

TABLE OF CONTENTS

<u>Section</u>	<u>Description</u>	<u>Page</u>
A.	<u>General Information and General Arrangements</u>	
	(1) 13.6 Tonne Crane - - - - -	1
	(2) 9.1 Tonne Crane - - - - -	3
	(3) 13.6/2.7 Tonne Crane - - - - -	11
	(4) 9.1 Tonne Crane General Arrangement - - - - -	13
	(5) 13.6 Tonne Crane General Arrangement - - - - -	14
	(6) 13.6/2.7 Tonne Crane General Arrangement - - - - -	15
B.	<u>Crane Operators Manual</u>	
	(1) Qualifications - - - - -	16
	(2) Operation - - - - -	16
	(3) Bridge Travel Motion - - - - -	17
	(4) Trolley Travel Motion - - - - -	17
	(5) Hoist Motion - - - - -	18
	(6) General Rules - - - - -	19
	(7) Standard Hand Signals - - - - -	21
	(8) Operating Rules - - - - -	22
C.	<u>Maintenance</u>	
	(1) Care, Operation and Maintenance of P & H Balance Design Heri-Lift Hoists - - - - - (1-1 to 7-1)	
	(2) Elevation Hydraulic Brakes - - - - -	25
	(3) Reuland Electric Motors - - - - -	27
	(4) Maintenance Procedure for Bridge and Trolley Wheels -	30
	(5) Lubrication Chart - - - - -	31
	(6) Overhead Crane Inspection & Maintenance Checklist - -	32
	<u>Parts List</u>	
D.	9.1 Tonne P & H Hoist (35CN43G) - - - - -	36
E.	13.6 Tonne P & H Hoist (36CR33G) - - - - -	70
F.	2.7 Tonne P & H Hoist (14BF45G) - - - - -	103
G.	Elevation Hydraulic Brakes - - - - -	133
H.	Bridge and Trolley Wheels - - - - -	135
I.	Reuland Electric Motors and Gearbox - - - - -	140
J.	<u>Bill of Materials</u>	
	(1) 9.1 Tonne Bridge Panel - - - - -	142
	(2) 9.1 Tonne Trolley Panel - - - - -	143
	(3) 13.6 Tonne Bridge Panel - - - - -	144
	(4) 13.6 Tonne Trolley Panel - - - - -	145
	(5) 13.6/2.7 Tonne Bridge Panel - - - - -	146
	(6) 13.6/2.7 Tonne Trolley Panel - - - - -	147
	(7) Miscellaneous Electrical - - - - -	148
	(8) Bridge Conductor System - - - - -	149
	(9) Runway Conductor System - - - - -	150
	(10) Pushbutton Station - - - - -	151

K. Miscellaneous Spare Parts

(1) Pushbutton Pendant and Relays - - - - -	152
(2) Bridge Lights - - - - -	159
(3) Horn - - - - -	163
(4) Photocells - - - - -	164
(5) Bridge Conductor System - - - - -	168
(6) Runway Conductor System - - - - -	171
(7) Sylvania Thermal Overload Relays - - - - -	176
(8) Sylvania Starters and Contactors Size 00, 0, 1, 1P & 2 - - - - -	177
(9) Sylvania Starters and Contactors Size 3 and 4 - - - - -	179
(10) Sylvania Oiltight Pushbuttons - - - - -	181
(11) Bridge and Trolley Resistor Banks	
1. 13.6 Tonne Bridge Motor Resistors - - - - -	183
2. 13.6 Tonne Trolley Motor Resistors - - - - -	185
3. 9.1 Tonne Bridge Motor Resistors - - - - -	187
4. 9.1 Tonne Trolley Motor Resistors - - - - -	189
(12) Circuit Breakers - - - - -	191
(13) Safety Switches - - - - -	193
(14) Voltage Monitors - - - - -	195
(15) Cab Console Layout	
1. 9.1 and 13.6 Tonne - - - - -	197
2. 13.6/2.7 (Aux.) Tonne - - - - -	198

L. Electrical

(1) 13.6 Tonne Bridge Panel Layout - - - - -	199
(2) 9.1 Tonne Bridge Panel Layout - - - - -	200
(3) 9.1 and 13.6 Tonne Trolley Panel Layout - - - - -	201
(4) 9.1 and 13.6 Tonne Magnetorque Control - - - - -	202
(5) 2.7 Tonne Magnetorque Control - - - - -	203
(6) 9.1 and 13.6 Tonne Wiring Diagram - - - - -	204
(7) 13.6/2.7 (Aux.) Tonne Wiring Diagram - - - - -	205
(8) Wiring Diagram Pushbutton Station - - - - -	206
(9) Intermediate Relay Panel For Pendant Control - - - - -	207
(10) Colour Code For Pushbutton Cable Conductors - - - - -	208

APEX

**A C H I N E
W O R K S L I M I T E D**DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-2604General Information

<u>Serial Number</u> -	2514219-6
<u>Rated Capacity</u> -	13.6 tonne (main)/2.7 tonne (aux.)
<u>Crane Design</u> -	C.S.A. B167-1964 Class B Service
<u>Span</u> -	28.650 m
<u>Lifting Height</u> -	7.750 m
<u>Power Supply</u> -	575V/3 Ph/60 Cycle
<u>Operating Controls</u> -	Cab Operated
<u>Control Voltage</u> -	120V/1 Ph/60 Cycle
<u>Main Lifting Speeds</u> -	1.3, 3.0, 4.5, 6.0, 7.5 (m/min)
<u>Aux. Lifting Speeds</u> -	1.3, 3.0, 4.5, 7.0, 9.2 (m/min)
<u>Trolley Speeds</u> -	9.0, 25.0, 45.0 (m/min)
<u>Bridge Speeds</u> -	9.0, 48.0, 90.0 (m/min)

APEX**A C H I N E
W O R K S L I M I T E D**DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-214General Information Cont'd.

	<u>Main</u>	<u>Auxiliary</u>
<u>Hoist:</u>	P & H Model No. - 36CR33G	14BF456
	Unit Serial No. - T62376	T62962
	Motor Type - HEWH324RX	HEWH256RX
	Motor Serial No. - 111182-A	1624-821082
	Motor R.P.M. - 1710	1720
	Horsepower - 25	10
	Amperage - 24.5	10.6
 <u>Trolley:</u>	Reuland Model No. - 16931 - GG1394A	
	Serial No. - 8220 43B-1	
	Frame - 215 Size Q	
	Motor/gearbox R.P.M. - 1800/216	
	Horsepower - 3	
	Amperage - 3.4	
 <u>Bridge:</u>	Reuland Model No. - 16918 - GG2042A	
	Serial No. (a) - 8220 43A-4	
	(b) - 8220 43A-1	
	Frame - 254U Size R	
	Motor/gearbox R.P.M. - 1800/216	
	Horsepower - 8.75	
	Amperage - 9.5	

APEX

**A C H I N E
W O R K S L I M I T E D**

250 PACIFIC AVENUE

TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-2604

DIVISION OF
APEX INDUSTRIES LIMITEDGeneral Information

<u>Serial Number</u> -	2514219-2
<u>Rated Capacity</u> -	9.1 tonnes
<u>Crane Design</u> -	C.S.A. B167-1964 Class B Service
<u>Span</u> -	28.650 m
<u>Lifting Height</u> -	7.750 m
<u>Power Supply</u> -	575V/3 Ph/60 Cycle
<u>Operating Controls</u> -	Cab Operated
<u>Control Voltage</u> -	120V/1 Ph/60 Cycle
<u>Main Lifting Speeds</u> -	1.3, 3.0, 4.5, 6.0, 7.5 (m/min)
<u>Trolley Speeds</u> -	9.0, 25.0, 45.0 (m/min)
<u>Bridge Speeds</u> -	9.0, 48.0, 90.0 (m/min)

APEX**A C H I N E
W O R K S L I M I T E D**DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-26General Information Cont'd.

Hoist: P & H Model No. - 35CN43G
Unit Serial No. - T62377
Motor Type - HEWH324RX
Motor Serial No. - 1106-82482
Motor R.P.M. - 1710
Horsepower - 20
Amperage - 18.7

Trolley: Reuland Model No. - 16932-GG1394A
Serial No. - 8220 44B-2
Frame - 184 Size Q
Motor/gearbox R.P.M. - 1800/216
Horsepower - 2
Amperage - 2.3

Bridge: Reuland Model No. - 15986-GG2042A
Serial No. (a) - 8220 44A-3
(b) - 8220 42A-1
Frame - 254U Size R
Motor/gearbox R.P.M. - 1800/216
Horsepower - 7.5
Amperage - 8

APEX



A C H I N E W O R K S L I M I T E D

DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-2604

General Information

<u>Serial Number</u> -	2514219-4
<u>Rated Capacity</u> -	9.1 tonnes
<u>Crane Design</u> -	C.S.A. B167-1964 Class B Service
<u>Span</u> -	28.650 m
<u>Lifting Height</u> -	7.750 m
<u>Power Supply</u> -	575V/3 Ph/60 Cycle
<u>Operating Controls</u> -	Cab Operated
<u>Control Voltage</u> -	120V/1 Ph/60 Cycle
<u>Main Lifting Speeds</u> -	1.3, 3.0, 4.5, 6.0, 7.5 (m/min)
<u>Trolley Speeds</u> -	9.0, 25.0, 45.0 (m/min)
<u>Bridge Speeds</u> -	9.0, 48.0, 90.0 (m/min)

APEX**A C H I N E
W O R K S L I M I T E D**DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-260General Information Cont'd.

Hoist: P & H Model No. - 35CN43G
Unit Serial No. - T62378
Motor Type - HEWH324RX
Motor Serial No. - 1107-82582
Motor R.P.M. - 1710
Horsepower - 20
Amperage - 18.7

Trolley: Reuland Model No. - 16932-GG1394A
Serial No. - 8220 42B-2
Frame - 184 Size Q
Motor/gearbox R.P.M. - 1800/216
Horsepower - 2
Amperage - 2.3

Bridge: Reuland Model No. - 15986-GG2042A
Serial No. (a) - 8220 44A-2
(b) - 8220 42A-3
Frame - 254U Size R
Motor/gearbox R.P.M. - 1800/216
Horsepower - 7.5
Amperage - 8

APEX



A C H I N E O R K S L I M I T E D

DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-2604General Information

<u>Serial Number</u> -	2514219-5
<u>Rated Capacity</u> -	9.1 tonnes
<u>Crane Design</u> -	C.S.A. B167-1964 Class B Service
<u>Span</u> -	28.650 m
<u>Lifting Height</u> -	7.750 m
<u>Power Supply</u> -	575V/3 Ph/60 Cycle
<u>Operating Controls</u> -	Cab Operated
<u>Control Voltage</u> -	120V/1 Ph/60 Cycle
<u>Main Lifting Speeds</u> -	1.3, 3.0, 4.5, 6.0, 7.5 (m/min)
<u>Trolley Speeds</u> -	9.0, 25.0, 45.0 (m/min)
<u>Bridge Speeds</u> -	9.0, 48.0, 90.0 (m/min)

APEX**A C H I N E
W O R K S L I M I T E D**DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-26General Information Cont'd.

Hoist: P & H Model No. - 35CN43G
Unit Serial No. - T62380
Motor Type - HEWH324RX
Motor Serial No. - 1109-82582
Motor R.P.M. - 1710
Horsepower - 20
Amperage - 18.7

Trolley: Reuland Model No. - 16932-GG1394A
Serial No. - 8220 44B-1
Frame - 184 Size Q
Motor/gearbox R.P.M. - 1800/216
Horsepower - 2
Amperage - 2.3

Bridge: Reuland Model No. - 15986-GG2042A
Serial No. (a) - 8220 44A-4
(b) - 8220 42A-2
Frame - 254U Size Q
Motor/gearbox R.P.M. - 1800/216
Horsepower - 7.5
Amperage - 8

APEX

**A C H I N E
W O R K S L I M I T E D**DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-2604General Information

<u>Serial Number</u> -	2514219-1
<u>Rated Capacity</u> -	13.6 tonnes
<u>Crane Design</u> -	C.S.A. B167-1964 Class B Service
<u>Span</u> -	28.650 m
<u>Lifting Height</u> -	7.750 m
<u>Power Supply</u> -	575V/3 Ph/60 Cycle
<u>Operating Controls</u> -	Cab Operated
<u>Control Voltage</u> -	120V/1 Ph/60 Cycle
<u>Main Lifting Speeds</u> -	1.3, 3.0, 4.5, 6.0, 7.5 (m/min)
<u>Trolley Speeds</u> -	9.0, 25.0, 45.0 (m/min)
<u>Bridge Speeds</u> -	9.0, 48.0, 90.0 (m/min)

APEX**MACHINE
WORKS LIMITED**DIVISION OF
APEX INDUSTRIES LIMITED

250 PACIFIC AVENUE

TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-260

General Information Cont'd.

Hoist: P & H Model No. - 36CR33G
Unit Serial No. - T62375
Motor Type - HEWH324RX
Motor Serial No. - 111282-A
Motor R.P.M. - 1710
Horsepower - 25
Amperage - 24.5

Trolley: Reuland Model No. - 1631-GG1394A
Serial No. - 8220 43R-2
Frame - 215 Size Q
Motor/gearbox R.P.M. - 1800/216
Horsepower - 3
Amperage - 3.4

Bridge: Reuland Model No. - 16918-GG2042A
Serial No. (a) - 8220 43A-3
(b) - 8220 43A-2
Frame - 254U Size R
Motor/gearbox R.P.M. - 1800/216
Horsepower - 8.75
Amperage - 9.5

APEX

MACHINE WORKS LIMITED

DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-2604General Information

<u>Serial Number</u> -	2514219-3
<u>Rated Capacity</u> -	9.1 tonnes
<u>Crane Design</u> -	C.S.A. B167-1964 Class B Service
<u>Span</u> -	28.650 m
<u>Lifting Height</u> -	7.750 m
<u>Power Supply</u> -	575V/3 Ph/60 Cycle
<u>Operating Controls</u> -	Cab Operated
<u>Control Voltage</u> -	120V/1 Ph/60 Cycle
<u>Main Lifting Speeds</u> -	1.3, 3.0, 4.5, 6.0, 7.5 (m/min)
<u>Trolley Speeds</u> -	9.0, 25.0, 45.0 (m/min)
<u>Bridge Speeds</u> -	9.0, 48.0, 90.0 (m/min)

APEX**A C H I N E
W O R K S L I M I T E D**DIVISION OF
APEX INDUSTRIES LIMITED250 PACIFIC AVENUE
TELEPHONE (506) 388-4088 • MONCTON, N.B. • EIC 8M6 • TELEX 014-26General Information Cont'd.

Hoist: P & H Model No. - 35CN43G
Unit Serial No. - T62379
Motor Type - HEWH324RX
Motor Serial No. - 1108-82582
Motor R.P.M. - 1710
Horsepower - 20
Amperage - 18.7

Trolley: Reuland Model No. - 16932-GG1394A
Serial No. - 8220 42B-1
Frame - 184 Size Q
Motor/gearbox R.P.M. - 1800/216
Horsepower - 2
Amperage - 2.3

Bridge: Reuland Model No. - 15986-GG2042A
Serial No. (a) - 8220 42A-4
(b) - 8220 44A-1
Frame - 254U Size R
Motor/gearbox R.P.M. - 1800/216
Horsepower - 7.5
Amperage - 8