

FAMCO



LINEAR BACK GAGE

SERVICE MANUAL

READ THIS MANUAL CAREFULLY

It is essential to give the Serial Number of your machine in any order of repair parts to assure prompt and accurate service.

Order repair parts by part numbers, description and machine serial number.



MILWAUKEE
SLIDE AND
SPINDLE

CINCINNATI PRECISION MACHINERY 513-860-4133

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CINCINNATI PRECISION MACHINERY 513-860-4133

CAUTION

POINT OF OPERATION HAZARD

REAR AREA OF SHEAR

NEVER PLACE YOUR HANDS, OR ANY PART OF YOUR BODY UNDER THE CROSSHEAD (RAM), BACKGAGE, OR IN THE POINT OF OPERATION, WHILE SHEAR MOTOR IS RUNNING

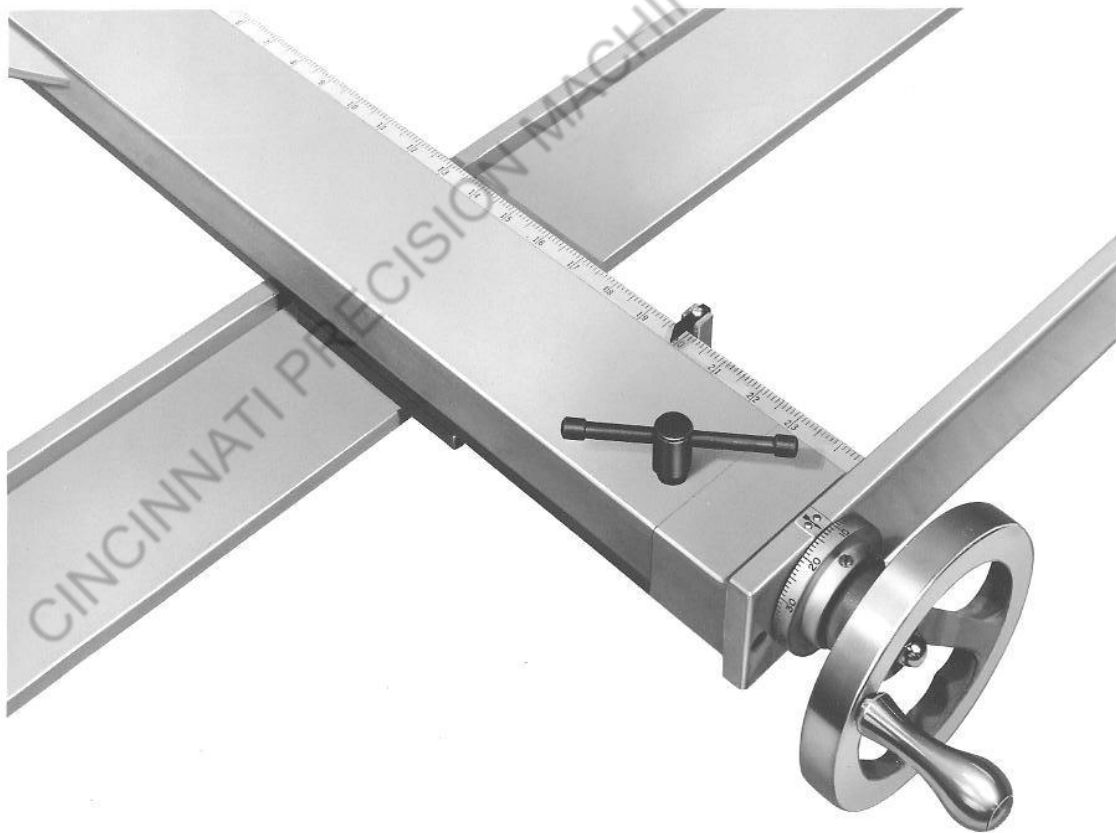
STAY AWAY FROM THE REAR AREA OF THE SHEAR WHILE MACHINE IS OPERATING

THE EMPLOYER SHALL ESTABLISH AND ENSURE ADHERENCE TO SAFE WORKING PROCEDURES REGARDING THE OPERATIONS REQUIRED AT THE REAR OF THE SHEAR AND SHALL PROVIDE ADEQUATE SAFEGUARDS TO MINIMIZE THE HAZARDS FROM MOVING PARTS AND FROM SLIDING OR FALLING MATERIAL THAT HAS BEEN SHEARED. (ANSI B11.4 PAR. 5.2.2.2)

This manual has been written to instruct the operator in the operation and maintenance of the FAMCO BACK GAGE. When written, it was completely up-to-date. Because of the later improvements in design, descriptions may vary slightly from the back gage delivered to you.

Your FAMCO BACK GAGE is a precision-built, accurate, quality machine tool. Careful attention to the adjustment and maintenance of the back gage should result in many years of trouble-free service. Although your back gage has been carefully inspected and tested in our plant, some of the adjustments may have been disturbed in transit. Therefore, it is recommended that your maintenance personnel and machine operators carefully read these instructions before the back gage is operated. Additional copies of this manual will be furnished on request at additional charge. We can assume no liability for unauthorized alterations or attachments to the back gage.

16-2500 Rear Operated Ball Bearing Back Gage



16-2500 Rear Operated Ball Bearing Back Gage Assembly



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CINCINNATI PRECISION MACHINERY 513-860-4123

BALL BEARING BACK GAGE

Receipt and Inspection

Check the back gage immediately when first received for obvious shipping damage or missing parts. All damages should be promptly reported to the carrier, and the carrier's agent should inspect the damaged unit before proceeding with installation.

Installation (Rear Operated Only)

Secure the back gage to the shear by fastening the arms to the underside of the crosshead using socket head cap screws and washers as shown on drawing.

Operation

When moving the back gage to a new setting, turn beyond the desired length and then crank forward to the desired position and lock with the lock knob.

If an angular cut is desired, first uncouple the left arm sprocket by loosening the acorn nut and pull back the clutch.

The angle can then be set with a protractor by turning the hand-wheel until the desired angle has been reached. You now re-engage the clutch and you set your gage for the desired length.

To Re-Square the Back Gage:

1. Bring bar against blade to establish which side does not touch.
2. Looking from the front of the machine. If the left side does not touch proceed as follows:
 - A. Loosen acorn nut of left arm & pull back clutch
 - B. Turn right end out to approximately the same distance from the blade as the left end.
 - C. Retighten clutch.
 - D. Turn bar against blade & recheck.

Repeat above procedure until the left end is against the blade. You are now ready to check the squareness with a .002 feeler gage.

3. If the right side does not touch proceed as follows:
 - A. Bring left end of bar against blade.
 - B. Loosen clutch as described above.
 - C. Turn right end against blade.
 - D. Retighten clutch.
 - E. Check squareness with feeler gage.

Lubrication

All bearings are of the sealed type and require no lubrication. The only recommended lubrication is the weekly oiling of all the machined way surfaces and greasing of both lead screw nuts.

PARTS LIST FOR 16-2500
REAR OPERATED BALL BEARING BACK GAGE

1	9133-3510	Soc Hd Cap Sc 3/8 x 2½
2	9228-5190	Lockwasher 3/8
3	9228-7190	Washer SAE 3/8
4	1010-175	Dowel Bushing
5	9133-3940	Soc Hd Cap Sc 1/2 x 2
6		
7	9228-5210	Lockwasher 1/2
8	9238-0690	Roll Pin 1/8 x 7/8
9	1272-269A	Bearing Housing
10	9132-2490	Soc Hd Cap Sc 1/4 x 2
11	9132-2510	Soc Hd Cap Sc 1/4 x 2½
12	See Page 4	Chain Guard
13	1272-275A	Clutch Sprocket
14	1272-274A	Clutch
15	9227-1190	Acorn Nut 3/8
16	1010-289	Guide Block
17	9132-2430	Soc Hd Cap Sc 1/4 x 3/4
18	1272-260	Lead Screw 24"
18	1272-261	Lead Screw 36"
19	1272-251A	Right Guide Arm 24"
19	1272-253A	Right Guide Arm 36"
20	1010-141A	Guide Support 24"
20	1010-190A	Guide Support 36"
21	1272-277A	Pointer
22	1272-283	Scale 24"
22	1272-284	Scale 36"
23	1010-182A	Locking Handle
24	1010-149A-3	Spacer
25		
26	9245-9290	Retaining Ring
27	9450-0680	Ball Bearing
28	59-057	Dial Indicator
29	9218-0330	Tapping Screw #2 x 1/4
30	1272-279A	Graduated Dial
31	9001-0820	Machine Key 1/8 x 1/8 x 1
32	1010-180A	Handwheel
33	9228-1190	Flat Washer 3/8
34	9226-2730	Self Locking Nut 3/4 NF
35	9228-2230	Washer 3/4
36	1010-166	Mounting Stud
37	See Page 4	Back Gage Bar Assem
38	1010-155A	Nut & Bottom Plate Assem
39	9132-2420	Soc Hd Cap Sc 1/4 x 5/8
40	9238-0670	Roll Pin 1/8 x 5/8
41	9228-5150	Lockwasher 1/4
42	1010-213	Doweled Guide Bar 24"
42	1010-215	Doweled Guide Bar 36"

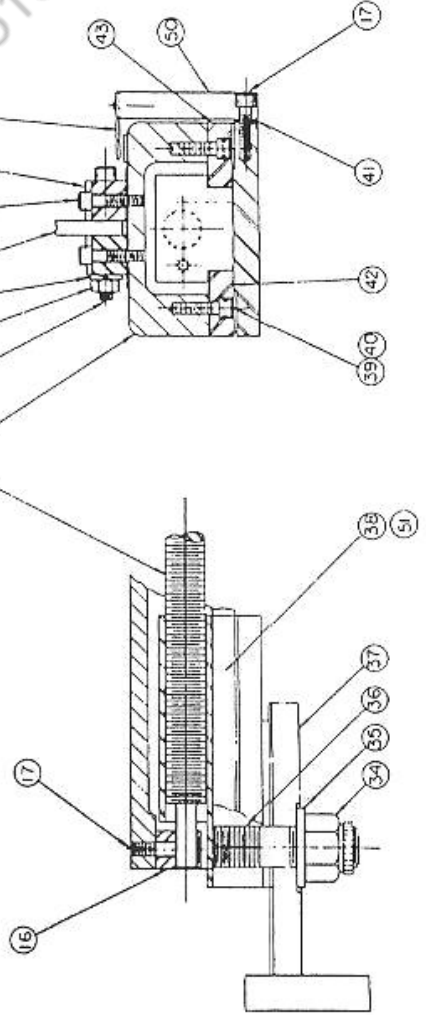
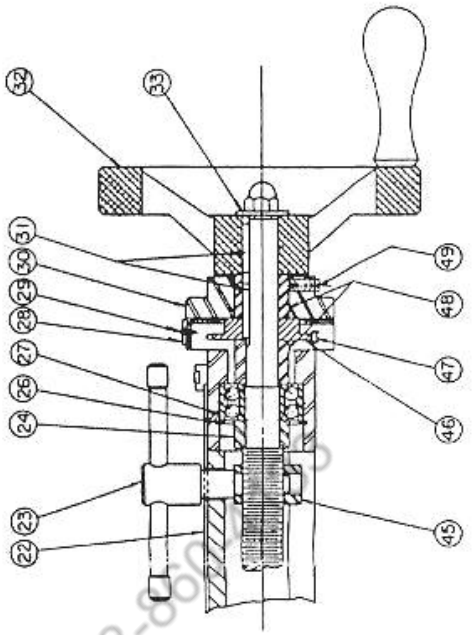
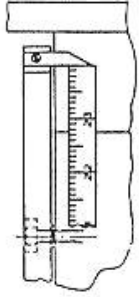
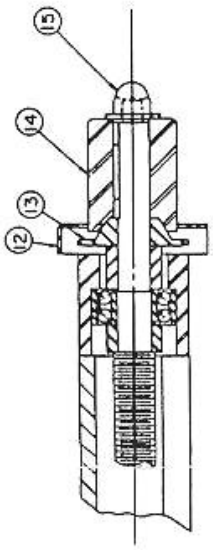
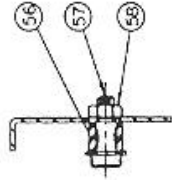
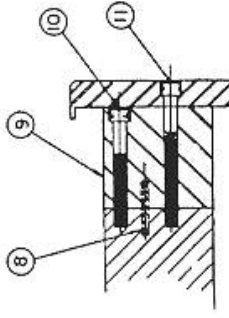
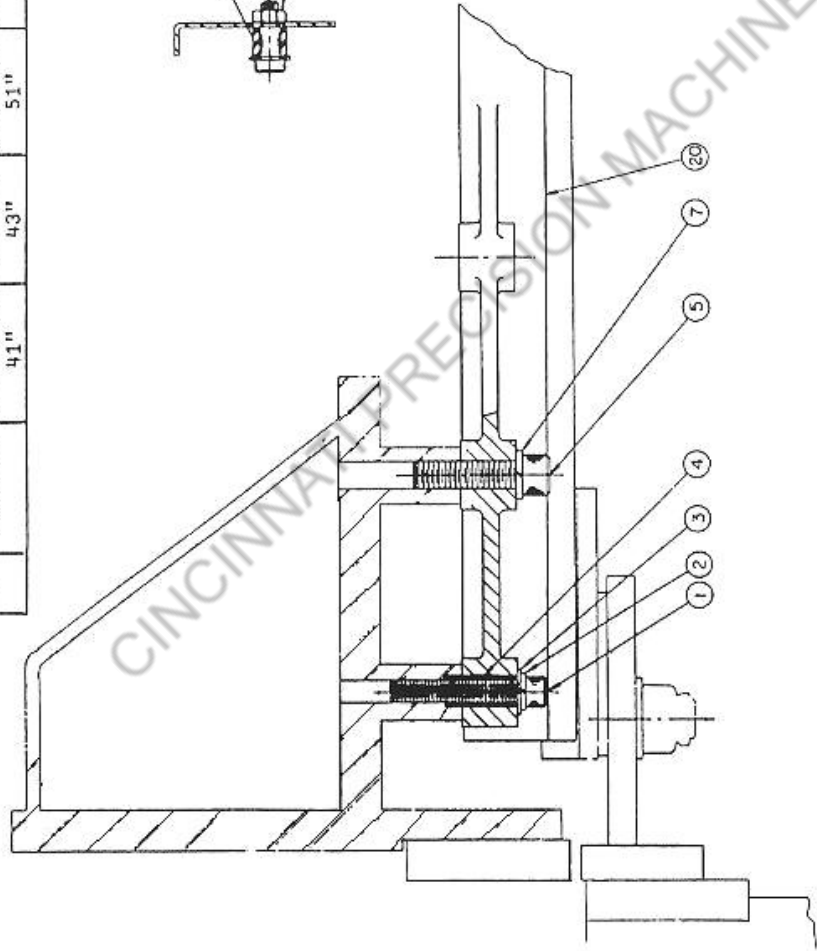
PARTS LIST FOR 16-2500 (CON'T)
REAR OPERATED BALL BEARING BACK GAGE

43	1010-214	Plain Guide Bar 24"
43	1010-216	Plain Guide Bar 36"
45	1010-181A	Locking Block
46	1272-276A	Driver Sprocket
47	See Page 4	Roller Chain
48	1272-288A	Bushing
49	9150-2420	Set Screw 1/4 x 5/8
50	1272-278A	Indicator Arm
51	9270-3020	Grease Fitting
52	9223-2150	Hex Jam Nut 1/4
53	1010-226	Arm Support 24"
53	1010-227	Arm Support 36"
54	9132-2450	Soc Hd Cap Sc 1/4 x 1
55	1010-225	Support Block
56	9454-5820	Flanged Bearing
57	9174-3430	Shoulder Bolt 3/8 x 5/8
58	9223-2180	Hex Nut 5/16

NO	SHEAR	24"	36"	42"	48"	52"
12	PT. NO.	1224-280A	1436-280A	1442-280A	1048-280A	1252-280A
37	PT. NO.	1224-366A	1436-366A	1442-366A	1048-366	1452-366
47	PT. NO.	1224-281	1436-281	1442-281	1048-281	1252-281
		41"	43"	51"	59"	55"

NO	SHEAR	60"	72"	96"	10'	12'
12	PT. NO.	1260-280A	1272-280A	1496-280A	1410-280	1612-280
37	PT. NO.	1460-366A	1672-366A	1696-366A	1010-366	1212-366
47	PT. NO.	1260-281	1272-281	1496-281	1410-281	1612-281
		71"	95"	117"	135"	155"

No.	Shear	24"	36"	42"	48"	52"	60"	72"	96"	10 ft.	12 ft.
12	Part No.	1224-280A	1436-280A	1442-280A	1048-280A	1252-280A	1260-280A	1272-280A	1496-280A	1410-280	1612-280
37	Part No.	1224-366A	1436-366A	1442-366A	1048-366	1452-366	1460-366A	1672-366A	1696-366A	1010-366	1212-366
47	Part No.	1224-281	1436-281	1442-281	1048-281	1252-281	1260-281	1272-281	1496-281	1410-281	1612-281
		41"	43"	51"	59"	55"	71"	95"	117"	135"	155"



REAR OPERATED BALL BEARING BACK GAGE
 Assembly Drawing No. 16-2500

CINCINNATI PRECISION MACHINERY 513-860-4133

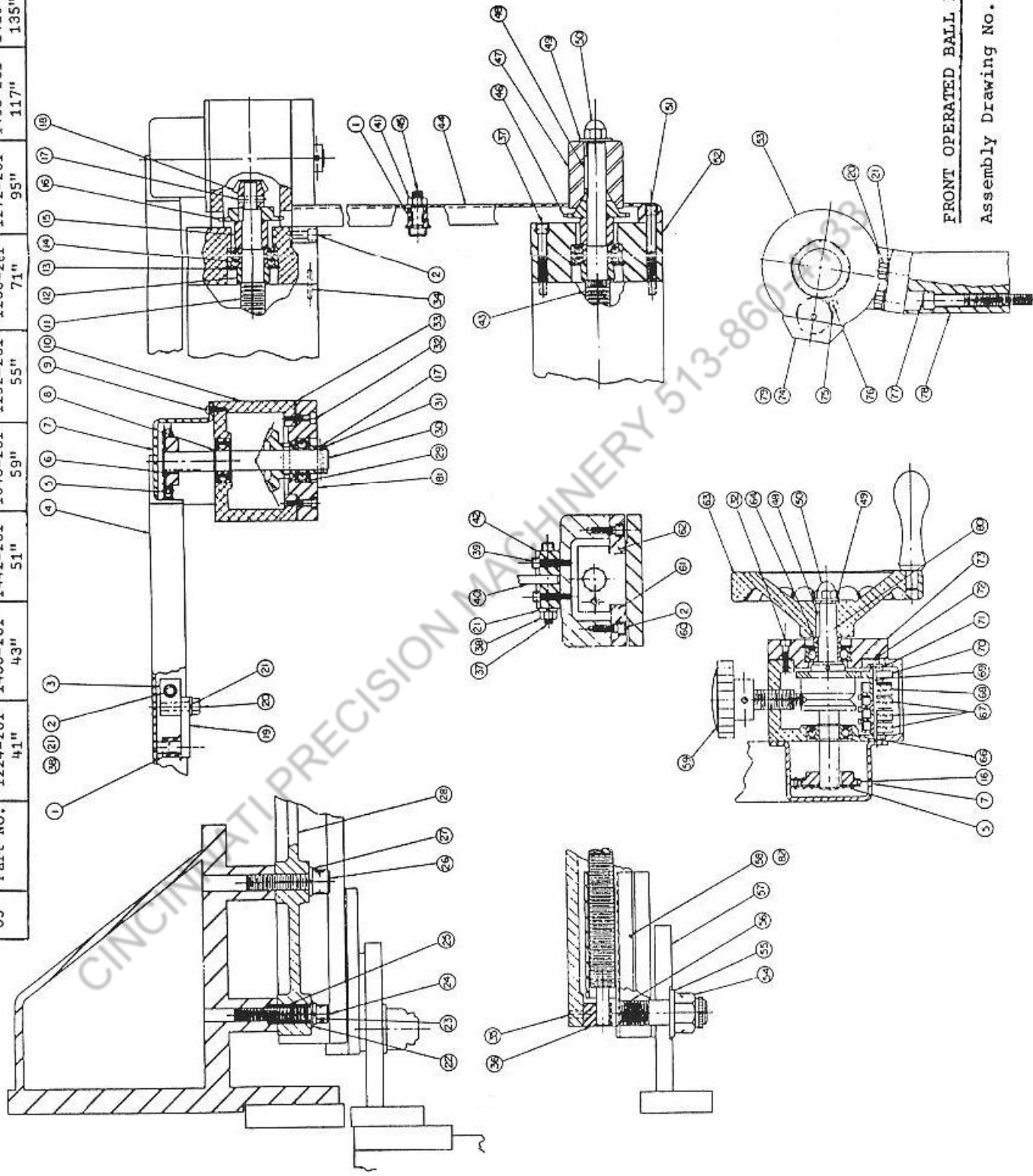
PART LIST FOR 16-2300
FRONT OPERATED BALL BEARING BACK GAGE

1	9454-5820	Flanged Bearing
2	9132-2420	Soc Hd Cap Sc 1/4 x 5/8
3	1010-233	Chain Idler Block
4	1010-228	Counter Chain Guard 24"
4	1010-229	Counter Chain Guard 36"
5	9410-2100	Roller Chain
6	9001-0780	Machine Key 1/8 x 3/8
7	1010-234	Sprocket Housing
8	9245-1220	Retaining Ring
9	9213-1650	Self Tapping Screw
10	1272-241	Gear Housing
11	1272-244	Drive Screw 24"
11	1272-245	Drive Screw 36"
12	1010-149A-3	Spacer
13	9245-9290	Retaining Ring
14	9450-0680	Ball Bearing
15	1272-288A	Bushing
16	1272-276A	Driver Sprocket
17	9238-1690	Roll Pin 3/16 x 7/8
18	1010-149-2	Bevel Gear
19	1010-232	Chain Idler
20	9126-2450	Hex Hd Cap Sc 1/4 x 1
21	9228-5150	Lockwasher 1/4
22	9228-7190	Washer SAE 3/8
23	9228-5190	Lockwasher 3/8
24	9133-3510	Soc Hd Cap Sc 3/8 x 2½
25	1010-175	Bushing
26	9133-3940	Soc Hd Cap Sc 1/2 x 2
27	9228-5210	Lockwasher 1/2
28	1010-141A	Guide Arm 24"
28	1010-227	Guide Arm 36"
29	9245-9250	Retaining Ring
30	1272-243	Left Shaft Assembly
31	1010-251A	Spacer
32	9132-1680	Soc Hd Cap Sc#10 x 3/4
33	1010-236	Bearing Cap Shims
34	9238-0690	Roll Pin 1/8 x 7/8
35	9132-2430	Soc Hd Cap Sc 1/4 x 3/4
36	1010-289	Guide Block
37	9132-2490	Soc Hd Cap Sc 1/4 x 2
38	9223-2150	Jam Nut 1/4
39	9132-2450	Soc Hd Cap Sc 1/4 x 1
40	1010-226	Arm Support 24"
40	1010-227	Arm Support 36"
41	9223-2280	Hex Nut 5/16
42	1010-225	Support Block

PARTS LIST FOR 16-2300 (CONT'D)
FRONT OPERATED BALL BEARING BACK GAGE

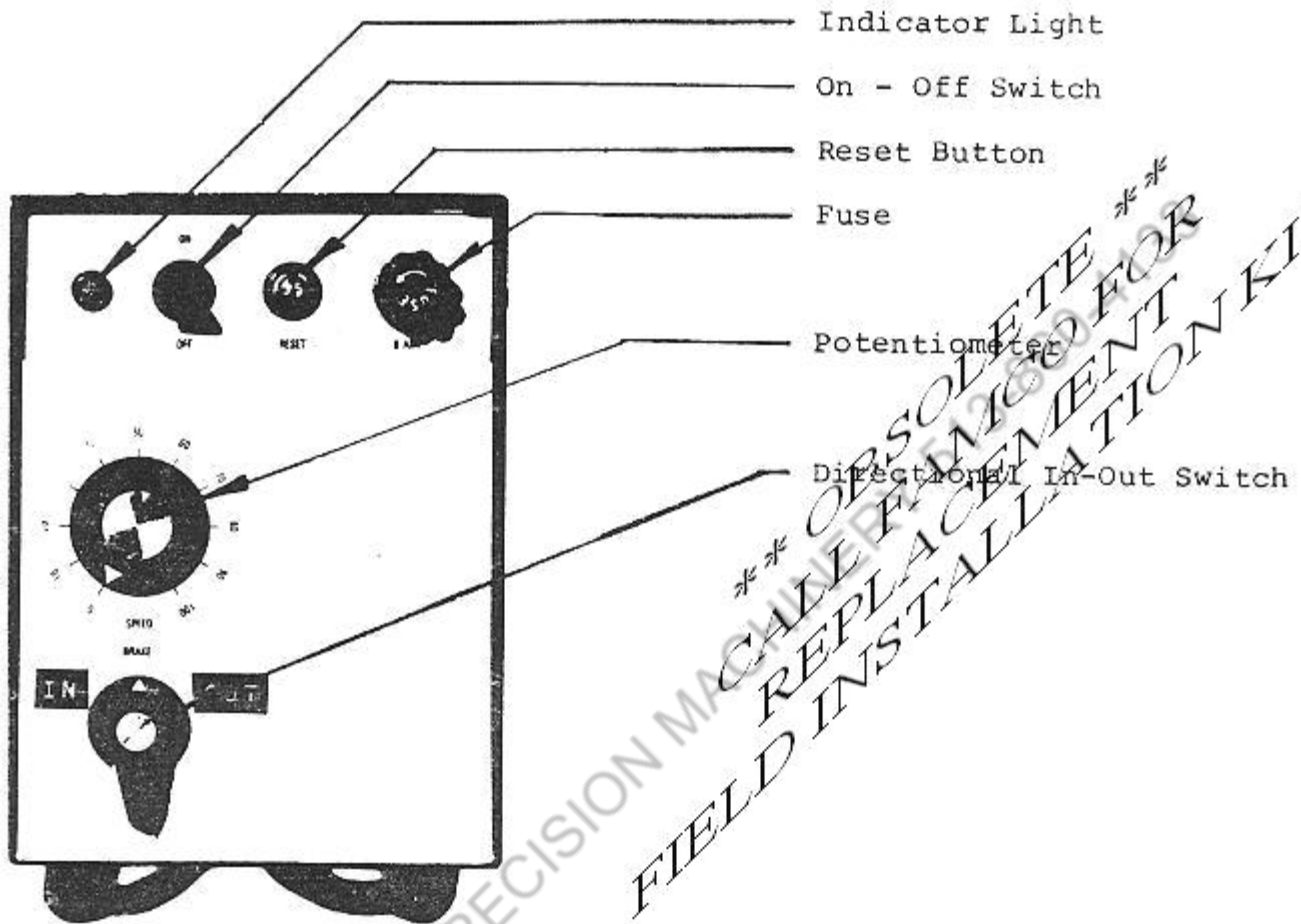
43	1272-260	Lead Screw 24"
43	1272-261	Lead Screw 36"
44	See Page 8	Chain Guard
45	9174-3430	Shoulder Bolt 3/8 x 5/8
46	1272-275A	Clutch Sprocket
47	1272-274A	Clutch
48	9001-0820	Machine Key 1/8 x 1
49	9228-1190	Flat Washer 3/8
50	9227-1190	Acorn Nut 3/8
51	9132-2510	Soc Hd Cap Sc 1/4 x 2½
52	1272-269A	Bearing Housing
53	1010-221	Counter Housing
54	9226-2730	Self Locking Nut 3/4 NF
55	9228-2230	Washer 3/4
56	1010-166	Mounting Stud
57	See Page 8	Back Gage Bar Assem
58	1010-155A	Nut & Bottom Plate Assem
59	1010-222	Lock Knob Assembly
60	9238-0670	Roll Pin 1/8 x 5/8
61	1010-213	Doweled Guide Bar 24"
61	1010-215	Doweled Guide Bar 36"
62	1010-214	Plain Guide Bar 24"
62	1010-216	Plain Guide Bar 36"
63	1010-180A	Handwheel
64	1010-176	Spacer
65	See Page 8	Roller Chain
66	9450-0620	Gear Housing Bearing
67	9999-0651	Number wheel
68	9999-0652	Unit Wheel
69	9238-0350	Roll Pin 1/16 x 3/8
70	9410-3480	Counter Pinion (48) Teeth
71		#4-40 Set Sc (Furnished w/ 1010-170)
72	1010-171	Counter Wheel Shaft
73	1010-154	Bearing Cap
74	1010-144A	Gear Housing Cover
75	9999-0583	Pinion
76	1010-172	Counter Pinion Shaft
77	9132-3530	Soc Hd Cap Sc 3/8 x 3
78	1010-224	Counter Mount
79	1010-145	Housing Cover Window
80	1010-235	Manual Counter Shaft
81	1272-242	Bearing Cap
82	9270-3020	Grease Fitting

No.	Shear	24"	36"	42"	48"	52"	60"	72"	96"	10 ft.	12 ft.
44	Part No.	1224-240	1436-240	1442-240	1048-240	1252-240	1260-240	1272-240	1496-240	1410-240	1612-240
57	Part No.	1224-366A	1436-366A	1442-366A	1048-366	1452-366	1460-366A	1672-366A	1696-366A	1010-366	1212-366
65	Part No.	1224-281	1436-281	1442-281	1048-281	1252-281	1260-281	1272-281	1496-281	1410-281	1612-281
		41"	43"	51"	59"	55"	71"	95"	117"	135"	155"



FRONT OPERATED BALL BEARING BACK GAGE
 Assembly Drawing No. 16-2300

POWER BACK GAGE CONTROLLER



The Power Back Gage is electrically connected with the shear motor. In order to move the Back Gage Bar, you must start up the shear.

When changing set-up, turn switch to "in" to decrease setting and "out" to increase the desired setting. Use maximum speed setting until you are within $\frac{1}{4}$ " to $\frac{1}{2}$ " of the desired setting, then reduce speed as needed until you reach the desired position.

NOTE: DO NOT leave speed setting at zero when the in-out switch is in either "in" or "out" position as this will cause an overload - ALWAYS turn switch to the brake position when desired setting is obtained.

Empty, clean and refill Power Back Gage Gear Motor annually with Mobil Compound DD.

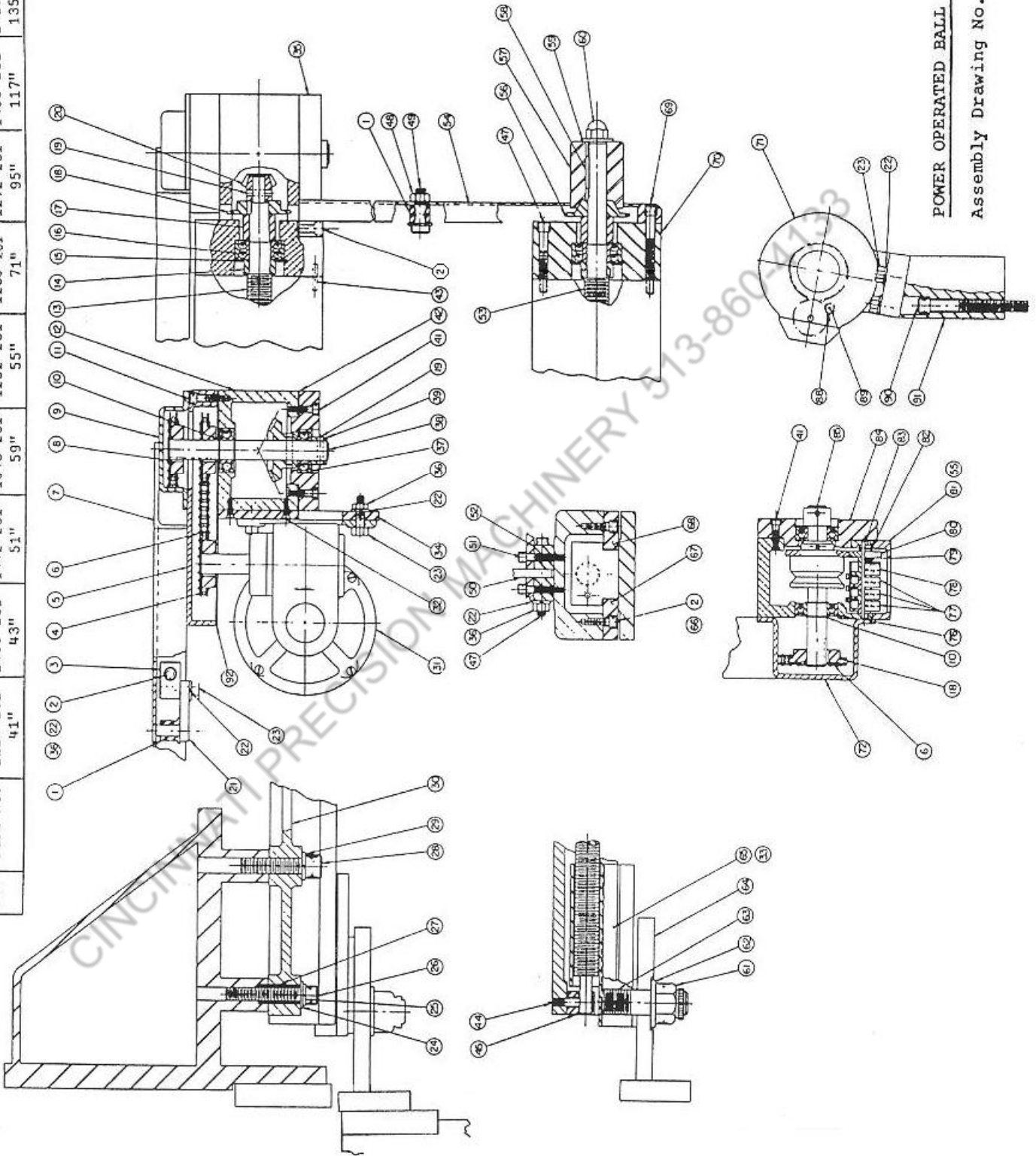
PARTS LIST FOR 16-2800
POWER OPERATED BALL BEARING BACK GAGE

1	9454-5820	Flanged Bearing
2	9132-2420	Soc Hd Cap Sc 1/4 x 5/8
3	1010-233	Chain Idler Block
4	1010-237	Driver Sprocket
5	1010-231	Chain Guard
6	9410-2100	Roller Chain
7	1010-228	Counter Chain Guard 24"
7	1010-229	Counter Chain Guard 36"
8	9001-0780	Machine Key 1/8 x 3/8
9	1010-230	Sprocket Housing
10	9245-1220	Retaining Ring
11	9132-1700	Soc Hd Cap Sc #10 x 1
12	1272-241	Gear Housing
13	1272-244	Drive Screw 24"
13	1272-245	Drive Screw 36"
14	1010-149A-3	Spacer
15	9245-9290	Retaining Ring
16	9450-0680	Ball Bearing
17	1272-288A	Bushing
18	1272-276A	Driver Sprocket
19	9238-1690	Roll Pin 3/16 x 7/8
20	1010-149-2	Bevel Gear
21	1010-232	Chain Idler
22	9228-5150	Lockwasher 1/4
23	9126-2450	Hex Hd Cap Sc 1/4 x 1
24	9228-7190	Washer SAE 3/8
25	9228-5190	Lockwasher 3/8
26	9133-3510	Soc Hd Cap Sc 3/8 x 2 1/2
27	1010-175	Bushing
28	9133-3940	Soc Hd Cap Sc 1/2 x 2
29	9228-5210	Lockwasher 1/2
30	1010-141A	Arm Support 24"
30	1010-227	Arm Support 36"
31	9500-0211	Motor
32	9102-1670	Fl Hd Mach Sc #10 x 1/2
33	9270-3020	Grease Fitting
34	1010-223	Motor Mount
35	1272-242	Bearing Cap
36	9223-2150	Hex Jam Nut 1/4
37	9245-9250	Retaining Ring
38	1272-243	Left Shaft Assembly
39	1010-251A	Spacer
41	9132-1680	Soc Hd Cap Sc #10 x 3/4
42	1010-236	Bearing Cap Shims
43	9238-0690	Roll Pin 1/8 x 7/8

PARTS LIST FOR 16-2800 (CON'T)
POWER OPERATED BALL BEARING BACK GAGE

44	9132-2430	Soc Hd Cap Sc 1/4 x 3/4
45	1010-289	Guide Block
47	9132-2490	Soc Hd Cap Sc 1/4 x 2
48	9223-2180	Hex Nut 5/16
49	9174-3430	Shoulder Bolt 3/8 x 5/8
50	1010-226	Arm Support 24"
50	1010-227	Arm Support 36"
51	9132-2460	Soc Hd Cap Sc 1/4 x 1 1/2
52	1010-225	Support Block
53	1272-260	Lead Screw 24"
54	See Page 12	Chain Guard
55	1010-145	Housing Cover Window
56	1272-275A	Clutch Sprocket
57	1272-274A	Clutch
58	9001-0820	Machine Key 1/8 x 1
59	9228-1190	Flat Washer 3/8
60	9227-1190	Acorn Nut 3/8
61	9226-2730	Self Locking Nut 3/4 NF
62	9228-2230	Washer 3/4
63	1010-166	Mounting Stud
64	See Page 12	Back Gage Bar Assem
65	1010-155A	Nut & Bottom Plate Assem
66	9238-0670	Roll Pin 1/8 x 5/8
67	1010-213	Doweled Guide Bar 24"
67	1010-215	Doweled Guide Bar 36"
68	1010-214	Plain Guide Bar 24"
68	1010-216	Plain Guide Bar 36"
69	9132-2510	Soc Hd Cap Sc 1/4 x 2 1/2
70	1272-269A	Bearing Housing
71	1010-143A	Counter Housing
72	1010-234	Sprocket Housing
76	9450-0620	Gear Housing Bearing
77	9999-0651	Number Wheel
78	9999-0652	Unit wheel
79	9238-0350	Roll Pin 1/16 x 3/8
80	9410-3480	Counter Pinions (48) Teeth
81	1010-144A	Gear Housing Cover
82		#4-40 Set Sc. (Furnished w/ 1010-170)
83	1010-171	Counter Wheel Shaft
84	1010-154	Bearing Cap
85	1010-220	Power Counter Shaft
86	See Page 12	Roller Chain
88	9999-0583	Pinion
89	1010-172	Counter Pinion Shaft
90	9132-3530	Soc Hd Cap Sc 3/8 x 3
91	1010-224	Counter Mount
92	1010-238	Cover

No. • Shear	24"	36"	42"	48"	52"	60"	72"	96"	10 ft.	12 ft.
54	1224-240	1436-240	1442-240	1048-240	1252-240	1260-240	1272-240	1496-240	1410-240	1612-240
64	1224-366A	1436-366A	1442-366A	1048-366	1452-366	1460-366A	1672-366A	1696-366A	1010-366	1212-366
86	1224-281	1436-281	1442-281	1048-281	1252-281	1260-281	1272-281	1496-281	1410-281	1612-281
	41"	43"	51"	59"	55"	71"	95"	117"	133"	155"



POWER OPERATED BALL BEARING BACK GAGE

Assembly Drawing No. 16-2800

How to Identify and Order Replacement Parts

1. Refer to the pertinent Back Gage Parts Illustrations and identification. Locate the desired part and item number on each drawing or picture.
2. Refer to the corresponding item number in the Parts List to determine the part number and name.
3. Send, FAX or e-mail a purchase order with the part number(s), name, quantity and the SERIAL NUMBER and MODEL NUMBER of the machine to:

Parts Division

FAMCO MACHINE DIVISION

BELCO INDUSTRIES, INC.
1001-31st STREET
KENOSHA, WISCONSIN 53140
PHONE NO.: 1-262-654-3516
FAX NO.: 1-262-654-0803
e-mail: SALES@FAMCOMACHINE.COM

NOTE: USE ONLY FAMCO PART NUMBERS!

Do not use manufacturer's number. If part is not identified, sketch or photograph the part required and include it with the order.



CORPORATE HISTORY

In 1927, Mr. Herman Noll purchased the then Freeze and Miller Company, forming his new corporation Famco Machine Company. Since then Famco has continued as an American machine tool manufacturer of arbor, air and foot presses as well as power squaring shears.

In 1975, the company was sold to Belco Industries, Inc. and continued in the manufacture of former products under the Famco Machine Division banner.

In 1987, Famco acquired the Gorton Machine Tool products along with the Lars Corporation products and moved same to its newly expanded Kenosha facility. These products include the Gorton pantograph (engraving) line as well as the Lars tool and cutter grinders.

In 1994, William Blasi purchased 100% of the assets of Famco Gorton/Lars.

In 1996, Famco Machine Division, Belco Industries Incorporated acquired the assets of Milwaukee Slide and Spindle Company.

Famco is located on approximately 12 acres in Kenosha, Wisconsin. The current building is 55,000 square feet and is home for corporate offices, engineering, sales, manufacturing and purchasing.

The average length of service of Famco's manufacturing personnel is approximately 16 years.

FAMCO
MACHINE DIVISION



GORTON



MILWAUKEE
SLIDE AND
SPINDLE

**– MANUFACTURERS OF FAMCO/GORTON-LARS PRODUCTS/
MILWAUKEE SLIDE AND SPINDLE PRODUCTS –**

Four Easy Ways to Reach Us!



Phone:
1-800-465-2233 (Toll Free)
262-654-3516 (Local)



Mail to:
FAMCO MACHINE DIVISION
BELCO INDUSTRIES, INC.
1001 – 31st Street
Kenosha, WI 53140-1926



Fax:
262-654-0803 (Local)



Internet:
<http://www.famcomachine.com>