

NOTE:

Four shipping brackets (no. 112) are provided to hold crown and columns together when lifting machine.

Remove these brackets before operating machine.

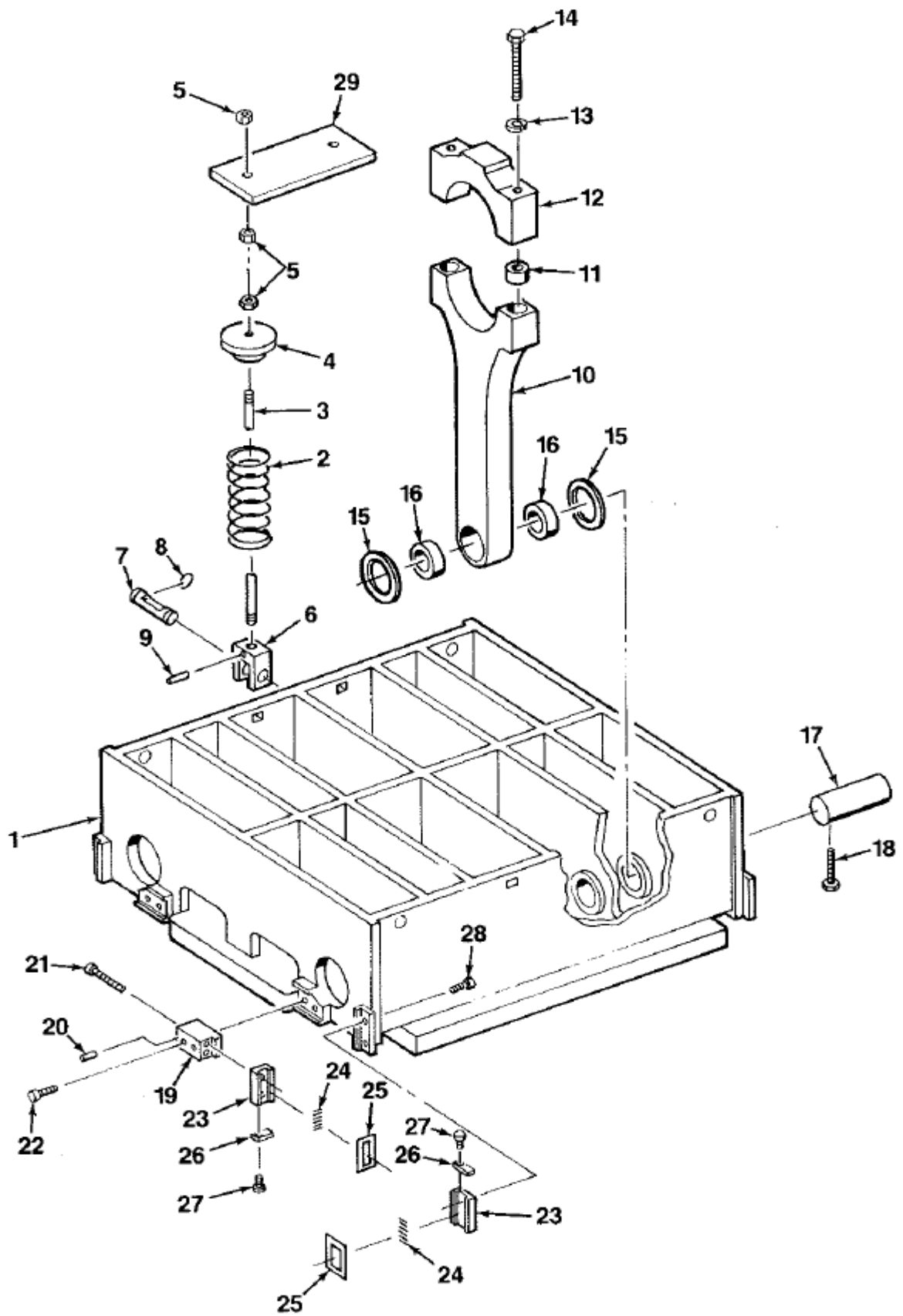
Save and re-install all four brackets when lifting machine in the future.

Torque 3/4" socket head cap screws (no. 116) to 370 ft. lbs.

Torque 1 3/4" hex nuts (no. 114) to 675 ft. lbs.

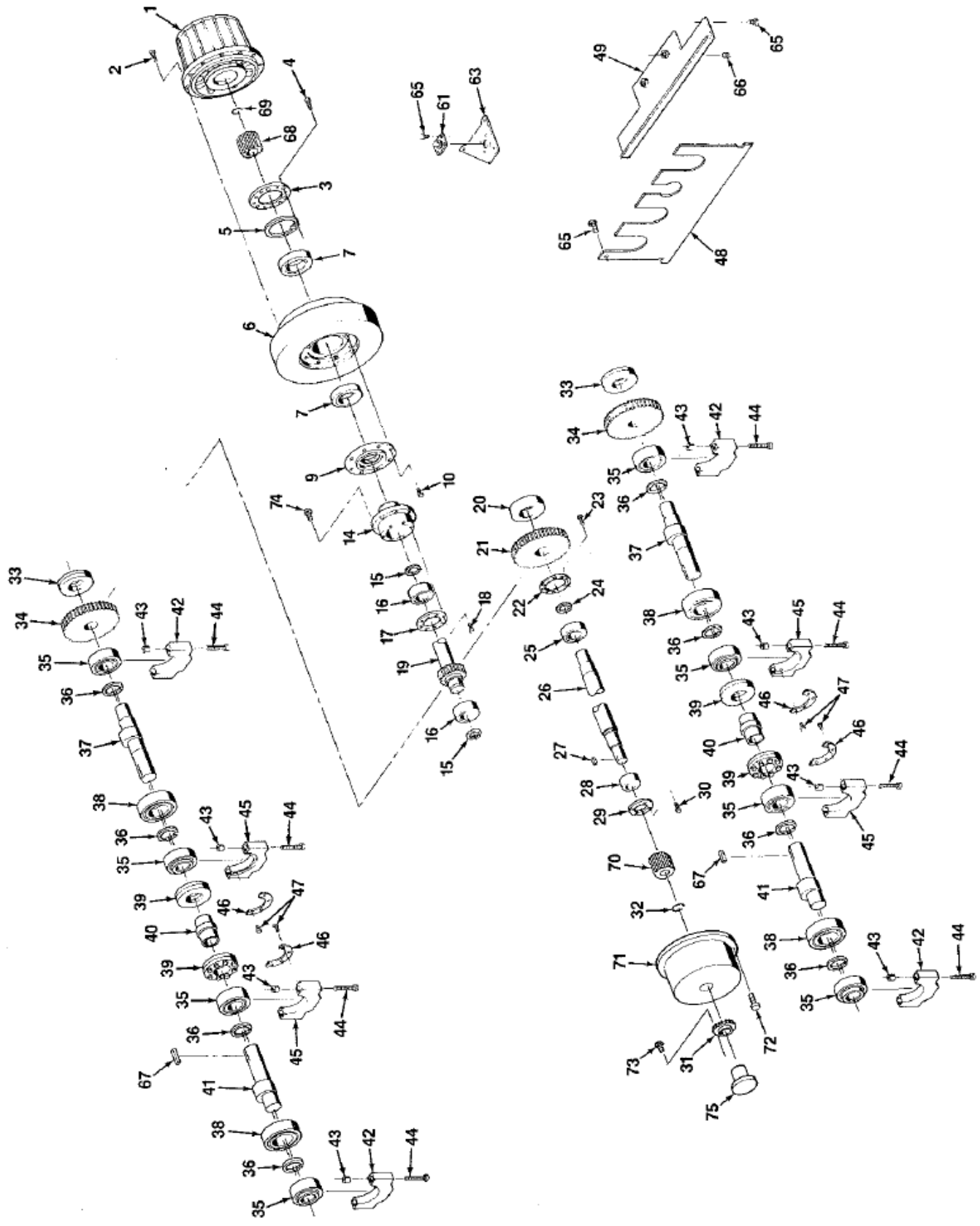
- | | | |
|--|---------------------------------|--|
| 1. Bed | 31. Spacer For Back Plate | 61. Lower Gib |
| 2. Column and Cylinder Assembly (see separate part list) | 32. Spacer Screw | 62. Upper Gib |
| 3. Bolster | 33. Motor | 63. Gib Mounting Screw |
| 4. Crown | 34. Motor Mounting Screw | 64. Chain Support |
| 5. Drive Assembly (not shown; see separate part list) | 35. Motor Base | 65. Chain Support Screw |
| 6. Limit Switch | 36. Base Mounting Screw | 66. Chain Guide |
| 7. Key | 37. Motor Sheave | 67. Guide Mounting Screw |
| 8. Limit Switch Mounting Screw | 38. Key | 68. Front or Rear Chain Guard |
| 9. Limit Switch Sprocket | 39. 'V' Belts | 69. Chain Guard Mounting Screw |
| 10. Stroke Indicator Dial | 40. Flywheel Brake (See pg. 14) | 70. Column Tie Bar and Shims |
| 11. Dial Mounting Screw | 41. Flywheel Brake Bracket | 71. Tie Bar Mounting Screw |
| 12. Limit Switch Bracket | 42. Brake Bracket Screw | 72. Die Block |
| 13. Plug For Gear Case Level | 43. Rear Crown Cover | 73. "Crown Up" Switch |
| 14. Chain | 44. Front Crown Cover | 74. Screw |
| 15. Limit Switch Chain Guard | 45. Right Front Crown Cover | 75. Crown Switch Bracket |
| 16. Guard Mounting Screw | 46. Crown Cover Screw | 76. Bracket Screw |
| 17. Lubrication Pump | 47. Belt Guard Back Plate | 77. Frame Switch Bracket |
| 18. Pump Mounting Screw | 48. Belt Guard | 78. Bracket Screw |
| 19. Lubrication Pump Cover | 49. Belt Guard Mounting Screw | 79. Crown End Cover |
| 20. Screw For Cover | 50. R.H. or L.H. Chain Guard | 80. Cover Screw |
| 21. Counter | 51. Chain Guard Mounting Screw | 81. Crown Cover |
| 22. Bushing | 52. Chain Guard Back Plate | 82. Cover Screw |
| 23. Counter Sprocket | 53. Hydraguard Mounting Bracket | 111. Hydraulic Pump and Reservoir Unit |
| 24. Counter Mounting Screw | 54. Bracket Mounting Screw | 112. Shipping Bracket |
| 25. Counter Bracket | 55. Hydraguard Valve | 113. Tie Rod |
| 26. Counter Bracket Screw | 56. Screw | 114. Hex Nut |
| 27. Clutch and Brake Solenoid | 57. Hydraguard Solenoid Valve | 115. Jam Nut |
| 28. Screw | 58. Screw | 116. Screw |
| 29. Flywheel Brake Pressure Switch | 59. Hydraguard Pressure Switch | 118. Crown Switch Plate |
| 30. Screw | 60. Screw | 119. "Crown Down" Switch |

FRAME



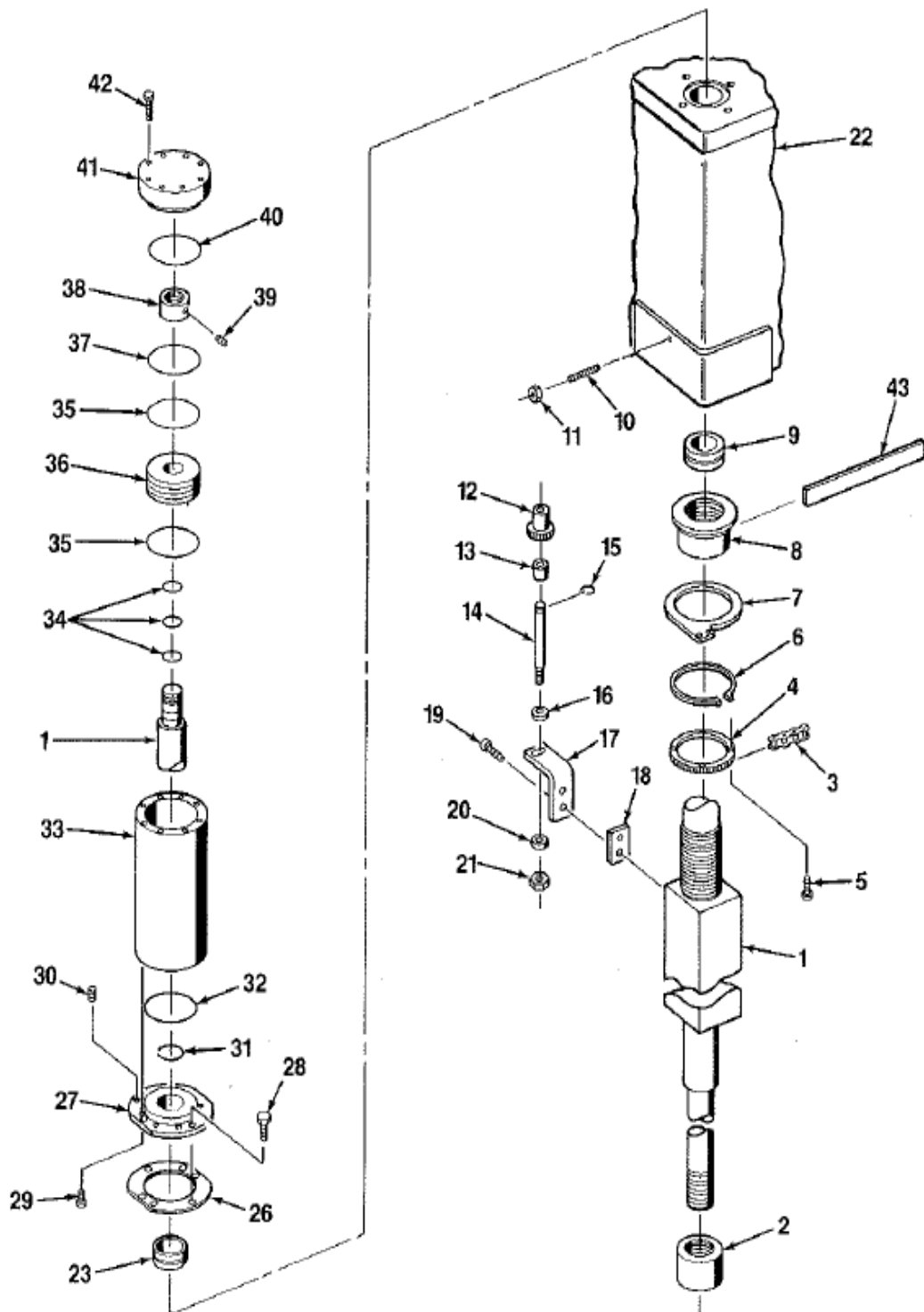
SLIDE ASSEMBLY

1. Slide
2. Counter Balance Spring
3. Piston Rod
4. Spring Retainer Cap
5. Hex Nut
6. Clevis
7. Clevis Pin
8. Retaining Ring
9. Roll Pin
10. Connection
11. Locating Bushing
12. Connection Cap
13. Lock Washer
14. Screw
15. Thrust Washer
16. Bearing
17. Wrist Pin
18. Screw
19. Gib Bearing Housing Bracket
20. Dowel
21. Screw
22. Screw
23. Gib Bearing Housing
24. Needle Rollers
25. Bearing Retainer Plate
26. Bearing Housing Cap
27. Screw
28. Screw
29. Spring Retainer



DRIVE ASSEMBLY

1. Clutch (See pg. 10)
2. Clutch Mounting Screw
3. Flywheel Bearing Cover
4. Screw For Cover
5. Retaining Ring
6. Flywheel
7. Bearing
9. Flywheel Bearing Cover
10. Cover Mounting Screw
14. Quill
15. Retaining Ring
16. Bearing
17. Bearing Retainer
18. Retainer Screw
19. Drive Shaft
20. Shrink Disc
21. Idler Gear
22. Bearing Retainer
23. Retainer Screw
24. Retaining Ring
25. Bearing
26. Idler Shaft
27. Key
28. Bearing
29. Bearing Retainer
30. Retainer Screw
31. Sprocket
32. Retaining Ring
33. Shrink Disc
34. Eccentric Gear
35. Bearing
36. Retaining Ring
37. R.H. Eccentric Shaft
38. Connection Bearing
39. Shrink Disc
40. Shaft Coupling
41. L.H. Eccentric Shaft
42. Outer Bearing Cap
43. Locating Dowel
44. Bearing Cap Screw
45. Inner Bearing Cap
46. Bearing Retainer
47. Retainer Screw
48. Gear Case Side Cover
49. Gear Case Bottom Cover
61. Gear Lube Filler Unit
63. R.H. Front Crown Cover (*reference*)
65. Screw
66. Pipe Plug
67. Key For Eccentric Shaft
68. Clutch Driving Hub
69. Hub Retaining Ring
70. Brake Driving Hub
71. Brake (See pg. 12)
72. Brake Mounting Bolts
73. Sprocket Mounting Bolts
74. Quill Mounting Bolts
75. Disc Hub For Feed



COLUMN AND CYLINDER ASSEMBLY

1. Column (*specify L.H. or R.H., front or rear*)
2. Tie Rod Nut
3. Chain
4. Adjusting Nut Sprocket
5. Sprocket Screw
6. Retaining Ring
7. Chain Support Bracket
8. Column Adjusting Nut
9. Lower Tie Rod Bushing
10. Set Screw
11. Hex Nut
12. Idler Sprocket
13. Bushing
14. Idler Sprocket Shaft
15. Retaining Ring
16. Washer
17. Chain Idler Bracket
18. Idler Bracket Spacer
19. Bracket Screw
20. Washer
21. Nut
22. Crown (*reference*)
23. Upper Tie Rod Bushing
26. Shim
27. Cylinder Mounting Plate
28. Plate Mounting Screw
29. Cylinder Mounting Screw
30. Jack Screw
31. Rod Seal
32. "O" Ring
33. Cylinder
34. "O" Ring with Back-up Rings
35. Wear Ring
36. Piston
37. Piston Seal
38. Piston Nut
39. Set Screw
40. "O" Ring
41. Cylinder Cover
42. Cover Screw
43. Wrench For Column Adjusting Nut

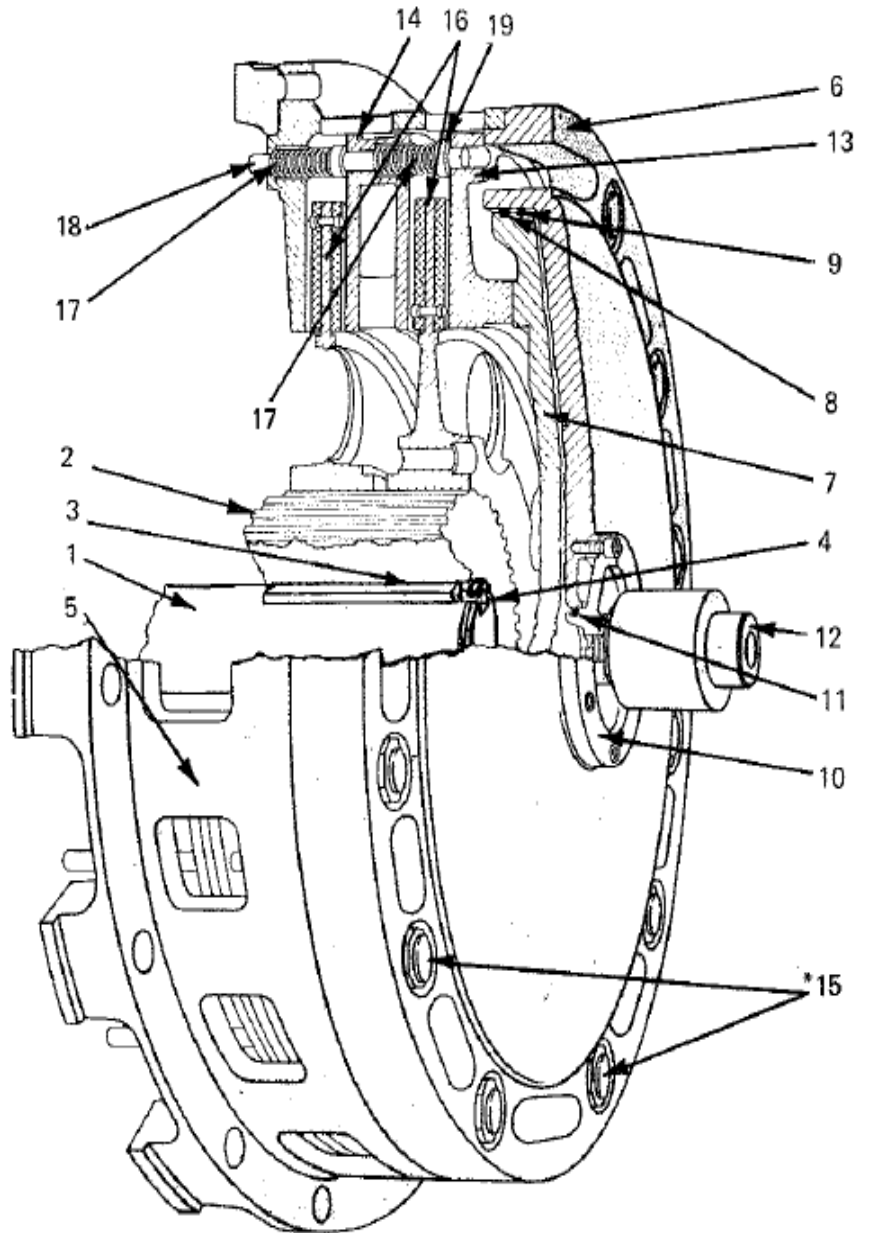
AIR FRICTION CLUTCH – TYPE LI-P

1. Drive Shaft
2. Driving Hub
3. Key
4. Retainer Ring
5. Clutch Housing
6. Clutch Cylinder
7. Clutch Piston
8. Piston Wiper
9. Piston "O" Ring
10. Rotary Air Seal Adapter
11. Adapter "O" Ring
12. Rotary Air Seal
13. Pressure Plate
14. Inner Pressure Plate
- *15. Pressure Plate Guides & Nut
16. Friction Disc
17. Spreader Spring
18. Spring Guide
19. Guide Collar

*Refer to Table for recommended torque value.

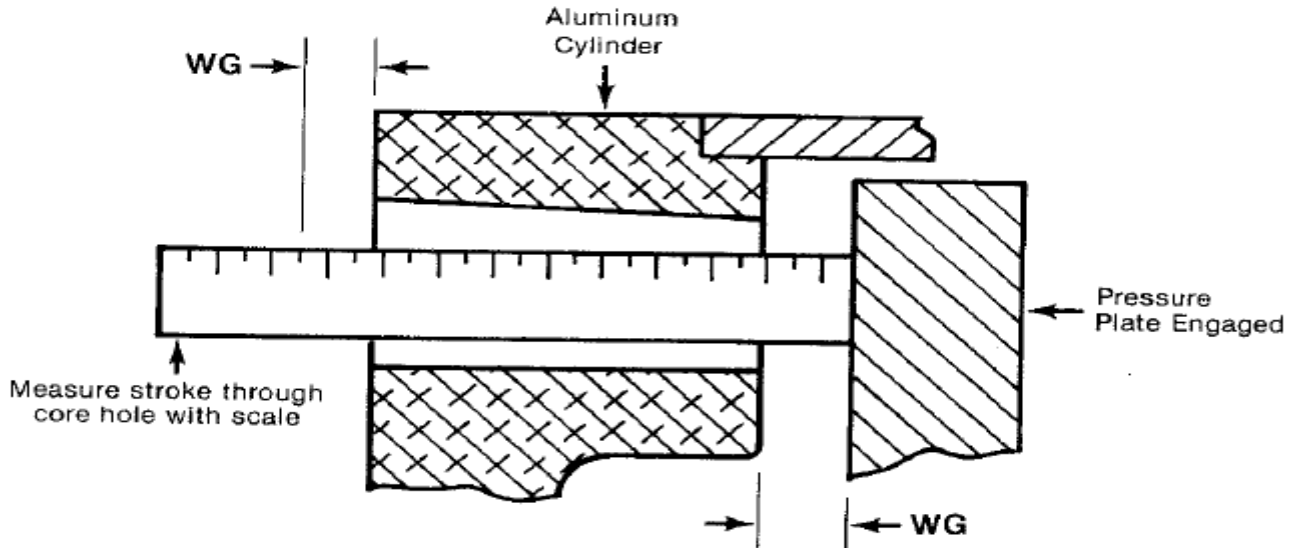
TORQUE VALUES BY FRICTION DISC DIAMETER

8"	25-30 ft/lbs
10"	30-35 ft/lbs
11"	35-40 ft/lbs
13"	45-50 ft/lbs
17"	70-80 ft/lbs
18"	70-80 ft/lbs
21"	90-100 ft/lbs
25"	110-120 ft/lbs
30"	190-200 ft/lbs
35"	220-230 ft/lbs



CLUTCH LINING REPLACEMENT

Replace linings on Niagara Air Friction Clutches when WG is equal to or greater than the WG given in the following table:



DISC QTY.	DISC DIA.	WG	DISC QTY.	DISC DIA.	WG
1	08"	1/4"	1	18 1/2"	3/8"
2	08"	3/8"	2	18 1/2"	5/8"
1	10"	1/4"	1	21"	7/16"
2	10"	7/16"	2	21"	7/16"
1	11 1/2"	1/4"	3	21"	9/16"
2	11 1/2"	3/8"	1	25"	1/2"
1	13 1/2"	1/4"	2	25"	9/16"
2	13 1/2"	7/16"	1	35"	9/16"
1	17"	7/16"	2	35"	5/8"
2	17"	7/16"			

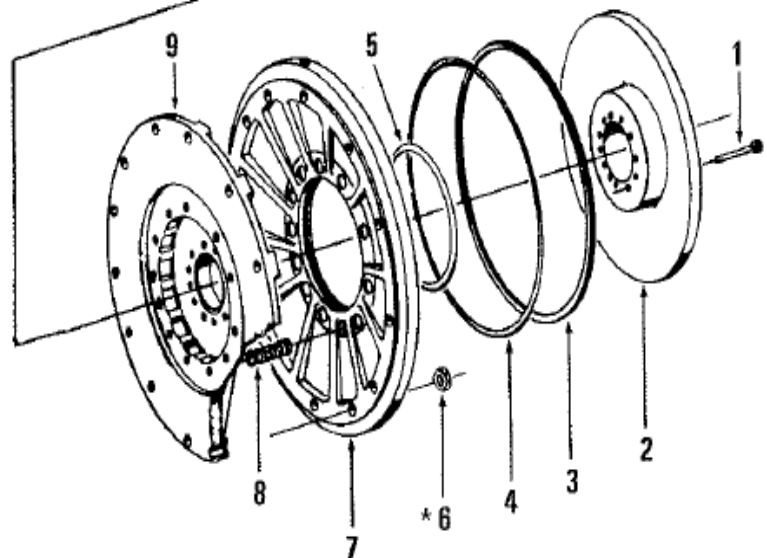
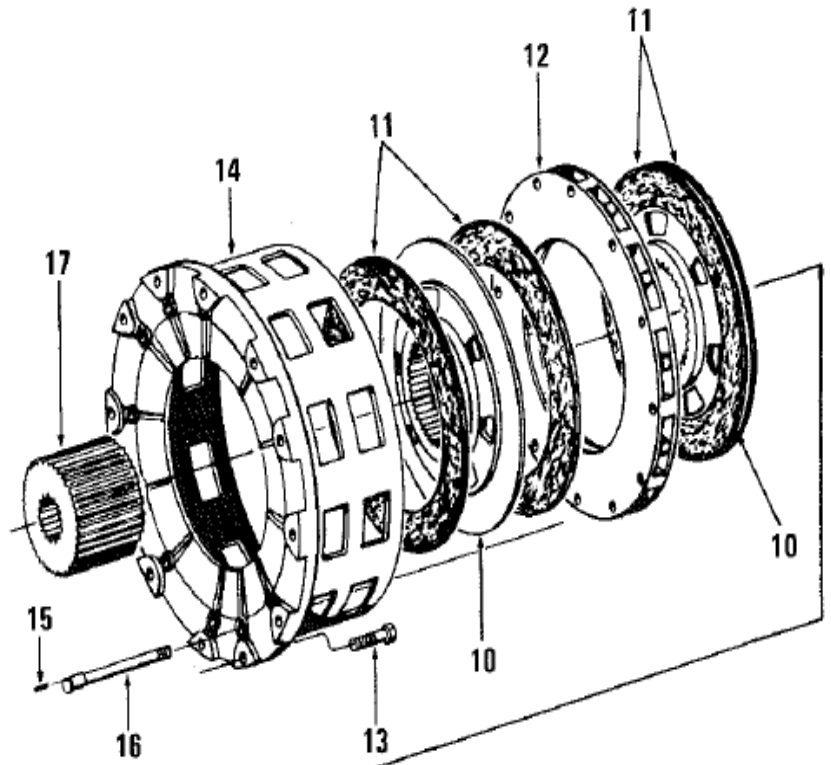
DISC RELINE SPECIFICATIONS

Disc Diameter	Thickness New	Thickness for Reline	Disc Diameter	Thickness New	Thickness for Reline
11 1/2"	.56"	.44"	21"	1.38"	1.25"
13 1/2"	.56"	.44"	25"	.97"	.84"
17"	1"	.88"	30"	1.03"	.90"
18 1/2"	1"	.88"	35"	1.03"	.90"

AIR RELEASING DISC BRAKE

1. Piston Screw (Remove to replace seal and rings.)
2. Piston
3. Piston Dust Seal
4. Piston Ring (outer)
5. Piston Ring (inner)
- *6. Cylinder Stud Nut (Remove to replace linings.)
7. Cylinder
8. Spring
9. Pressure Plate
10. Brake Disc (quantity may vary)
11. Brake Lining (quantity may vary)
12. Center Plate (not used with single disc)
13. Brake Ring Mounting Screw
14. Brake Ring
15. Brake Stud Pin
16. Brake Stud
17. Brake Hub
18. Lining Rivet (not shown)

* Refer to Table for recommended torque value.

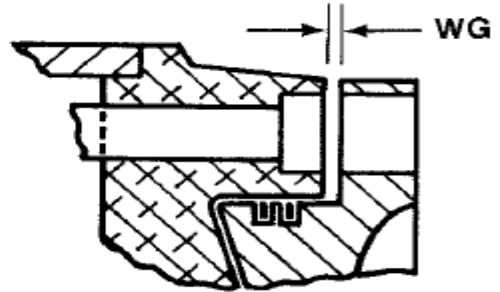


TORQUE VALUES BY FRICTION DISC DIAMETER	
8"	25-30 ft/lbs
10"	30-35 ft/lbs
11"	35-40 ft/lbs
13"	45-50 ft/lbs
17"	70-80 ft/lbs
18"	70-80 ft/lbs
21"	90-100 ft/lbs
25"	110-120 ft/lbs
30"	190-200 ft/lbs
35"	220-230 ft/lbs

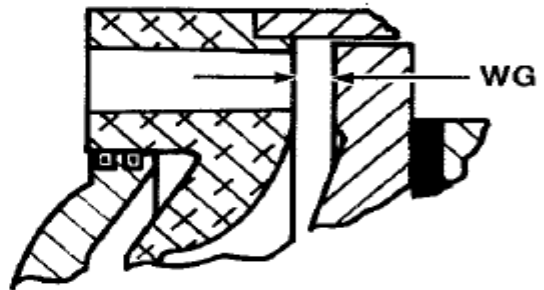
BRAKE LINING REPLACEMENT

Replace linings on Niagara Air Releasing Brakes when the WG reaches the WG figure given in the following tables:

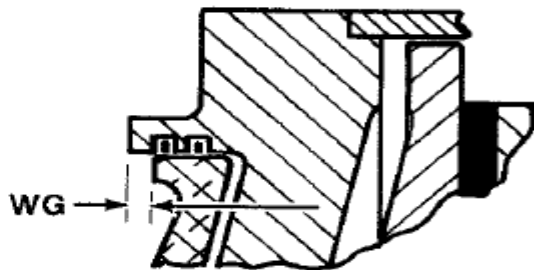
DISC QTY.	DISC DIA.	WG
1	08"	1/8"
2	08"	0
1	35"	0
2	35"	0



DISC QTY.	DISC DIA.	WG
1	13"	1/4"
2	13"	3/8"
1	21"	7/16"
2	21"	7/16"
1	25"	7/16"
2	25"	7/16"



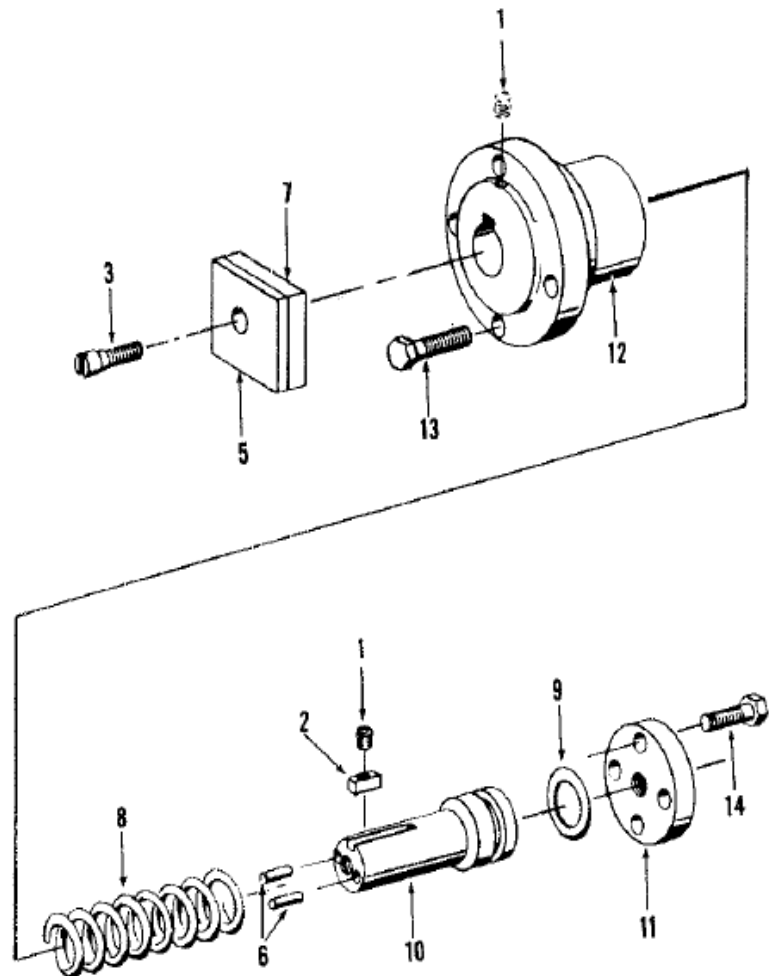
DISC QTY.	DISC DIA.	WG
1	11"	5/32"
2	11"	5/32"
1	17"	3/32"
2	17"	3/16"



DISC RELINE SPECIFICATIONS

Disc Diameter	Thickness New	Thickness for Reline	Disc Diameter	Thickness New	Thickness for Reline
11½"	.56"	.44"	21"	1.38"	1.25"
13½"	.56"	.44"	25"	.97"	.84"
17"	1"	.88"	30"	1.03"	.90"
18½"	1"	.88"	35"	1.03"	.90"

AIR OPERATED FLYWHEEL BRAKE



1. Key Dowel Pin
2. Guide Key
3. Mounting Screw
5. Brake Lining
6. Dowel Pin
7. Brake Shoe
8. Spring
9. "O" Ring
10. Piston
11. Cylinder Cover
12. Cylinder
13. Cylinder Mounting Screw
14. Cover Mounting Screw