



4100XPC

ELECTRIC MINING SHOVEL

ASSEMBLY PROCEDURE

ASSEMBLY ASSISTANCE

With the purchase of your Model 4100XPC electric mining shovel, a P&H MinePro Services advisor will be provided for a period of 50 working days to assist the purchaser or the purchaser's assembly contractor with the assembly of the machine. The purchaser should arrange to assemble, test and place the machine into operation during this 50 day period.

The P&H MinePro Services advisor can provide advice only. He is available to advise the purchaser or the purchaser's assembly contractor on assembly sequences, commissioning procedures, testing and other assembly details as requested, but is not authorized to supervise workers or to direct the assembly, testing or commissioning in any way. The purchaser will be required to provide all tools, equipment and personnel needed to assemble the machine, as well as supervision of personnel erecting the machine. For example, the P&H MinePro Services advisor is available to consult with supervisory personnel on questions such as places to make hitches on components, but P&H Mining Equipment will not be responsible for placement of such hitching or for working with lifting equipment. P&H Mining Equipment will not be liable in any event for any indirect, special or consequential damages. Purchaser shall indemnify and hold P&H Mining Equipment harmless for all liability for damage to property or personal injury (including death) arising out of purchaser's assembly, testing or placing into service of the machine.

The P&H MinePro Services advisor is not authorized to approve modifications to the machine that are not covered by the machine data sheet, nor will P&H Mining Equipment accept any back-charge for any unauthorized modifications made. (See section titled "Machine Modification Procedure".)

The purchaser or the purchaser's assembly contractor should contact the nearest P&H Mining Equipment regional office to schedule the P&H MinePro Services advisor. We ask the purchaser, prior to the arrival of P&H MinePro Services advisor, to issue a purchase order covering the P&H MinePro Services advisor. The first 50 normal working days will be on a no charge basis. Any days beyond the first 50 days will be charged against the purchase order at established service rates.

The normal working day for the P&H MinePro Services advisor is eight hours on site per day. The normal work week is five days per week (Monday through Friday excluding holidays). Time spent on site beyond the normal work week or day will be charged against the purchase order at established service overtime rates.

ASSEMBLY PERSONNEL REQUIREMENTS

The assembly history for the Model 4100XPC indicates assembly can be made within 5200-5500 man-hours. The history also indicates that if proper manpower is not available, the 50 working day period of assembly and placement into operation will be exceeded. We therefore advise that the following labor types be available at various stages of machine assembly.

- | | |
|---|-----------------------------|
| 4 – Laborers (for the purpose of cleaning parts before they undergo assembly) | 4 – Mechanics / Millwrights |
| | 4 – Electricians |
| | 3 – Welders |

After the initial cleaning and opening of the packing cases, the four laborers may be replaced by additional mechanics and millwrights, as the tasks of the mechanics and millwrights will be more prevalent.

We have not included the supervision mentioned previously. The necessary mechanical and electrical supervision should be present when the various trades are involved in the assembly of the machine.

This listing does not include crane operators or oilers (if there is a requirement for their use).



SAFETY: All safety related equipment requirements and procedures are the responsibility of the Purchaser and or designated Assembly Contractor and should be in accordance with all applicable MSHA, Local Mine, State Authorities and regulations.

NOTE: The purchaser is to supply all necessary start-up lubrication materials, oils, greases, etc., per P&H specifications.

SITE AND MATERIAL LOCATION

Assembly site preparation is the responsibility of the Purchaser and should be a flat leveled area, with good drainage, and stable under footing to support the lifting equipment and their floats or outriggers during any lift to be made.

The area required is approximately 300 feet (91.4 m) square, with a tool shed.

MACHINE MODIFICATION PROCEDURE

During the shovel assembly process, the shovel purchaser will sometimes request alterations to the standard machine design. Some of the more-commonly requested modifications affect lubrication systems, walkways, hand rails, lighting systems and guards.

While some modifications might improve the ability of the purchaser to utilize and maintain the shovel, some modifications might in fact adversely affect productivity over time or have significant safety implications not readily ascertainable.

Accordingly, it is imperative that any modifications sought by the shovel purchaser of the kind noted above (or any other significant modifications) be discussed with your P&H MinePro Services shovel project manager. In turn, your shovel project manager will discuss your requests with P&H Mining Equipment shovel design engineers to determine if the modifications can be carried out. P&H Mining Equipment and P&H MinePro Services make every effort to accommodate the purchaser's requests while taking into consideration the machine's optimal productivity and mine application, as well as current design and safety specifications and regulations.

It is most important that any modification to the machine be documented so that P&H Mining Equipment and P&H MinePro Services can maintain current drawings and specifications for your electric shovel. Furthermore, any future service involving the P&H Mining Equipment engineering staff can be expedited if modifications are known and documented.

Please be aware that any modification performed without P&H Mining Equipment and P&H MinePro Services concurrence might void the warranty.

Some modifications requested by the purchaser can be accommodated at no additional charge. However, some modifications require additional welding or other services that cannot be absorbed by P&H Mining Equipment or P&H MinePro Services. The purchaser will be notified of such costs in advance of the work being performed.

BASIC RIGGING MATERIAL REQUIREMENTS

Cranes

Two (2) heavy-lift cranes are required at the start of the assembly, staying on-site until all the heavy lifts are completed and the boom has been pinned to the revolving frame. After raising the boom, the balance of the assembly process can proceed with one (1) rough-terrain crane in the 30-ton to 50-ton (27,216-kg to 45,360-kg) class.

Heavy-lift crane size requirements are based on many factors, including crane access to heavy lifts, type of crane used, cold weather capacity de-rating, reach, and pick-and-carry capability.

Therefore, in extreme cold weather environments, two 225-ton (204,120-kg) cranes are recommended. In moderate weather, one 150-ton (136,080 kg) and one 190-ton (172,368-kg) crane are recommended for heavy lifts.

Cables / Slings

- | | | |
|------------------|------------------|------------------|
| 4 — 2-1/2" x 25' | 4 — 1-3/4" x 20' | 4 — 1-1/2" x 20' |
| 4 — 1" x 12' | 2 — 1-1/2" x 20' | 4 — 3/4" x 10' |
| 2 — 1-1/4" x 20' | 2 — 5/8" x 20' | |

10 — smaller cables (1/2" and 3/8", 15' long) to handle the misc. material, such as brakes, blower motors, boxes, cab sections, etc.

Assortment of nylon slings

Shackles and Pins

- | | |
|---------------------|---------------------|
| 2 — 85-ton shackles | 4 — 55-ton shackles |
| 4 — 35-ton shackles | 4 — 25-ton shackles |

Pins — six (6) each in the following sizes: 1/4", 3/8", 1/2", 3/4", 1"

Blocking (Hardwood)

40 ea. 8" x 8" or 10" x 10" in 6', 4', and 2' lengths

Plywood and 2" lumber (available from shipping crates / boxes)

This material is used for setting the various components on the ground. The carbody is blocked 48" high for side frame clearance with shoes on.

Optional Time-Saving Equipment

- 1 — 10-ton* (9,072 kg.) forklift.

BASIC TOOL REQUIREMENTS

Basic Hand Tools

- 2 — 6" screwdrivers 1/4" face
 - 2 — 8" screwdrivers 3/8" face
 - 2 — 12" screwdrivers 1/2" face
 - 2 — 15" adjustable open end wrenches
 - 2 — 12" adjustable open end wrenches
 - 4 — 12" long bastard files
 - 6 — 4" paint brushes for use with cleaning solvent
 - 1 — crosscut saw
 - 3 — 36" wrecking bars
 - 2 — 20 lb. sledge hammers
 - 4 — 2 lb. ball peen hammers
 - 6 — putty knives 3" wide
 - 1 — heavy-duty mechanic's tool set
 - 2 — wire brushes
 - 3 — each tapered drifts, 12" long, 5/8" and 5/8" dia.
 - 2 — 1/2" drive socket wrench sets, including two extensions, ratchet and sockets, from 7/16" to 1 1/4", in 1/8" increments
 - 1 3/4" drive socket wrench set, including ratchet and sockets, from 1" to 3", in 1/8" increments
 - 6 — 3-ton come-alongs
 - 2 — standard bolt tap set—1/4" to 1 1/2" in 1/8" increments
 - 2 — drill bit set—3/16" to 5/8" in standard increments
 - 1 — set of rotary files for pencil grinder
 - 1 — 3/4" drive breaker bar
 - 1 — 1" drive breaker bar
 - 1 — 1" drive socket wrench set, ratchet and sockets, from 1 1/16" through 3 1/2" in 1/16" increments
 - 1 — 1" Swivel
 - 1 — 1 1/2" Swivel
 - 1 — 1" to 1 1/2" Adapter
 - 1 — 1 1/2" to 1" Adapter
 - 1 — set of 1 1/2" drive sockets from 2" through 4 3/4" in 1/16" increments
- Extensions: 2 — 3/4" drive by 8", 1 — 3/4" drive by 13",
2 — 1" drive by 8", 1 — 1" drive by 13", 1 — 1 1/2" drive by 12"

BASIC TOOL REQUIREMENTS (continued)

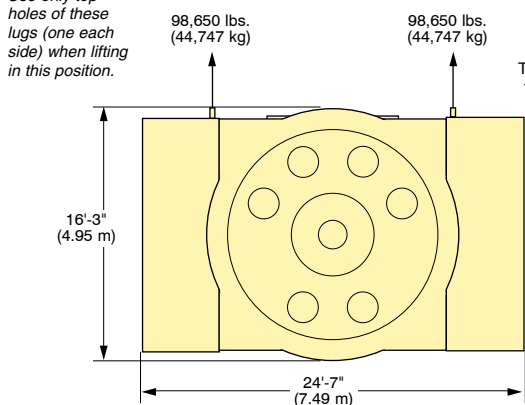
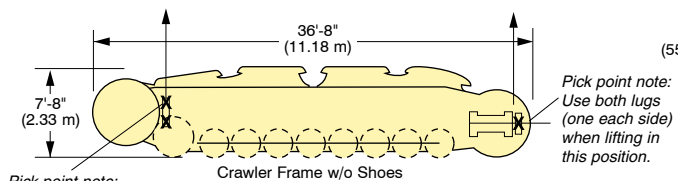
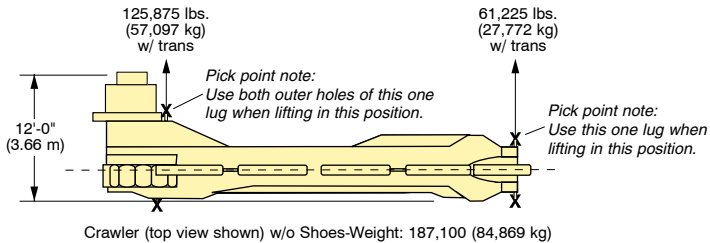
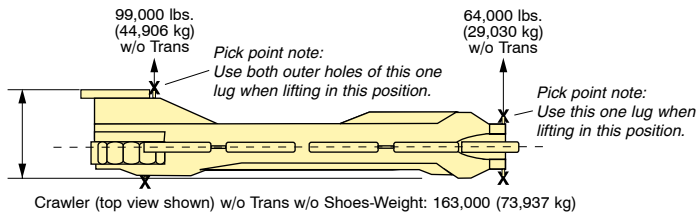
- 6 — 6 ton come-alongs
 - 6 — 1/5 ton come-alongs
 - 4 — 3/4 ton come-alongs
 - 2 — 1/2" torque wrenches
 - 1 — 3/4" torque wrench
 - 1 — 1" torque wrench
 - 1 — torque multiplier 18 1/2 : 1
 - 1 — 48" aluminum pipe wrench
 - 2 — 24" pipe wrenches
 - 1 — 24" aluminum pipe wrench
 - 1 — 24" chain wrench
 - 1 — 24" crescent wrench
 - 1 — open end wrenches 5/16" through 2 1/2" in 1/16" increments
 - 1 — hammer wrenches 1 1/8" through 3 1/8" in 1/16" increments
 - 1 — 4" hammer wrench
- ### Basic Power Tools
- 1 — pneumatic air wrench, 1/2" drive, with sockets from 1/2" to 1 1/4", in 1/8" increments
 - 1 — spray paint gun
 - 1 — air powered grinder, 9" right angle disc
 - 1 — air powered 1/4" pencil grinder
 - 1 — air powered chipping hammer w/chisels
 - 1 — welding machine, 400 amp capacity (portable gasoline or diesel driven), including 100' long welding cables
 - 1 — portable air compressor, 150 CFM capacity, with 2 ea. 100' long hoses with inline oilers
 - 1 — portable light plant or electric power supply if needed
 - 1 — electric heated rod oven
 - 2 — oxygen/acetylene burning sets with 75' hose
 - 2 — 50-ton hydraulic jacks
 - 2 — 1/2" electric drills
 - 2 — 1/2" cordless drills
 - 1 — 1/2" angle drill
 - 2 — 3/8" electric drills
 - 1 — magnetic drill
 - 1 — 1 1/2" drive pneumatic impact wrench
 - 2 — 1" drive pneumatic impact wrenches
 - 1 — 3/4" Super-bolt impact wrench
 - 2 — 3/4" drive pneumatic wrenches
 - 4 — 1/4" die grinders
 - 9 — 5" grinders
 - 5 — 7" grinders
 - 2 — straight grinders
- ### Basic Electrical Tools
- 1 — knock out punch set
 - 1 — hydraulic hand pump
 - 1 — hole saw kit
 - 2 — manual Crimpers
 - 1 — hydraulic crimpers
 - 3 — heat guns
 - 2 — reciprocating saws
 - 1 — soldering gun
 - 6 — 600 amp welders
 - 4 — wire feeders
 - 4 — air arcs
 - 1 — diesel genset - 300 kW
- ### Miscellaneous Items
- 3 — tarpaulins, 30' x 30'
 - 2 — 12' step ladders - straight
 - 2 — 20' extension ladders
 - 2 — barrels of cleaning solvent
 - 20 — rolls masking tape 1"
 - 50 — sheets of fine emery cloth
 - 50 — sheets of medium emery cloth
 - 2 — wooden stairway with railing for boarding
 - 25 — rolls black plastic electrical tape
 - 25 — rolls of friction tape
 - 5 — anti-seize lubricant (cans)
 - 5 — dye check kits for checking welds (NDT-PT)
 - 6 — fire extinguishers—20 lb. dry chemical type
 - 100 — lbs. 3/32" weld rod
 - 300 — lbs. 1/8" weld rod
 - 200 — lbs. 3/16" weld rod (low hydrogen, pre-dried)
 - 300 — feet manila rope
 - 100 — lbs. cleaning rags
 - 2000 — lbs. (approx.) dry ice (the exact quantity required will depend upon location of source and ambient temperature)
 - or —
 - Liquid Nitrogen - 4 bottles, approximately 370 lbs. of product each bottle and must have liquid withdrawal capabilities
 - 3 — 6-foot step ladder
 - 3 — 8-foot step ladder
 - Painting supplies
 - Assorted-color electrical tape

The above tool listing indicates the basic minimum range and quantity of tools recommended. The list is not intended to be all-inclusive.

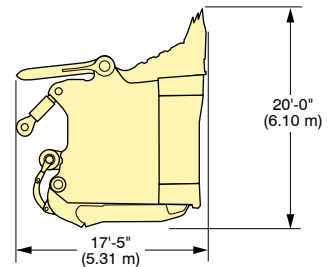
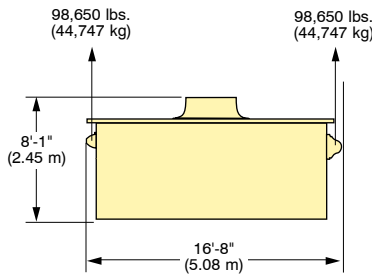
Data Codes

- *1 ton = 2,000 pounds (907.2 kg)
- 10' = 10 feet (305 cm) 10" = 10 inches (25.4 cm)

4100XPC LIFTING OR HITCHING POINTS AND APPROXIMATE WEIGHTS* OF MAJOR ITEMS

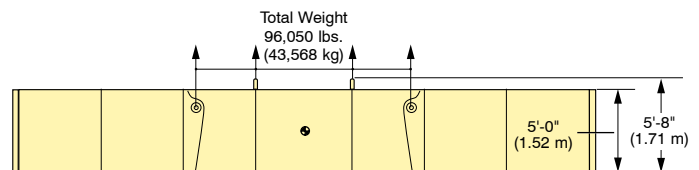
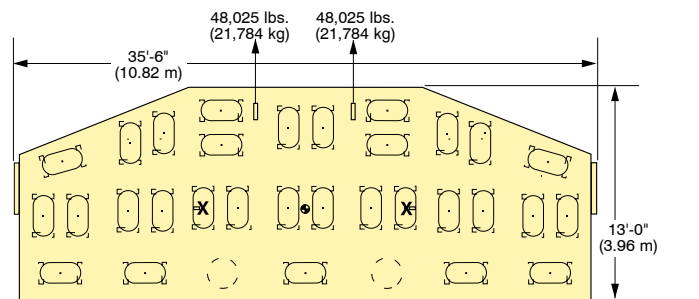
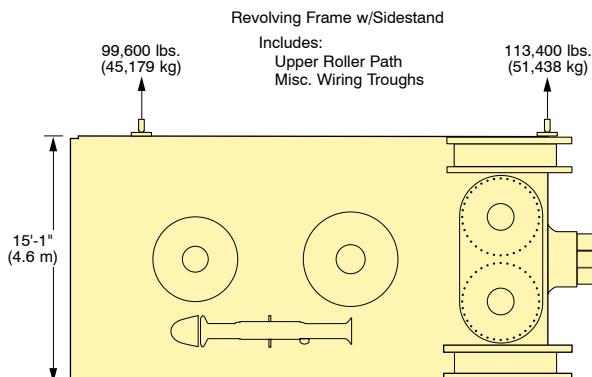
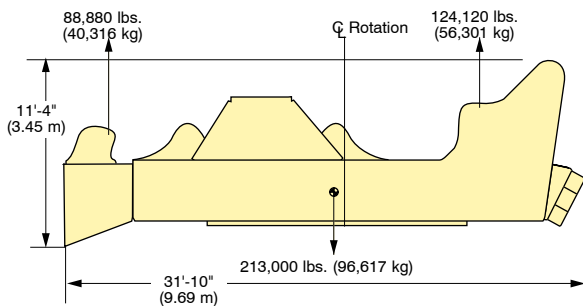


Total Weight: 197,300 lbs. (44,747 kg) Includes: Swing Roller Carrier Ring Lower Swing Roller Path



76 yd³ (58.1 m³) Bail Type Dipper
175,000 lbs. (79,380 kg)

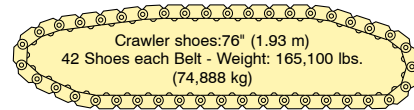
Typical values only; there is no standard dipper.



Counterweight Box

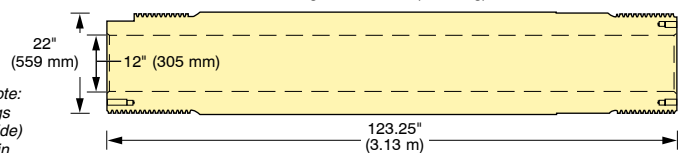
CAUTION The side loading to any welded-on lifting lug cannot exceed $\pm 5^\circ$ from the vertical.

*Weights are $\pm 10\%$. For actual weight of each component, refer to packing list.



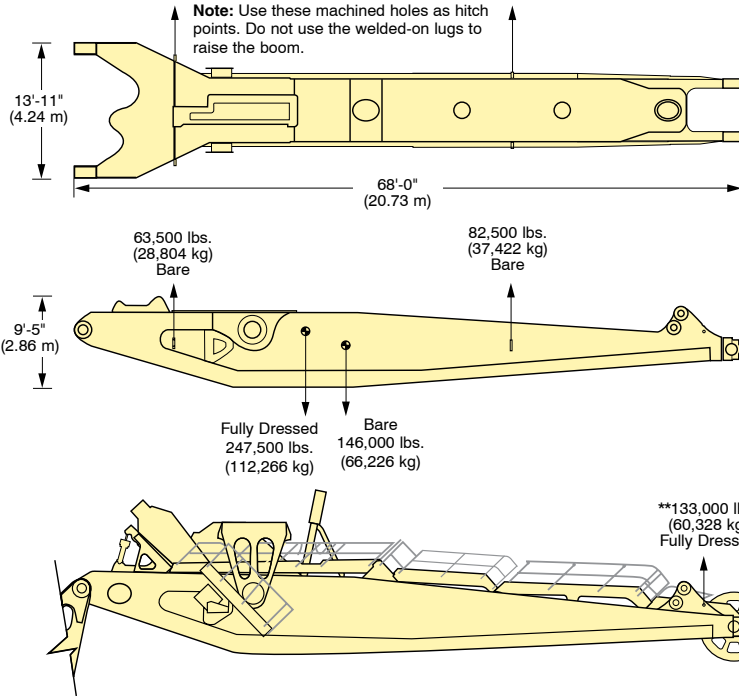
Crawler shoes: 87" (2.21 m)
42 Shoes each Belt - Weight: 175,000 Lbs. (79,379 Kg.)

Center Gudgeon
Weight: 9,050 lbs. (4,105 kg)



Dry ice to freeze center gudgeon (shown above) for field installation into carbody. The quantity will depend on location of supplier, and ambient temperature.

4100XPC LIFTING OR HITCHING POINTS AND APPROXIMATE WEIGHTS* OF MAJOR ITEMS



CAUTION The side loading to any welded-on lifting lug cannot exceed $\pm 5^\circ$ from the vertical.

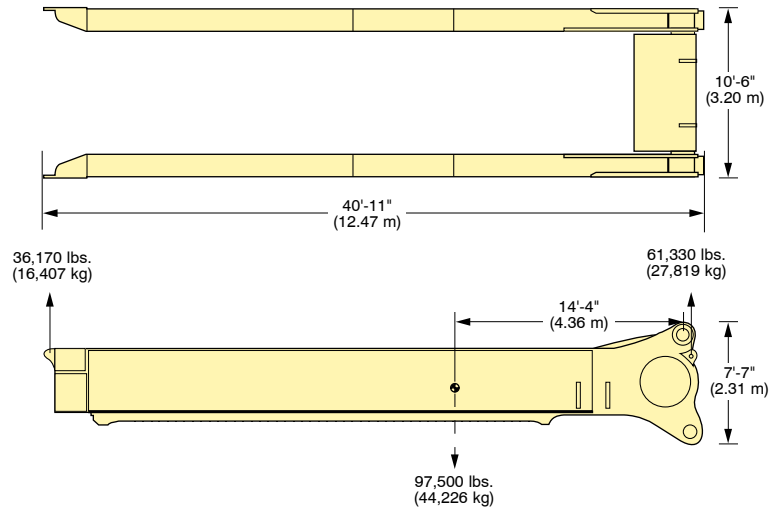
*Weights are $\pm 10\%$. For actual weight of each component, refer to packing list.

Bare Boom includes:
- Lube material

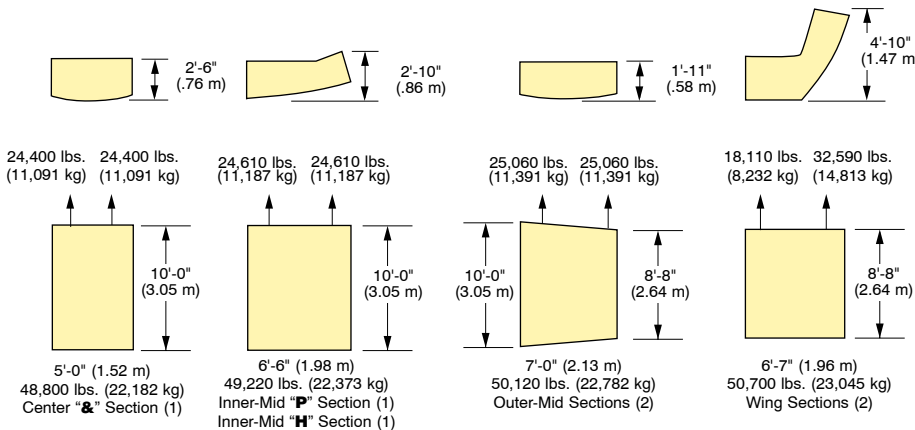
Fully-dressed Boom includes:
- Boom Point Assembly
- Crowd Machinery
- Hoist Rope Guide
- Dipper Trip Machinery
- Catwalks

** Hitch point load encountered when raising a fully-dressed boom into position.

Handle Layout



Counterweight Slabs



SITE LAYOUT

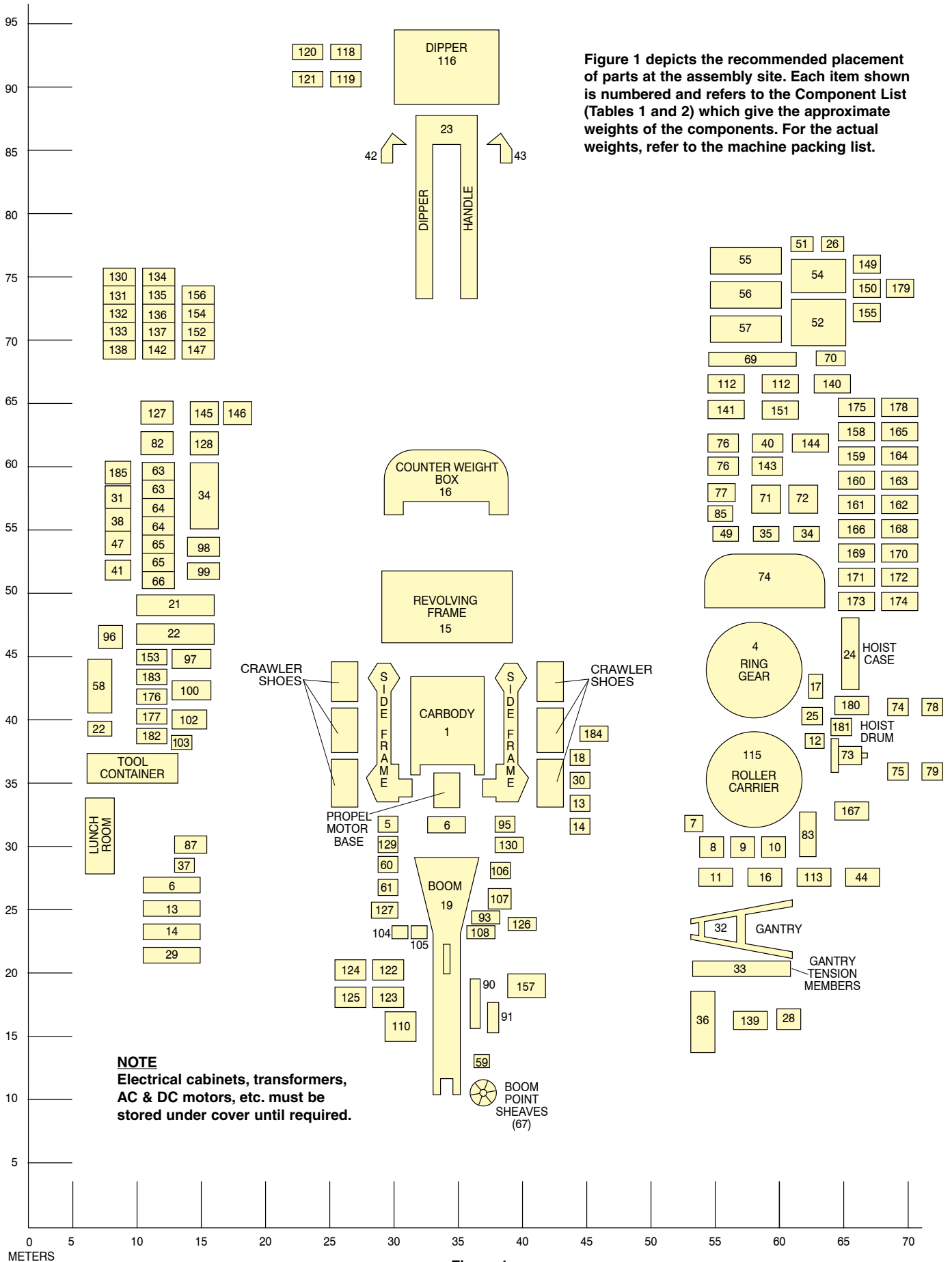


Figure 1 depicts the recommended placement of parts at the assembly site. Each item shown is numbered and refers to the Component List (Tables 1 and 2) which give the approximate weights of the components. For the actual weights, refer to the machine packing list.

Figure 1

4100XPC COMPONENT LIST - US & CANADA Table 1

Site Location	Description of Contents	Approx Weight*		Site Location	Description of Contents	Approx Weight*	
		Lbs.	Kg			Lbs.	Kg
CARBODY COMPONENTS				REVOLVING FRAME COMPONENTS (CONTINUED)			
129	Cabinet - Control - Lower - Skid	740	336	138	Hoist Gear Case - I/O Cabinet Assy - Box	390	177
130	Cabinet - Switch - Lower Disc. - Box	1,042	473	24	Hoist Gear Case Assembly - Pc	37,000	16783
1	Carbody - Lower - Pc	195,000	88452	79	Hoist Motor Assembly Hardware - Box	524	238
62	Carbody Stairs Installation - Skid	570	259	74	Hoist Motor Base - Skid	6,070	2753
18	Center Gudgeon Assembly - Box	13,800	6260	75	Hoist Motor Base - Skid	6,070	2753
2	Crawler - L/H (w/o Transmission) - Pc	164,400	74572	78	Hoist Motor Front - (K1980) - Skid	20,640	9362
3	Crawler - R/H (w/o Transmission) - Pc	164,400	74572	78	Hoist Motor Front (K1690) - Skid	19,125	8675
xx	Crawler Frame Dowel Rod Bolts - Box	2,820	1279	79	Hoist Motor Rear - (K1980) - Skid	20,640	9362
6	Crawler Frame Installation (Bolts) - Box	11,400	5171	79	Hoist Motor Rear (K1690) - Skid	19,125	8675
14	Crawler Shoe Pin Hardware - Box	1,376	624	145	Hood Half - Rear Roof (1 of 2) - Skid	4,140	1878
13	Crawler Shoe Pins #1 - Box	6,262	2840	146	Hood Half - Rear Roof (2 of 2) - Skid	4,140	1878
13	Crawler Shoe Pins #2 - Box	6,202	2813	112	House - Angle, Jacking Installation - Box	884	401
14	Crawler Shoe Pins #3 - Box	6,202	2813	54	House - Center Beam - Skid	4,800	2177
	Crawler Shoes - Shipped Direct - appx 42 skids @ 8,000 lbs ea			149	House - Center Front Panel - Skid	2,060	934
5	Propel Motors & Base Assembly - Pc	43,000	19505	150	House - Hatch Cover Front - L/H - Skid	1,460	662
29	Propel Transmission (1 of 2) - Skid	25,000	11340	158	House - Hatch Cover Front - R/H - Skid	1,460	662
30	Propel Transmission (2 of 2) - Skid	25,000	11340	159	House - Hatch Covers - Box	5,765	2615
37	Propel Transmission Bolts - Hardware - Box	388	176	160	House - Installation Assembly - Box	3,000	1361
4	Swing - Ring Gear - Pc	23,000	10433	161	House - Panel - Front - L/H - Skid	1,000	454
7	Swing Component Installation - Box	3,112	1412	162	House - Panel - Front - R/H - Skid	1,000	454
8	Swing Rollers (1 of 3) - Box	2,322	1053	163	House - Panel - Rear Wall - Box	14,420	6541
9	Swing Rollers (2 of 3) - Box	2,322	1053	164	House - Panel - Side Wall - Box	8,760	3974
10	Swing Rollers (3 of 3) - Box	2,310	1048	20	House - Roof Grating - Box	2,540	1152
87	Tools - Hydraulic and Miscellaneous - Box	918	416	165	House - Shims / Covers - Box	382	173
179	Wiper Assembly - Roller Circle Inst. - Box	804	365	166	I-Beam Framing - Box	10,000	4536
REVOLVING FRAME COMPONENTS				167	L/H Room Assembly - Pc	20,500	9299
25	Air Compressor - Box	1,550	703	58	Ladder - Vertical Pull-down - Skid	1,760	798
180	Air Compressor - Duct Bleed Component - Box	274	124	142	Light - Interior Installation - Box	922	418
181	Air Compressor Installation - Box	362	164	184	Oil Seal Installation Kit - Box	264	120
85	Air Conditioner / Plate Assembly - Box	3,394	1540	40	Operators Coop - Pc	11,860	5380
182	Brake Removal Kit (Bolts under Platform) - Box	1,400	635	40	Ops Coop - Roof Grating Installation - Skid	420	191
41	Buss Bar Assembly (1 of 2) - Box	1,460	662	143	Ops Coop - Access Ladder - Skid	750	340
41	Buss Bar Assembly (2 of 2) - Box	1,020	463	144	Ops Coop - Awning Installation - Box	2,780	1261
100	Cabinet - Converter - Skid	12,500	5670	168	Plat Mdl. Assembly - Upper - Box	720	327
98	Cabinet - High-Voltage - Skid	2,850	1293	35	Platform - R/H Room Elevated Platform - Pc	11,200	5080
97	Cabinet - Main Transformer - Skid	25,000	11340	34	Platform - Rear L/H - Pc	12,000	5443
102	Cabinet - R.P.C. - Skid	18,000	8165	72	Platform - Rear R/H - Pc	12,000	5443
101	Cabinet - Transfer - Contactor - Skid	1,514	687	169	Platform L/H Room - Pc	11,900	5398
22	Catwalk - Air - Stair - Crate	2,040	925	128	Pressurization Sys. - Silencer Installation - Box	1,726	783
22	Catwalk - Operators Cab - Skid	2,480	1125	127	Pressurization Sys. - Truss Hood - Skid	460	209
21	Catwalk #1 - Skid	4,080	1851	82	Pressurization System (AirScrubPro) - Pc	34,500	15649
22	Catwalk #2 - Crate	4,740	2150	71	R/H Room Assembly - Pc	19,500	8845
147	Control Assembly Filter - Box	450	204	21	Railings - Crate	4,520	2050
178	Controllor - Stair Air R/H Assy. - Box	560	254	151	Revolving Frame - Lifting Lugs - Box	764	347
177	Counterweight - Flat Stock - Filler - Box	202	92	15	Revolving Frame - Upper - Pc	213,600	96889
31	Counterweight - Troughing - Box	3,060	1388	170	Side Beams - Roof - Box	4,350	1973
16	Counterweight Box - Pc	98,000	44453	171	Sky Light (1 of 2) - Box	374	170
47	Counterweight Mounting Bolts - Box	1,368	621	172	Sky Light (2 of 2) - Box	168	76
63	Counterweight Slab (&) - Pc	50,000	22680	173	Sky Light Guards - Skid	348	158
64	Counterweight Slab (H) - Pc	50,000	22680	49	Slipring Mounting Parts - Box	752	341
63	Counterweight Slab (P) - Pc	50,000	22680	174	Stairway - Air / LWR - R/H - Skid	1,280	581
64	Counterweight Slab Middle Section - Pc	50,000	22680	22	Stairway - Air UPR/LWR/RH - Skid	1,996	905
65	Counterweight Slab Middle Section - Pc	50,000	22680	113	Swing Guards - Box	1,380	626
65	Counterweight Slab Wing Section - Pc	50,000	22680	76	Swing Installation Components - Box	3,112	1412
66	Counterweight Slab Wing Section - Pc	50,000	22680	152	Swing Motor Troughing - Box	708	321
39	Crowd Motor Blower - Box	694	315	76	Swing Motors (3 units, ea. weighing) - Skid	10,000	4536
176	Crowd Transmission Lube - Box	729	331	83	Swing Shaft (1 of 3) - Pc	5,440	2468
116	Dipper Assembly	Variable		84	Swing Shaft (2 of 3) - Pc	5,440	2468
141	Dirt Chute - Box	1,168	530	44	Swing Shaft (3 of 3) - Pc	5,620	2549
112	Dirt Chute - Hood Assembly - Box	518	235	77	Swing Trans. (3 units, ea weighing) - Skid	12,750	5783
140	Dirt Chute - Tube Assembly - Skid	256	116	153	Swing Transmission Drain Assembly - Box	438	199
185	Duct Swing Blower Assembly	440	200	38	Swivel Grease Assembly - Box	5,650	2563
130	Electrical - Cable - I/O Profibus Installation - Box	556	252	154	Temperature Monitoring Kit - Box	538	244
131	Electrical - Upper Cable Tray Installation - Box	1,005	456	183	Transformer - Main - Duct Installation - Box	580	263
132	Electrical - Wire Installation - Loose (1 of 3) - Box	458	208	99	Transformer - Auxilliary Field - Skid	6,532	2963
133	Electrical - Wire Installation - Loose (2 of 3) - Box	1,096	497	155	Winch - Elec. - Windshield Install - Box	956	434
134	Electrical - Wire Installation - Loose (3 of 3) - box	1,090	494	BOOM/HANDLE COMPONENTS			
96	Electrical Shipping Materials - Box	373	169	95	Boom - Electrical Materials - Box	414	188
135	Floodlight Installation - 400W - Box	1,218	552	156	Boom - Jack Stands - Box	1,134	514
136	Floodlight Installation - 500W - Box	306	139	60	Boom - Trip Sheave Bracket Assembly - Skid	792	359
137	Floodlight Material - Box	336	152	19	Boom Assembly - Pc	148,000	67133
33	Gantry - Tension Members (2 units, each weighing) - Pc	9,800	4445	127	Boom Foot Pin Assembly - Box	2,226	1010
32	Gantry Assembly - Pc	35,900	16284	67	Boom Point Sheave Assembly - Pc	13,500	6124
28	Gantry Assembly Parts - Box	976	443	157	Cable - Hoist - Guide - Skid	2,186	992
175	Gantry Boot Assembly - Box	265	120	12	Cable - Hoist - Tugger Installation - Skid	2,880	1306
36	Gantry Platform Assembly - Skid	2,865	1300	104	Cable - Hoist (1 of 2) - Pc	6,240	2830
139	Gantry Platform Ladder Assembly - Skid	622	282	105	Cable - Hoist (2 of 2) - Pc	6,240	2830
73	Hoist Drum Assembly - Pc	53,000	24041	106	Cable - Suspension (1 of 2) - Pc	11,500	5216
17	Hoist Drum Assembly Cabinet Bracing Box	850	386	107	Cable - Suspension (2 of 2) - Pc	11,500	5216
51	Hoist Drum Guard Installation - Box	1,300	590	125	Catwalk - Lower Boom Assembly - Skid	1,366	620

4100XPC COMPONENT LIST - US & CANADA Table 1

Site Location	Description of Contents	Approx Weight*		Site Location	Description of Contents	Approx Weight*	
		Lbs.	Kg			Lbs.	Kg
BOOM/HANDLE COMPONENTS (CONTINUED)				BOOM/HANDLE COMPONENTS (CONTINUED)			
122	Catwalk - Platform - Boom - Skid	4,227	1917	42	Saddle Block (1 of 2) - Pc	11,500	5216
123	Catwalk - Sdl Blk / Lower Boom L/H - Skid	3,890	1765	43	Saddle Block (2 of 2) - Pc	11,500	5216
124	Catwalk - Sdl Blk / Lower Boom R/H - Skid	3,890	1765	90	Shipper Shaft - Box	16,600	7530
126	Crowd Drive Assembly - Box	1,442	654	110	Shipper Shaft Gear - Box	7,600	3447
93	Crowd Gear Case Cover - Pc	13,940	6323	59	Shipper Shaft Pinions - Box	4,610	2091
108	Crowd Motor and Base - Skid	14,800	6713	118	Snubber Kit (SnubRite) - (1 of 2) - Box	1,574	714
61	Dipper Trip Drum & Motor Assembly, R/H - Skid	2,234	1013	119	Snubber Kit (SnubRite) - (2 of 2) - Box	1,574	714
23	Handle - Dipper - Pc	99,870	45301	120	Snubber Mounting Kit (SnubRite) - Box	830	376
60	Handle - Sheave Bracket Assembly - Skid	782	355	122	Stairs - Boom - Skid	3,280	1488
121	Pitch Brace Assembly - Adjustable - Skid	3,365	1526				

Weights are ±10%. For actual weight of each component, refer to packing list.

4100XPC COMPONENT LIST - EXPORT Table 2

Description of Contents	Approx Weight*		Description of Contents	Approx Weight*	
	Lbs.	Kg		Lbs.	Kg
CARBODY COMPONENTS			REVOLVING FRAME COMPONENTS (CONTINUED)		
Cabinet - Control - Lower - Skid	874	396	Electrical - Upper Cable Tray Installation - Box	1,864	846
Cabinet - Switch - Lower Disc. - Box	1,042	473	Electrical - Wire Installation - Loose (1 of 3) - Box	458	208
Carbody - Lower - Pc	195,000	88452	Electrical - Wire Installation - Loose (2 of 3) - Box	1,754	796
Carbody Stairs Installation - Skid	570	259	Electrical - Wire Installation - Loose (3 of 3) - Box	878	398
Center Gudgeon Assembly - Box	13,800	6260	Electrical Shipping Materials - Box	373	169
Crawler - L/H (w/o Transmission) - Pc	165,000	74844	Emergency Light Installation - Box	272	123
Crawler - R/H (w/o Transmission) - Pc	165,000	74844	Floodlight Installation - 400W - Box	1,286	583
Crawler Frame Dowel Rod Bolts - Box	2,820	1279	Floodlight Installation - 500W - Box	490	222
Crawler Frame Installation (Bolts) - Box	11,400	5171	Floodlight Material - Box	404	183
Crawler Shoe Pin Hardware - Box	1,376	624	Gantry - Tension Members (2 units, each weighing) - Pc	9,800	4445
Crawler Shoe Pins #1 - Box	6,316	2865	Gantry Assembly - Pc	35,900	16284
Crawler Shoe Pins #2 - Box	6,316	2865	Gantry Assembly Parts - Box	992	450
Crawler Shoe Pins #3 - Box	6,316	2865	Gantry Boot Assembly - Box	270	122
Crawler Shoes - Shipped Direct - appx 42 skids @ 8,000 lbs ea			Gantry Platform Assembly - Skid	2,865	1300
Propel Motors & Base Assembly - Pc	43,000	19505	Gantry Platform Ladder Assembly - Skid	622	282
Propel Transmission (1 of 2) - Box	25,920	11757	Hoist Drum Assembly - Pc	53,000	24041
Propel Transmission (2 of 2) - Box	25,000	11340	Hoist Drum Assembly Cabinet Bracing - Box	1158	525
Propel Transmission Bolts - Hardware - Box	388	176	Hoist Drum Guard Installation - Box	1,300	590
Swing - Ring Gear - Pc	23,200	10524	Hoist Drum Lock Assembly - Box	2432	1103
Swing Component Installation - Box	3,112	1412	Hoist Gear Case - I/O Cabinet Assy - Box	390	177
Swing Rollers (1 of 3) - Box	2,356	1069	Hoist Gear Case Assembly - Pc	37,000	16783
Swing Rollers (2 of 3) - Box	2,356	1069	Hoist Motor Assembly Hardware - Box	524	238
Swing Rollers (3 of 3) - Box	2,356	1069	Hoist Motor Base - Skid	6,070	2753
Tools - Hydraulic and Miscellaneous - Box	992	450	Hoist Motor Base - Skid	6,070	2753
Wiper Assembly - Roller Circle Inst. - Box	868	394	Hoist Motor Front - (K1690) - Skid	20,240	9181
REVOLVING FRAME COMPONENTS			Hoist Motor Front - (K1980) - Skid	21,840	9907
Air Compressor - Box	1,586	719	Hoist Motor Rear - (K1690) - Skid	20,240	9181
Air Compressor - Duct Bleed Component - Box	278	126	Hoist Motor Rear - (K1980) - Skid	21,840	9907
Air Compressor Installation - Box	880	399	Hood - Rope Guide - Skid	1340	608
Air Conditioner / Plate Assembly - Box	3,980	1805	Hood Half - Rear Roof (1 of 2) - Skid	4,140	1878
Brake Removal Kit (Bolts under Platform) - Box	1,400	635	Hood Half - Rear Roof (2 of 2) - Skid	4,140	1878
Buss Bar Assembly (1 of 2) - Box	1,960	889	House - Angle, Jacking Installation - Box	908	412
Cabinet - Converter - Skid	12,500	5670	House - Center Beam - Skid	4,950	2245
Cabinet - High-Voltage - Box	4,200	1905	House - Center Front Panel - Skid	2,060	934
Cabinet - Main Transformer - Skid	27,900	12655	House - Filtration Elec. Installation - Box	366	166
Cabinet - R.P.C. - Skid	24,000	10886	House - Hatch Cover Front - L/H - Skid	1,460	662
Cabinet - Transfer - Contactor - Box	1,766	801	House - Hatch Cover Front - R/H - Skid	1,460	662
Catwalk - Air - Stair - Crate	3,880	1760	House - Hatch Covers - Box	5,765	2615
Catwalk - Operators Cab - Skid	2,480	1125	House - Heater Installation Kit - Box	427	194
Catwalk #1 - Crate	5,300	2404	House - Installation Assembly - Box	2,212	1003
Catwalk #2 - Crate	2,040	925	House - Panel - Front - L/H - Pc	1,000	454
Controller - Stair Air R/H Assy. - Box	560	254	House - Panel - Front - R/H - Pc	1,000	454
Counterweight - Flat Stock - Filler - Box	221	100	House - Panel - Rear Wall - Box	14,420	6541
Counterweight - Troughing - Box	3,060	1388	House - Panel - Side Wall - Box	8,760	3974
Counterweight Box - Pc	98,000	44453	House - Roof Grating - Box	2,540	1152
Counterweight Mounting Bolts - Box	1,396	633	House - Shims / Covers - Box	382	173
Counterweight Slab (&) - Pc	50,000	22680	I-Beam Framing - Box	9,600	4355
Counterweight Slab (H) - Pc	50,000	22680	L/H Room Assembly - Pc	20,500	9299
Counterweight Slab (P) - Pc	50,000	22680	Ladder - Vertical Pull-down - Skid	1,760	798
Counterweight Slab Middle Section - Pc	50,000	22680	Light - Interior Installation - Box	968	439
Counterweight Slab Middle Section - Pc	50,000	22680	Oil Seal Installation Kit - Box	274	124
Counterweight Slab Wing Section - Pc	50,000	22680	Operators Coop - Box	13,360	6060
Counterweight Slab Wing Section - Pc	50,000	22680	Ops Coop - Roof Grating Installation - Skid	420	191
Crowd Motor Blower - Duct - Box	734	333	Ops Coop - Access Ladder - Skid	860	390
Crowd Transmission Lube - Box	768	348	Ops Coop - Awning Installation - Box	2,780	1261
Dipper Assembly	Variable		Plat Mdl. Assembly - Upper - Box	720	327
Dirt Chute - Box	1,000	454	Platform - R/H Room Elevated Platform - Pc	11,200	5080
Dirt Chute - Hood Assembly - Box	528	240	Platform - Rear L/H - Pc	12,000	5443
Duct Swing Blower Assembly - Box	286	130	Platform - Rear R/H - Pc	12,000	5443
Electrical - Cable - I/O Profibus Installation - Box	556	252	Platform L/H Room - Pc	11,900	5398

4100XPC COMPONENT LIST - EXPORT

Table 2

Description of Contents	Approx Weight*		Description of Contents	Approx Weight*	
	Lbs.	Kg		Lbs.	Kg
REVOLVING FRAME COMPONENTS (CONTINUED)			BOOM/HANDLE COMPONENTS (CONTINUED)		
Pressurization Sys. - Silencer Installation - Box	1,748	793	Boom Foot Pin Assembly - Box	2,226	1010
Pressurization Sys. - Truss Hood - Skid	680	308	Boom Point Sheave Assembly - Pc	13,500	6124
Pressurization System (AirScrubPro) - Pc	34,500	15649	Cable - Hoist - Guide - Skid	2,186	992
R/H Room Assembly - Pc	19,500	8845	Cable - Hoist - Tugger Installation - Skid	2,880	1306
Railings - Crate	3,900	1769	Cable - Hoist (1 of 2) - Pc	6,240	2830
Resolver Cable Installation - Box	526	239	Cable - Hoist (2 of 2) - Pc	6,240	2830
Revolving Frame - Lifting Lugs - Box	1,198	543	Cable - Suspension (1 of 2) - Pc	11,500	5216
Revolving Frame - Upper - Pc	214,000	97070	Cable - Suspension (2 of 2) - Pc	11,500	5216
Side Beams - Roof - Box	4,350	1973	Cable Installation - Boom Material - Box	308	140
Sky Light (1 of 2) - Box	404	183	Catwalk - Lower Boom Assembly - Skid	1,270	576
Sky Light (2 of 2) - Box	190	86	Catwalk - Platform - Boom - Skid	4,048	1836
Sky Light Guards - Skid	355	161	Catwalk - Sdl Blk / Lower Boom L/H - Skid	3,890	1765
Slipring Mounting Parts - Box	789	358	Catwalk - Sdl Blk / Lower Boom R/H - Skid	3,890	1765
Stairway - Air / LWR - R/H - Skid	1,280	581	Crowd Drive Assembly - Box	1,454	660
Stairway - Air UPR/LWR/RH - Skid	1,996	905	Crowd Gear Case Cover - Pc	14,940	6777
Swing Guards - Box	1,380	626	Crowd Motor and Base - Box	15,640	7094
Swing Installation Components - Box	3,112	1412	Dipper Trip Drum & Motor Assembly, R/H - Skid	2,310	1048
Swing Motor Troughing - Box	774	351	Handle - Dipper - Pc	99,870	45301
Swing Motors (3 units, ea. weighing) - Skid	10,750	4876	Handle - Sheave Bracket Assembly - Skid	790	358
Swing Shaft (1 of 3) - Pc	5,556	2520	Pitch Brace Assembly - Adjustable - Skid	3,910	1774
Swing Shaft (2 of 3) - Pc	5,556	2520	Saddle Block - Wear Plate - Skid	1,268	575
Swing Shaft (3 of 3) - Pc	5,556	2520	Saddle Block (1 of 2) - Skid	12,000	5443
Swing Trans. (3 units, ea weighing) - Skid	13,500	6124	Saddle Block (2 of 2) - Skid	12,000	5443
Swing Transmission Drain Assembly - Box	450	204	Sheave Brackets - Box	850	386
Swing Transmission Lube Assembly - Box	1,516	688	Shipper Shaft - Box	16,600	7530
Swivel Grease Assembly - Box	5,650	2563	Shipper Shaft - Bushings - Box	2,665	1209
Temperature Monitoring Kit - Box	672	305	Shipper Shaft Assembly - Box	1,164	528
Transformer - Main - Duct Installation - Box	596	270	Shipper Shaft Gear - Box	7,600	3447
Transformer - Auxilliary Field - Skid	7,461	3384	Shipper Shaft Pinions - Box	4,640	2105
Winch - Elec. - Windshield Install - Box	956	434	Snubber Kit (SnubRite) - (1 of 2) - Box	1,590	721
BOOM/HANDLE COMPONENTS			Snubber Kit (SnubRite) - (2 of 2) - Box	1,590	721
Boom - Electrical Materials - Box	420	191	Snubber Mounting Kit (SnubRite) - Box	852	386
Boom - Jack Stands - Box	1,134	514	Stairs Boom - Skid	3,280	1488
Boom Assembly - Pc	148,000	67133			

Weights are ±10%. For actual weight of each component, refer to packing list.

ELECTRICAL TEST EQUIPMENT REQUIREMENTS

Basic Electrical Test Instrumentation Recommended to Commission and Maintain Centurion Digital Drive Mining Excavator.

Recommended Maintenance Test Equipment Available through P&H and other Vendors.

Description	P&H Part #	Description	P&H Part
DMM (Digital MultiMeter)		#Clamp-On Ammeter —1A to 600A AC / 1000A (DC)	
Fluke Model 23	89Z514D12	Fluke Model i1010	89Z514D15
Alternate DMM—Fluke, Model 87	1089Z275	High Voltage Differential Probe —P5200	89Z515D21
Oscilloscope		Laptop computer —Consult service department for specs	N/A
Tektronix Model THS720A (Hand-held, Dual Trace, Digital, Storage, Battery Powered, Soft Case) Scope w/120V / 60Hz Adapter	89Z515D16	Drive Communications (hardware and software)	R40775D3
120V / 50 Hz AC Adapter (240V Adapters Available)	89Z515D30	RPC Capacitor Test unit	89Z508D1
Hard Carrying Case	89Z515D26	Voltage Divider	R1192F1
X10 Probe (1kV)	89Z515D17	Hand-held Drive Programmer, ABB CDP-312R	R46072D7
R5-232 to 485 Converter —for loading ABB drive firmware ABB NPCU-01-KIT	R49117D1	2 Meter Connection Cable	R46072D8
Megger —500V & 1000V Scales (hand-crank /w case) James D. Biddle Cat. 21158	89Z496	SCR (Thyristor) Tester	89Z511D1

NOTE: All designs, specifications and components of equipment described above are subject to change at manufacturer's sole discretion at any time without advance notice. Data published herein is informational in nature and shall not be construed to warrant suitability of machine for any particular purpose as performance may vary with conditions encountered. The only warranty applicable is our standard written warranty for this machine.



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