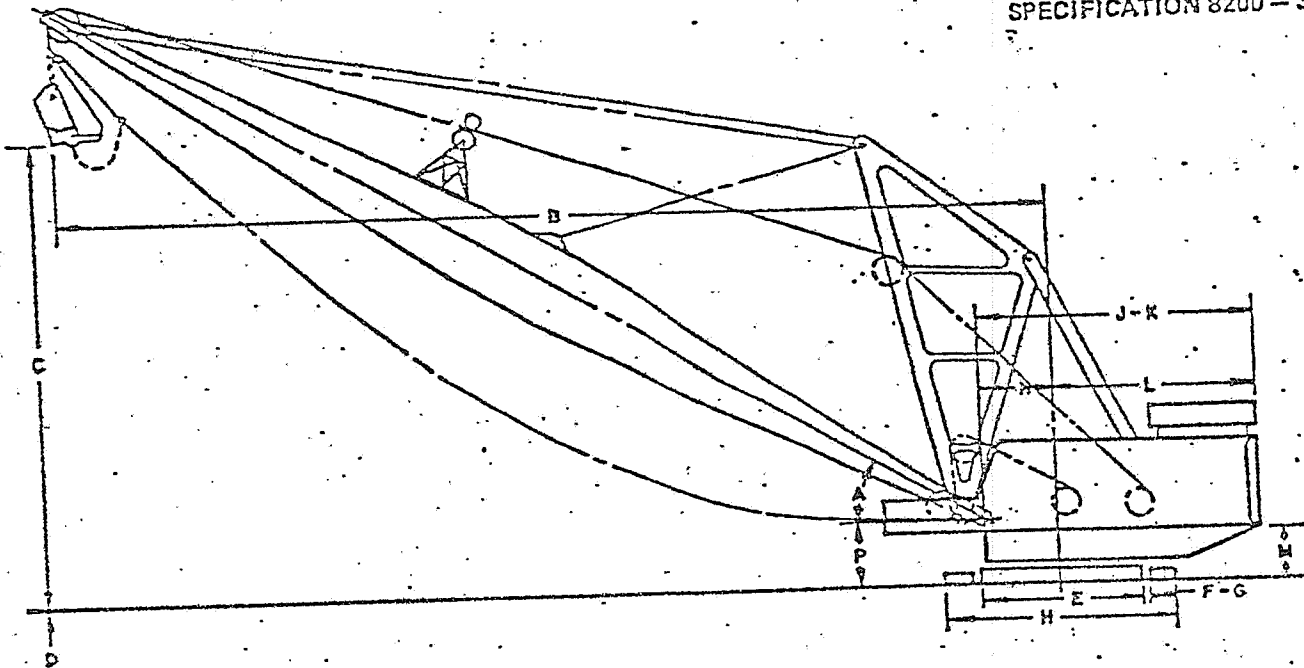


# 8200 WALKING DRAGLINE

WARD LOENARD - STATIC CONTROL - INDEPENDENT PROPEL

SPECIFICATION 8200 - 31



### WORKING RANGES

Boom Length .....	325'-0"
Boom Point Sheave, Pitch Diameter .....	120"
A - Boom Angle, Approx. ....	35°
B - Dumping Radius .....	292'-0"
C - Dumping Height .....	135'-0"
D - Depth .....	160'-0"
Maximum Allowable Load, lbs. ....	360,000
Hoist Drum, Pitch Diameter .....	96"
Hoist Rops, Twin, Diameter .....	3-3/4"
Drag Drum, Pitch Diameter .....	96"
Drag Rops, Twin, Single Hitch, Dia. ....	3-3/4"

### BASE

E - Outside Diameter - Nominal .....	65'-0"
Bearing Area - Effective, sq. ft. ....	3320
Bearing Pressure, psi .....	17.4
Rail Circle - Mean Diameter .....	46'-5"
Circle Rollers - Mean Diameter .....	12"
Main Swing Gear - Pitch Diameter, Approx. ....	39'-9"

### WALKING TRACTION

F - Width of Shoe .....	13'-0"
G - Length of Shoe .....	73'-0"
H - Width Over Both Shoes .....	94'-0"
Bearing Area of Both Shoes, sq. ft. ....	1858
Bearing Pressure @ 80% of Working Weight .....	24.4
Length of Step - Approx. ....	6'-0"

### ROTATING FRAME

J - Width @ Rear End .....	67'-4"
K - Length .....	91'-0"
Depth Sill Members .....	106"
L - Clearance Radius - Rear End .....	68'-0"
M - Clearance Under Frame .....	11'-0"
N - Center Rotation to Boom Foot .....	21'-6"
P - Ground to Boom Foot .....	15'-1"

### ELECTRICAL EQUIPMENT

Hoist Motors, Four, 1300 hp each @ 475 V, Total hp .....	5200
Drag Motors, Four, 1300 hp each @ 475 V, Total hp .....	5200
Swing Motors, Standard, Four, 800 hp each @ 475 V, Total hp .....	3200
Propel Motors, Two 1045 hp each @ 475 V, Total hp .....	2090
AC Driving Motors, Total hp .....	7000

### WEIGHTS

Domestic Shipping Weight, (Inc. Bucket), lbs. ....	7,200,000
Working Weight, lbs. ....	8,250,000
Ballast (Furnished by Purchaser), lbs. ....	1,150,000

Nominal bucket capacity 68 cu. yd.  
 : subject to final design assessment of  
 overburden weight and deadweight of  
 bucket components.  
 : The 360,000 pound suspended load value  
 governs.

Shipping Weight Subject to 5% Variation.

The Company reserves the right to improve or change the design of its products and specifications thereof and the Company shall incur no liability thereby or any obligations to install such improvements on products previously sold.

ITEM 1-MACHINE DESCRIPTION

One Marion Type 8200 Ward Leonard Electric Walking Dragline, per specification 8200-30 complete with the following:

1. 350'-0" rectangular deep section boom with boom set at  $34\frac{1}{2}^{\circ}$  angle to operate at 315'-0" dumping radius. Boom chords of FK-2 steel with catwalks on all four chords. Boom apex tubing gas filled for monitoring with alarm system in operator's cab. Maximum allowable load is 308,000 pounds.
2. 65'-0" tub or base of internal box section design with wear plates included.
3. 73'-0" by 13'-0" walking shoes. Marion exclusive outboard bearing propel system with eccentric and ball swivel connection.
4. Center journal with antifriction bearing and bronze brushing.
5. Marion over-and-under fairlead mounted in tower structure providing constant rope contact between drag rope and sheaves to provide maximum drag rope life and minimum wear. Both upper and lower sheaves are cast, machined, and have flame hardened rope grooves. All sheaves operate on antifriction bearings.
6. Improved operator's cab mounted on left corner of the machine includes the following features: acoustical tiles on ceiling; 40 point warning panel (rather than standard panel referred to on Page CI-934); increased windshield and side window area; sloped windows to reduce glare and dirt adherence; power operated windshield retracting under the cab ceiling; improved heating, defrosting, and air conditioning with duct forced air floor mounted registers; insulated side walls, ceiling and base. Anteroom includes the following built-in equipment; electric baseboard heaters, radio cabinet, six lockers, tool box/bench, wall mounted desk with storage, bulletin board, and hinged aluminum frame windows on both sides. Air conditioning to be ducted both to operator's cab and anteroom.
7. Two  $7\frac{1}{2}$  hp auxiliary electric wire rope winches for rope reeving and replacement.
8. Gantry tri-structure arranged with gantry tower combined with the mast and mast-link to form a rigid structure. Gantry backlegs are gas filled for monitoring with alarm system in the operator's cab. Gantry backleg safety cables.
9. Antifriction bearings on hoist, drag, and swing machinery shafting. Propel shaft bearings are also antifriction with exception of eccentric which is a bronze bushing.
10. Split-type main bull gears to facilitate removal without disassembly of shaft, bearings, brakes, etc.

- SCHEDULE "2"
11. Boom point sheaves are 120" diameter, cast and machined with flame hardened rope grooves. All major sheaves operate on antifriction bearings.
  12. Integral lagging on hoist and drag drums. Drums to be 96" diameter with machine cut and flame hardened rope grooves. Drum stub shafts run on antifriction bearings.
  13. Adequate lighting with mercury vapor high-bay floodlights inside and outside of house structure and the digging area. This includes:
    - 1) House interior: 8-1000 watt mercury vapor high-bay floodlights; 4-400 watt mercury vapor floodlights; 4-500 watt incandescent floodlights.
    - 2) House roof (area lighting): 8-1000 watt mercury vapor floodlights; 8-500 watt quartz floodlights.
    - 3) Boom has 13-1000 watt mercury vapor floodlights and 10-500 watt incandescent floodlights.
    - 4) Tri-structure has 2-1000 watt mercury vapor floodlights.
    - 5) The machine is supplemented over walkways inside and outside with additional incandescent lights.
  14. Two 10 ton overhead service cranes with electric hoist, bridge, and travel capable of servicing all major equipment in the machinery house.
  15. 475 volt, DC mill type driving motors with Ward Leonard Statitrol control.
    - 1) Hoist motors - 4 @ 1300 hp
    - 2) Swing motors - 4 @ 800 hp
    - 3) Drag motors - 4 @ 1300 hp
    - 4) Propel motors - 2 @ 1045 hp

Synchronous motor generator sets arranged for operation on 7200 volts, 3 phase, 60 cycle, AC supply. AC drive motors rated at 6600 volts suitable for operation at 6900 volts.
  16. Power factor regulator, static type, operating into the synchronous motor exciter field.
  17. Selsyn indicators in operator's cab for propel motion to give visual indication of shoe position.
  18. Limit switches on hoist and drag.
  19. Selsyn indicators for hoist and drag position.

20. The walking shoes are electrically synchronized.
21. Automatic field control for synchronous motors.
22. Surge protection for the MG sets.
23. Spring set, air released brakes on required main motors to prevent rotation in case of power failure.
24. Dynavane system to provide filtered and pressurized air to the machinery house. Units are of the reverse flow vane inertia type. Includes air filtering intake fans, motors, transformer, wiring, etc. (Complete system to include five units).
25. Walkways and ladders shall be of expanded metal design. All walkways and ladders shall have handrails and backguards when vertical.
26. A whistle or howler shall be provided to alert crew members.
27. Anti-tightlining device.
28. Anti-condensation strip heaters for MG sets, exciter set(s), DC motors, and control cabinets.
29. Ground fault detection for the 480 volt system.
30. Marion power control room to be individually filtered, pressurized, and air conditioned.
31. Eight 120 volt lighting receptables in the base to be used with drop cord lights.
32. External dirt reflection shields beneath the fairlead to prevent dirt from falling on the base of the machine.
33. Necessary wire ropes for hoist, drag and boom suspension.
34. Two piston type air compressors having 106 cfm displacement, 20 hp, rated maximum 125 psi. (One of said compressors is also referred to in Item 42)
35. One electric hoist to lift operating supplies from ground to machinery deck. Hoist has 5 ton capacity.
36. Four weatherproof 120 volt outlets.
37. A Gai-tronics phone system with nine phone sets and two outside loudspeakers (locations to be determined by BUYER. Head Set with boom mike to be supplied by operator's cab).

38. Operation and maintenance training programs package to include the following areas of interest:

- 1) Operation
- 2) Maintenance
- 3) Disassembly
- 4) Assembly
- 5) Adjustment
- 6) Lubrication

39. Fire Protection System for house and operator's cab as described below:

1. System #1-Carbon Dioxide - House

This system provides fire protection to the house by utilizing two hose reels for manually fighting fires in the main deck area. Twelve 75 pound CO<sub>2</sub> cylinders, six main and six reserve, will be provided. Each hose reel will have 100 feet of ½" hose with a horn and valve assembly. Pressure operated switches for automatic shut-down of machine functions and alarm bells are included. Remote pull boxes at three locations for actuating the system are included.

2. System #2-Dry Chemical - Roller Circle

This system serves the roller circle and ring gear area. Three 150 pound dry chemical cylinders and a piping system give fire protection coverage of the area inside the roller circle. The system is manually actuated (to protect personnel), but an automatic sensing system is provided.

3. System #3-Dry Chemical - Propel

This system consists of two chemical tanks and hose reels, one on each side of the machine (outside) in the walking cam area. This system is manual, with each hose reel containing 75 feet of ½" hose.

4. Operator's Cab-Two 20 pound CO<sub>2</sub> fire extinguishers will be provided (one for operator's cab control room and one for operator's cab anteroom).

40. The equipment is provided with a prime coat of paint.

41. Workbench, vise, and special tools.

42. Marion automatic and semi-automatic lubrication systems including pumps, control, warning devices, injectors, and hardware. Extension to machinery deck is to be provided to isolate and locate the equipment. Also included is additional air compressor (106 cfm, 20 hp, rated maximum 125 psi). This includes the following coverages:

SCHEDULE "2"

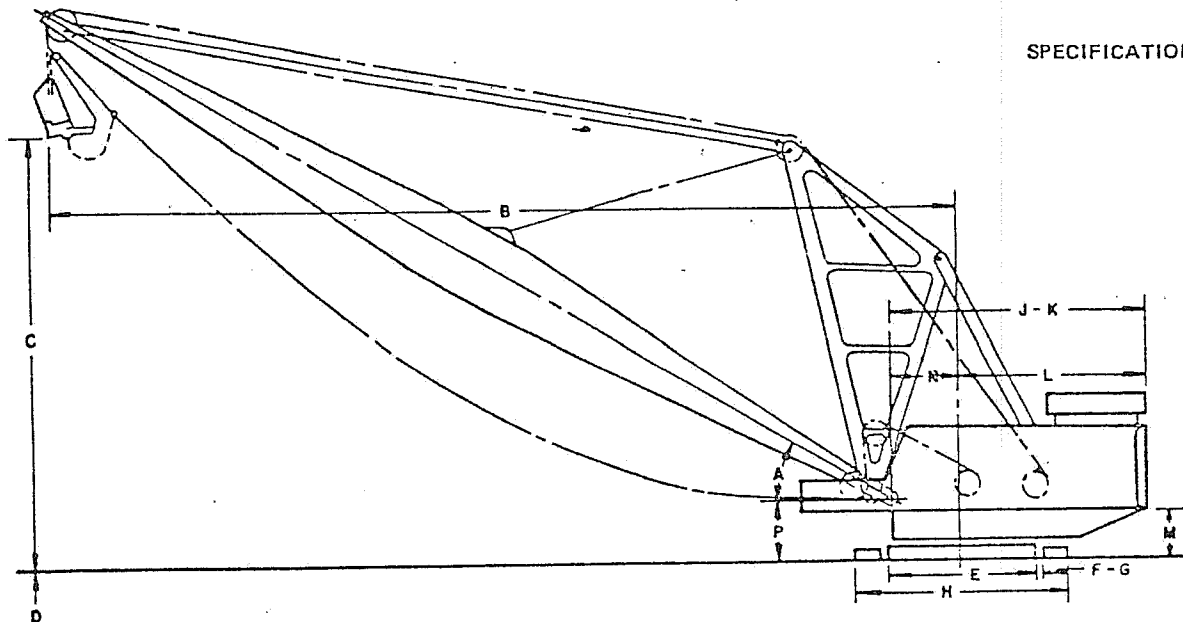
- 1) Rotating frame area.
  - 2) Front end equipment (includes boom, fairlead, tri-structure, and roller circle areas).
  - 3) Propel system area.
  - 4) Open gear area.
  - 5) Wire rope area.
43. Leseney swing recorder.
44. Finish paint-color to be selected by BUYER. This includes:
- 1) 2,440 gallons of enamel.
  - 2) 60 gallons of primer.
  - 3) 300 gallons of thinner.
45. Two Marion 58 cubic yard dragline buckets complete with rigging and wear package. (Buckets to be designed for maximum interchangeability within practical limits with Alberta Power Limited's existing 58 cubic yard buckets).
46. Field Weld Rod (approximately 38,500 lbs. required).
47. Heaters on the following:
- a) M.G. Set bearing pedestal
  - b) Walking Cam
  - c) Hoist, drag, swing and propel gear case
  - d) Machinery house:
    - (1) Six 50 KW forced air heaters
  - e) Tub bottom plate heating
  - f) Enclosure over propel area
48. Ballast (approximately 1,050,000 lbs.) (To be supplied from source within Alberta).
49. Trail cable winch.
50. Installation of on-board data logger if required by Alberta Power Limited.
51. Items not included: power feeder cable and start-up lubricants.



# 8200 WALKING DRAGLINE

WARD LEONARD - STATIC CONTROL - INDEPENDENT PROPEL

SPECIFICATION 8200-30



### WORKING RANGES

Boom Length	350'-0"
Boom Point Sheave, Pitch Diameter	120"
- Boom Angle, Approx.	34-1/2°
- Dumping Radius	315'-0"
- Dumping Height	150'-0"
- Depth	160'-0"
Maximum Allowable Load, lbs.	300,000
Hoist Drum, Pitch Diameter	96"
Hoist Ropes, Twin, Diameter	3-1/4"
Drag Drum, Pitch Diameter	96"
Drag Rope, Twin, Single Hitch, Dia.	3-1/4"

### ROTATING FRAME

J - Width @ Rear End	67'-4"
K - Length	94'-6"
Depth Sill Members	106"
L - Clearance Radius - Rear End	71'-6"
M - Clearance Under Frame	9'-1"
N - Center Rotation to Boom Foot	21'-6"
P - Ground to Boom Foot	15'-1"

### ELECTRICAL EQUIPMENT

Hoist Motors, Four, 1300 hp each @ 475 V, Total hp	5200
*Hoist Motors, Five, 1300 hp each @ 475 V, Total hp	6500
Drag Motors, Four, 1300 hp each @ 475 V, Total hp	5200
Swing Motors, Four, 800 hp each @ 475 V, Total hp	3200
**Swing Motors, Five, 800 hp each @ 475 V, Total hp	4000
Propel Motors, Two, 1045 hp each @ 475 V, Total hp	2090
***AC Driving Motors, Total hp	7000

### BASE

- Outside Diameter - Nominal	65'-0"
Bearing Area - Effective, sq. ft.	3320
Bearing Pressure, psi	17
Rail Circle - Mean Diameter	46'-6"
Circle Rollers - Mean Diameter	12"
Main Swing Gear - Pitch Diameter, Approx.	39'-9"

### WEIGHTS

Domestic Shipping Weight, (Inc. Bucket), lbs.	7,075,000
Working Weight, lbs.	8,125,000
Ballast (Furnished by Purchaser), lbs.	1,050,000

### WALKING TRACTION

- Width of Shoe	13'-0"
- Length of Shoe	73'-0"
- Width Over Both Shoes	94'-0"
Bearing Area of Both Shoes, sq. ft.	1898
Bearing Pressure @ 80% of Working Weight, psi	23.8
Length of Step - Approx.	6'-9"

- \* For Optional Hoist Motor, Add 25,000 lbs.
- \*\* For Optional Swing Motor, Add 25,000 lbs.
- For Optional Hoist and Swing Motors, Add 175,000 lbs.
- \*\*\* Use 7500 Total AC hp With Optional Swing Motor
- Use 7500 Total AC hp With Optional Hoist Motor
- Use 8000 Total AC hp With Optional Hoist and Swing Motors
- Shipping Weight Subject to 5% Variation.

The Company reserves the right to improve or change the design of its products and specifications thereof and the Company shall incur no liability thereby or any obligations to install such improvements on products previously sold.

SCHEDULE "2"

SCHEDULE "1A"

Performance Requirements

The Dragline must have an annual excavating capacity of not less than 14,500,000 bank cubic yards based upon the following approximate parameters and utilizing approximately 6500 hours of operation per year:-

- (a) Nominal cut width - 100 feet;
- (b) Coal - Sub-bituminous; 75 lbs. per cubic foot;
- (c) Overburden material (in place) - 105 lbs. to 130 lbs. per cubic foot;
- (d) Loose weight of overburden - 3300 lbs. to 3500 lbs. per cubic yard;
- (e) High wall cut, angle - 70 feet to 75 feet, 60 degrees;
- (f) Bucket fill factor - 90%;
- (g) Material swell percentage - 20% to 40%;
- (h) Spoil angle of repose - 37 degrees;
- (i) Separation between coal seams - 70 feet average;
- (j) Overburden thickness - 40 feet to 70 feet;
- (k) Coal thickness - 5 feet to 10 feet.

The Dragline must be designed to utilize a power supply of 6900 volt, 3 phase, 60 cycle electrical energy. The design of the Dragline will be based on the assumption that it will receive a sufficient supply of electrical energy to operate at 100% design capability. The manufacturer of the Dragline shall specify the requirements for electrical energy for the Dragline to operate at said level.