trouble on new or modified installations is chips, pipe dope and other debris introduced to the system during piping. Flushing the pipes is added insurance against shower nozzle plugging.

Note: Always backwrench the shower when making hose connections. Failure to backwrench may result in a bent guide bar which will lead, in turn, to premature oscillator failure.

3.5 Discharge Piping

It is recommended that the purchaser provide suitable flexible piping from the flush valve for personnel protection and proper contaminant disposal.

4. Oscillator Consideration

4.1 Kadant AES Electro-Mechanical Oscillator - Type 51

Please refer to instructions for specific Kadant AES electro-mechanical oscillator.

4.2 Kadant AES Hydraulic Oscillator - Type 51

4.2.1 Connect the oscillator to a clean, filtered hydraulic fluid supply of between 60 and 120 psi. proper operation of the oscillator depends upon good quality fluid. If clean, fresh water is unavailable, consult with your Kadant AES Sales Engineer regarding the advisability of using a Kadant AES recirculatory system.

4.2.2 The speed of the system is regulated by throttling the discharge valve. The oscillator should be adjusted to provide a speed of approximately 24"/minute. This is equal to one (1) complete stroke/minute for a 12" stroke oscillator.

4.3 Motion Failure Alarm - Type 51 (Hydraulic Oscillators)

If the shower is equipped with a motion failure alarm safety switch, make the required electrical connections according to the instructions supplied with the control panel.

4.4 Oscillation and Alignment Check - Type 51 (Hydraulic Oscillators)

4.4.1 Start oscillator by turning on supply water and throttle to proper speed using valve on oscillator discharge.

4.4.2 To check alignment, grasp the guide bar and rotate it back and forth while the oscillator completes a full stroke out and back. There should be no binding of the guide bar during any portion of the stroke. Note: do not confuse interference from the connector clamp with binding.

4.4.3 If binding occurs, stop the oscillator and check to be certain that the guide bar has not been bent. The main cause of guide bar bending is failure to backwrench the shower during tightening of the flexible hose. A bent guide bar should be replaced since the resulting misalignment will greatly shorten the life of the oscillator.

Also check to be certain that the two (2) guide yoke clamps are in line with the guide bar bushings on the slide bearing housings. (The guide yoke clamps may become misaligned when the nozzle direction is adjusted).

4.4.4 Check motion failure alarm safety switch function according to the separate control panel instructions.

4.5 Oscillation Troubleshooting - Type 51

Properly installed, the oscillator has been proven to be a highly reliable piece of equipment. If the oscillator suddenly becomes a high maintenance item, the cause can usually be traced to one of three reasons:

Reason 1:
Misalignment due to bent guide bar.
Cause: failure to backwrench shower when installing or removing hose.

Reason 2:
Internal Wear (Hydraulic Oscillators)
Cause: Low quality hydraulic fluid. The oscillator is designed to operate using filtered fresh water or other clean hydraulic media (when specified). Note: the internal filter screen supplied with the 880 oscillator is designed to act as a final defense against pipe scale, etc. it should not be relied upon to do the total filtering job except in those cases where the supply water is exceptionally clean.

Reason 3:
Damage due to physical abuse.
Cause: The oscillator is not designed to be used as a step or toe hold while climbing on the machine. The careless use of hammers or oversized wrenches could cause damage to the close tolerance internal vale mechanisms.

5. Safety Precautions

Since this equipment utilizes high pressure water and consists of moving elements, some safety precautions must be taken by the operators. It is the purchaser's responsibility, where necessary, to provide appropriate guards and warning notices.

Particular attention should be given to the following areas.

5.1 High Pressure Water Spray. Provide personnel protection from high pressure spray at edge of sprayed surface where shower oscillation might expose the spray outside of this area. A guard may be required in this area.

5.2 Shower Pipe. Provide personnel protection from exposed end(s) of the shower pipe which may protrude into a tending aisle or walkway. A guard may be required in this area.

5.3 Oscillating Mechanism. Provide personnel protection to prevent operators from accidentally touching moving parts of a mechanism. A guard may be required in this area.

6. Operating Instructions

The Kadant AES Model 50 Stationary and Model 51 Oscillating brush showers are designed for fresh and recycled water applications and incorporate an internal full-length, manually-operated brush. The brush rotates to remove contaminants which block the nozzle orifice opening and also sweeps the pipe I.D. to remove contaminant build up. Flushing and contaminant disposal are accomplished off-process through the flush valve.

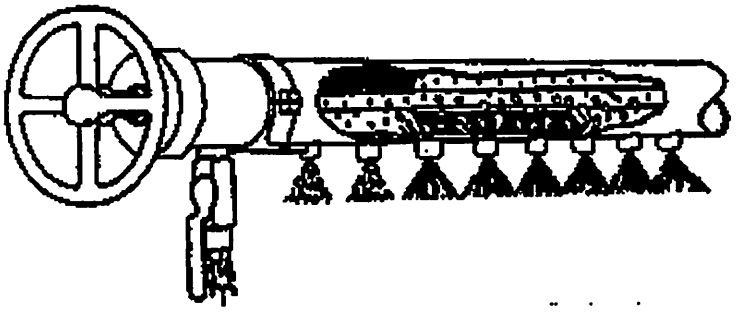

Figure 3

7. Maintenance Instructions.

7.1 Nozzle Orifice Replacement

An increase in design gallonage or a deterioration of the spray pattern indicates that the nozzle insert should be replaced. (For other available patterns contact Kadant AES).

See Figure 4 for nozzle component identification

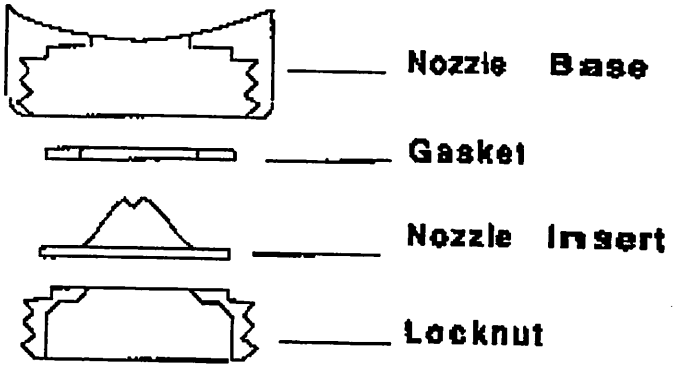

FIGURE 4

7.1.1 Ensure water supply is shut off and brush axle is in the "Park" position. Indicator pin is in the 12 o'clock position at "Park".

7.1.2 Disconnect shower and open flush valve.

7.1.3 Remove shower from machine.

7.1.4 Remove and clean nozzle retaining nut, orifice insert and gasket. A 1" allen key is required.

7.1.5 Discard used insert and gasket.

7.1.6 Clean nozzle base thoroughly, being careful not to damage threads or seal area.

7.1.7 Insert new gasket and nozzle insert.

Note:

- Always use a new gasket. Do not attempt to reuse existing one.
- Ensure that the dimple on the orifice insert is pointing into the shower pipe and that the flats are properly oriented. The nozzle insert locating flats should fit into the corresponding area on the nozzle base.

7.1.8 Install and securely tighten the retaining nut.

7.1.9 Test for leaks and proper spray pattern before reinstalling shower on machine.

7.2 Brush Replacement

The internal brushes are segmented in 18" lengths for ease of replacement. After extended usage, or when brushes continually fail to clean plugged nozzle inserts, consideration should be given to replacing worn brushes. See shower assembly drawing for replacement part number.

Brush replacement procedure is:

7.2.1 Ensure that the water supply has been shut off and the brush axle is in the Park position; i.e., indicator pin is in the 12 o'clock position.

7.2.2 If shower is an oscillating model, ensure that the oscillator is turned off.

7.2.3 Unscrew the end cap which holds the handwheel/seal assembly.

7.2.4 Pull the brush assembly, including the handwheel/ratchet shaft and end cap, out of the pipe. Model 51 oscillating showers include an internal half coupling for the purge valve outlet. The brush assembly will have to be rotated 120° each time the next brush interferes with the coupling as the assembly is withdrawn.

Caution: This assembly should be carefully supported during removal in order to prevent bending damage.

7.2.5 Removal of the retaining pins will allow brush segment removal.

7.2.6 To replace segment, firmly seat brush in the holder channel. Install new retaining pins. Push pins through the bristles.

7.3 Handwheel Shaft Maintenance

If leaking is detected around the handwheel shaft, the shaft seal must be replaced. Referring to Figure 5 below, the procedure is:

7.3.1 Remove end cap.

7.3.2 Withdraw brush assembly far enough to disconnect handwheel/ratchet shaft from main brush shaft.

7.3.3 Remove end cap and handwheel assembly to bench and loosen clamp collar.

7.3.4 Withdraw axle toward handwheel side far enough to expose the seal.

7.3.5 Remove old seal. Lubricate new seal and place in housing assembly. Push shaft assembly through housing so that indicator pin collar on the wheel side is within 1/4" of end cap.

7.3.6 Reinstall, in order, the retainer, spacer and locking collar. Slide them up to the housing and tighten the locking collar to 90 inch-pounds maximum.

7.3.7 Rejoin the coupling at the shaft/brush axle joint.

7.3.8 Slide the entire assembly into the pipe and refasten the end cap.

7.3.9 For re-assembly, reverse above instructions.

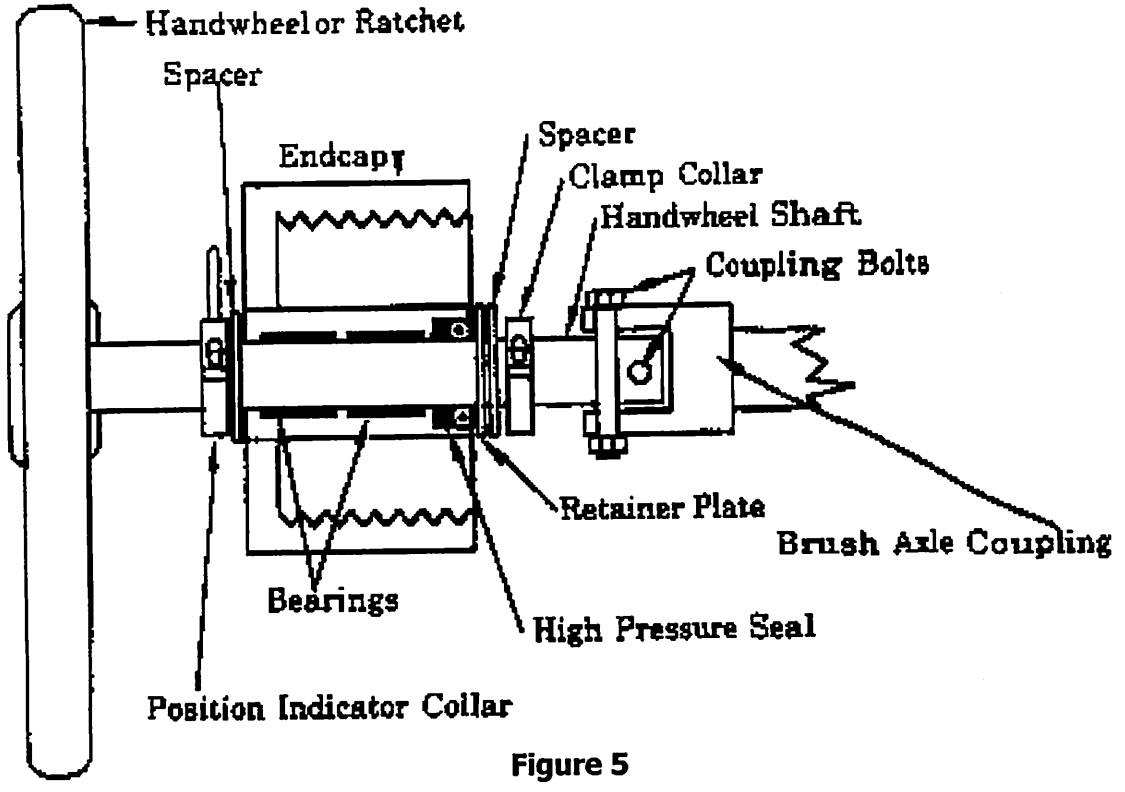

Figure 5

8. Recommended Spare Parts

Quantity	Kadant AES Part Number	Description
2	A23957	Bearing
1	A23959	Seal
	A20293GP__	Brush Segments (see assembly drawing)
	C14217	Nozzle Gasket (see assembly drawing)
	C14506GP__	Nozzle (see assembly drawing or form 669)

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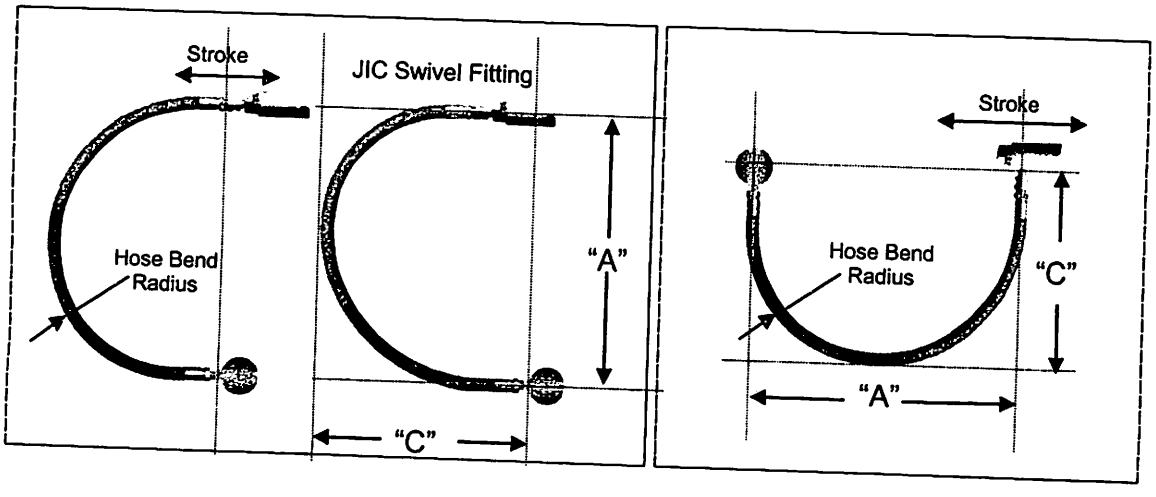
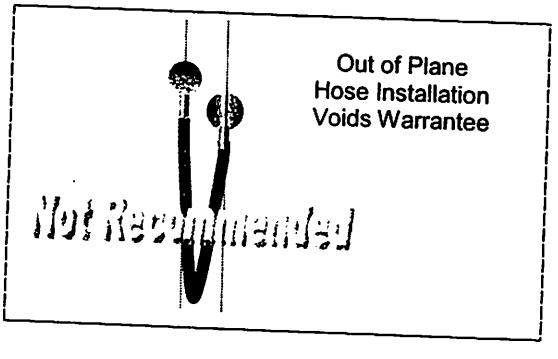
Flexible High Pressure Hose Installation Instructions

- For maximum hose life (and to prevent voiding the warrantee) hose end connections should be located in a plane that passes through the axis of the shower pipe.
- Do not force hose into smaller than minimum bend radius.

Hose Diameter	"A" Minimum	"C" Minimum	Minimum Bend Radius	KAES Standard Length
1"	24"	20"	12"	60"
1 ½"	40"	35"	20"	98"
2"	50"	35"	25"	98"





*Asterisk denotes change.

Kadant AES SO # 2406175
Prepared By (initials) TWH

Edit Sheet 1 of 2
Date (MDY) 2/9/05

FIXED-ORIFICE, BRUSH, & PURGE SHOWER
AES Service Manual Edit Sheet/Table of Contents

Items	✔	Doc/Dwg#	Notes	Description
Doc(s)	[✓]	SET-1		ALL SHOWERS
*		Form CC067		FO/B/P Shower Service Manual Edit Sheet
		Form CC161		Flexible Hose Application & Installation Instructions
		~~Form CC159~~	~~AES PAN SHRW ONLY~~	Fan Nozzle Coverage Chart
		SET-2		FIXED-ORIFICE SHOWERS
*	[ ]	Form CC153		Type **29/2900** Shower Instruction Manual
	[ ]	Form CC162		Type **32** Shower Instruction Manual
	[ ]	Form CC113		Type **39** Shower Instruction Manual
*	[ ]	Form CC069		Type **2000** Shower Instruction Manual
	[ ]	Form CC110		Type **3000** Shower Instruction Manual
		SET-3		BRUSH SHOWERS
	[✓]	Form CC154		Type **50/51** Shower Instruction Manual
*	[ ]	Form CC155		Type **2050/2051** Shower Instruction Manual
*	[ ]	Form CC114		Type **3051** Shower Instruction Manual
	[ ]	Form CC116		Type **3951** Shower Instruction Manual
	[ ]	Form CC051 →	OPTION	Auto Brush Actuator Edit Sheet **[fill-in]**
		SET-4		PURGE SHOWERS
	[ ]	Form CC153		Type **42** Shower Instruction Manual
*	[ ]	Form 252A	PLUS FORMS BELOW	Type **43** Shower Instruction Manual
	[ ]	Form CC117	CC163 & CC068	Type **3943** Shower Instruction Manual
	[ ]	SET 4 (Must include the following with all Set 4 Showers)		
		Form CC163	*inc with Set-4*	Maintenance Instructions Kadant AES PP Self-Purging Nozzles
		Form CC068 →		Purge Panel Edit Sheet **[fill-in]**
Doc(s)	[ ]			
	[ ]			
	[ ]			
	[ ]			
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OSCILLATION OPTIONS & DRAWINGS ARE LOCATED ON PAGE 2

INSTRUCTIONS:
1) Edit Sheet to be completed by Production Engineering and/or other.
2) Indicate requirements by placing a checkmark (✔) in the box next to the appropriate set of docs/dwgs. If the set selected has this symbol (☜), it means that there is a choice among the docs/dwgs. Circle the ☜ to indicate the choice and crossout the numbers of the other ones.
3) Docs (forms) Requirements: refer to the "notes" column for guidance.
4) For sorting purposes, the forms have been or will be renumbered as a three-digit, zero-suppressed number.
5) For configured drawings, enter the main number on the left and the various line numbers (LN#s) on the right (example: 9612345 LN#s 01,18,25).

*Asterisk Denotes Change.

Kadant AES SO # _____ Edit Sheet 2 of 2

Prepared By (initials) _____ Date (MDY) __/__/__

FIXED-ORIFICE, BRUSH, & PURGE SHOWER

AES Service Manual Edit Sheet/Table of Contents

Items	✔	Doc/Dwg#	Notes	Description
Doc(s)		SET-5	OSCILLATOR	OSCILLATION OPTION
	[ ]	Form CC099	[fill-in]	ArcDrive Oscillator Edit Sheet
	[ ]	Form CC052	[fill-in]	EHO Oscillator Edit Sheet
	[ ]	Form CC101	[fill-in]	EMOIII Oscillator Edit Sheet (COMPREHENSIVE)
		Form CC058	ARCHIVED	EMOIII Oscillator Edit Sheet (STANDARD)
	[ ]	Form CC079	[fill-in]	880/880-4 Hyd Osc Edit Sheet
	[ ]	Form CC008	[fill-in]	2880 EMO (Crank Arm) Osc Edit Sheet
	[ ]	Form CC087	[fill-in]	OutBack™ Oscillator Edit Sheet
	[ ]	Form CC055	[fill-in]	Posi-Stroke Oscillator Edit Sheet
	[ ]	Form	[fill-in]	

Dwg(s)	✔	SET-1	SHOWER ASSEMBLY MODEL / NOZ ASM P/N / PAGE
	[✓]	2406175 LN#s 01	51 Shower B36132G 04 B-_____
		LN#s	_____ Shower B-_____
		LN#s	_____ Shower B-_____
		LN#s	_____ Shower B-_____
		LN#s	_____ Shower B-_____
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		LN#s	_____ Shower B-_____

Dwg(s)			
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SERVICE MANUAL

02/09/05
Page 1

Sales Order: 2406175
PO Nbr: 449124
Salesman: 309
Ship Via: TRK-CH
Remarks: FHB/RFM - MAB

Bill To: 00236335

U. S. GYPSUM COMPANY
1255 RARITAN ROAD
CLARK, NJ 07066

Ship To: 00136335

U. S. GYPSUM COMPANY
1255 RARITAN ROAD
CLARK, NJ 07066

Ln	Item Number	Date Due	Qty Ordered	UM
1	2406175-01	06/29/05	1.0	EA
	SHOWER,C-51,OSCILLATING (LESS OSCILLATOR)			
2	MANUALS	06/29/05	2.0	
	INSTALLATION MANUALS			
	ATTN:MIKE SENCIC			
	ADDR:SHIP-TO			
	-			
	SEND WITH SHIPMENT			