



Ministerio de Transportes y Comunicaciones  
Dirección General de Caminos y Ferrocarriles  
Dirección de Equipo Mecánico

## Costo Referencial de Posesión y Operación de Equipo Mecánico del MTC

\* Agosto 2008 \*

### Maquinaria

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación						Costo Horario de Posesión y Operación (a+b)	
					Depreciación	Seguro 0.46%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador		Total (b)
<b>Equipos para Perforación</b>															
1		76	125-175 PCM	2,000	3.9	0.0	3.9	3.0	22.5	2.9	1.2	0.0	8.3	37.9	41.7
2		87	250-330 PCM	2,000	9.1	0.0	9.1	7.1	28.8	2.9	1.2	0.0	8.3	48.3	57.4
3	Compresoras Neumáticas	93	335-375 PCM	2,500	12.4	0.2	12.6	9.7	45.0	3.3	1.3	0.0	8.3	67.6	80.2
4		150	380-590 PCM	3,500	16.8	0.3	17.1	13.2	47.5	4.0	1.6	0.0	8.3	74.6	91.7
5		196	600-690 PCM	5,000	13.0	0.3	13.2	10.1	91.3	6.1	2.4	0.0	8.3	118.3	131.5
6		240	700-800 PCM	6,500	14.3	0.3	14.6	11.2	108.8	7.5	3.0	0.0	8.3	138.9	153.5
7	Martillos Neumáticos		24 Kg	24	3.1	0.0	3.1	2.4	0.0	0.0	0.0	0.0	0.0	2.4	5.5
8			29 Kg	29	4.0	0.0	4.0	3.1	0.0	0.0	0.0	0.0	0.0	3.1	7.1
9	Motoperforadora	1400 RPM	185 CC	26	4.9	0.1	4.9	1.6	0.0	0.0	0.0	0.0	0.0	1.6	6.5
10	Perforadora sobre Orugas		660-690 PCM	6,000	19.9	0.4	20.3	15.9	0.0	0.0	0.0	0.0	0.0	15.9	36.2
<b>Equipos para Movimiento de Tierra</b>															
11		50-79	0.7-1.3 Yd <sup>3</sup>	10,000	19.7	0.4	20.1	13.1	41.3	3.6	1.4	0.0	8.3	67.7	87.8
12	Cargador sobre Oruga	80-105	1.5-1.75 Yd <sup>3</sup>	12,967	23.3	0.5	23.8	15.5	45.0	4.7	1.9	0.0	8.3	75.3	99.1
13		110-135	2.0-2.25 Yd <sup>3</sup>	16,275	40.1	0.9	41.0	26.7	45.0	5.4	2.2	0.0	8.3	87.6	128.6
14		150-180	2.5-2.75 Yd <sup>3</sup>	18,387	48.8	1.1	49.8	32.5	70.0	5.8	2.3	0.0	8.3	118.9	168.7
15		190-225	3.2-3.75 Yd <sup>3</sup>	25,173	86.4	1.9	88.2	34.5	77.5	7.5	3.0	0.0	8.3	130.9	219.1
16		245	4.0-6.0 Yd <sup>3</sup>	28,000	89.8	1.9	91.7	35.9	87.5	7.9	3.2	0.0	8.3	142.8	234.6
17		Cargador Retroexcavador	62	1 Yd <sup>3</sup>	8,000	21.4	0.4	21.8	12.0	38.8	3.7	1.5	0.1	8.3	64.4
18		80-95	1.5-1.75 Yd <sup>3</sup>	9,031	29.0	0.5	29.5	19.2	25.0	3.3	1.3	1.2	8.3	58.3	87.8
19		100-115	2.0-2.35 Yd <sup>3</sup>	10,308	26.3	0.5	26.8	17.4	35.0	4.3	1.7	1.2	8.3	67.9	94.7
20		100-125	2.50 Yd <sup>3</sup>	11,500	38.9	0.7	39.6	25.9	35.0	5.0	2.0	0.9	8.3	77.0	116.6
21		125-155	3.0 Yd <sup>3</sup>	16,584	38.8	0.7	39.6	25.8	56.3	5.0	2.0	1.0	8.3	98.4	137.9
22	Cargador sobre Llantas	160-195	3.5 Yd <sup>3</sup>	18,585	50.5	0.9	51.5	33.6	60.0	5.4	2.2	1.7	8.3	111.2	162.7
23		200-250	4.0 - 4.1 Yd <sup>3</sup>	20,826	56.5	1.2	57.7	37.5	62.5	6.1	2.4	2.3	8.3	119.1	176.8
24		200-250	4.6 Yd <sup>3</sup>	22,000	58.7	1.3	59.9	39.0	66.3	7.9	3.2	2.3	8.3	126.8	186.7
25		260-300	5.0-5.50 Yd <sup>3</sup>	31,105	81.2	1.8	83.0	54.0	68.8	9.0	3.6	2.3	8.3	145.9	228.9
26		375	8.0 Yd <sup>3</sup>	49,738	117.3	2.5	119.8	78.0	87.5	11.1	4.4	3.1	8.3	192.4	312.3
27		140-200	11.0 Yd <sup>3</sup>	14,200	60.6	1.1	61.7	20.1	66.3	6.2	2.5	2.4	8.3	105.7	167.4
28		210-300	16.0 Yd <sup>3</sup>	20,600	91.6	1.7	93.3	30.4	93.8	9.0	3.6	3.0	8.3	148.0	241.3
29	Mototrallas Autocargable	310-350	23.0 Yd <sup>3</sup>	32,800	88.9	1.9	90.8	29.5	120.0	10.8	4.3	2.2	8.3	175.0	265.8
30		310-400	14-20 Yd <sup>3</sup>	20,000	86.3	1.9	88.2	28.7	125.0	11.8	4.7	2.3	8.3	180.8	269.0
31		405-480	21-31 Yd <sup>3</sup>	15,500	137.2	3.0	140.2	45.6	165.0	14.3	5.7	3.3	8.3	242.2	382.3
32	Retroexcavadora sobre Llantas	58	1 Yd <sup>3</sup>	9,000	17.7	0.3	18.0	7.7	25.0	2.5	1.0	0.2	8.3	44.8	62.8
33		80-110	0.50-1.3 Yd <sup>3</sup>	17,300	48.0	0.9	48.9	19.2	41.3	8.7	3.5	0.0	8.3	81.0	129.8
34	Retroexcavadora sobre Oruga	115-165	0.75-1.60 Yd <sup>3</sup>	23,400	66.8	1.2	68.0	26.7	62.5	8.8	3.5	0.0	8.3	109.8	177.8
35		170-250	1.10-2.75 Yd <sup>3</sup>	33,800	110.7	2.0	112.7	44.3	87.5	9.9	4.0	0.0	8.3	154.0	266.7
36		325	2.0-3.8 Yd <sup>3</sup>	61,600	185.2	3.4	188.6	74.1	112.5	10.1	4.0	0.0	8.3	209.0	397.6
37	Ripper (Potencia 150 HP)			2,000	3.4	0.1	3.5	1.9	0.0	0.0	0.0	0.0	0.0	1.9	5.4
38	Ripper (Potencia 250 HP)			2,600	5.7	0.1	5.8	3.2	0.0	0.0	0.0	0.0	0.0	3.2	9.0
39	Ripper (Potencia 300 HP)			4,400	10.0	0.2	10.1	5.5	0.0	0.0	0.0	0.0	0.0	5.5	15.7
40	Ripper (Potencia 470 HP)			6,600	12.9	0.2	13.2	7.2	0.0	0.0	0.0	0.0	0.0	7.2	20.4
41		60-70		6,711	20.5	0.4	20.9	10.9	30.0	2.5	1.0	0.0	8.3	52.8	73.7
42		75-100		9,090	31.4	0.6	31.9	16.7	31.3	2.7	1.1	0.0	8.3	60.0	92.0
43		105-135		12,300	44.3	0.8	45.1	23.6	37.5	4.7	1.9	0.0	8.3	75.9	121.0
44		140-160		14,900	38.7	0.7	39.4	20.6	62.5	5.4	2.2	0.0	8.3	99.0	138.4
45		190-240		20,520	74.2	1.6	75.8	39.6	68.8	7.2	2.9	0.0	8.3	126.7	202.5
46	Tractor sobre Orugas	270-295		21,863	71.7	1.9	73.6	38.2	87.5	7.9	3.2	0.0	8.3	145.1	218.6
47		300-330		31,980	71.4	1.9	73.3	47.6	128.8	8.6	3.5	0.0	8.3	196.7	270.0
48		335-410		37,170	78.6	2.1	80.6	52.4	137.5	10.4	4.2	0.0	8.3	212.8	293.4
49		410-470		52,007	107.8	2.8	110.7	57.5	163.8	12.8	5.1	0.0	8.3	247.5	358.2
50		510		54,760	136.6	3.6	140.2	72.9	163.8	14.6	5.8	0.0	8.3	265.4	405.6
51		650		70,320	175.7	4.6	180.3	117.2	206.3	31.5	12.6	0.0	8.3	375.8	556.1
52		200-250		20,500	41.2	0.8	42.0	27.3	102.5	10.6	4.2	2.3	8.3	155.3	197.3
53	Tractor sobre Llantas	300-350		30,380	54.1	1.0	55.1	35.8	148.8	14.2	5.7	4.5	8.3	217.2	272.3
54		400-500		46,355	116.2	2.2	118.3	77.1	150.0	17.7	7.1	4.9	8.3	265.1	383.4
55	Paleta Frontal	195	3.0 Yd <sup>3</sup>	38,380	143.8	2.7	146.5	115.0	136.3	7.2	2.9	0.0	8.3	269.7	416.1
<b>Equipos de Compactación</b>															
56		4	1.25 Pulg.		2.7	0.0	2.7	1.5	0.0	0.0	0.0	0.0	0.0	1.5	4.2
57	Vibrador de Concreto	4	1.50 Pulg.		2.8	0.0	2.8	1.5	0.0	0.0	0.0	0.0	0.0	1.5	4.3
58		4	2.40 Pulg.		3.3	0.0	3.4	1.8	0.0	0.0	0.0	0.0	0.0	1.8	5.2
59		4		95	1.9	0.0	1.9	0.8	3.4	0.4	0.2	0.0	8.3	13.1	15.0
60	Compactador Vibrador Tipo Plancha	5.8		145	2.4	0.0	2.4	1.0	3.9	0.8	0.3	0.0	8.3	14.3	16.7
61		7		160	3.6	0.0	3.6	1.2	4.1	1.1	0.5	0.0	8.3	15.2	18.8
62	Rodillo Liso Vibratorio Manual	10.8	0.8 - 1.1 Ton.	800	3.7	0.1	3.8	3.0	5.6	1.8	0.7	0.0	8.3	19.5	23.3
63		70-100	7-9 Ton.	7,300	15.0	0.3	15.3	7.9	26.3	3.3	1.3	0.8	8.3	47.8	63.1
64	Rodillo Liso Vibratorio Autopropulsado	101-135	10-12 Ton.	11,100	16.0	0.3	16.3	8.4	43.8	5.0	2.0	0.8	8.3	68.2	84.5
65		136-170	15-17 Ton.	13,700	19.6	0.4	20.0	10.4	46.3	5.4	2.2	0.8	8.3	73.2	93.2
66		210	19-23 Ton.	19,600	22.5	0.4	22.9	11.9	69.9	7.2	2.9	1.1	8.3	101.3	124.2
67	Rodillo Liso Vibratorio de Tiro	50-80	4-5.5 Ton.	5,500	5.7	0.1	5.8	3.0	23.8	2.9	1.2	0.0	8.3	39.2	44.9
68		60-80	3.0-5.0 Ton.	3,700	11.6	0.3	11.8	4.6	21.3	2.9	1.2	0.2	8.3	38.5	50.3
69	Rodillo Neumático Autopropulsado	81-100	5.5-20 Ton.	5,500	15.5	0.3	15.8	4.1	25.0	3.3	1.3	0.2	8.3	42.2	58.0
70		127	8.23 Ton.	8,000	11.7	0.3	12.0	6.2	38.8	4.7	1.9	0.2	8.3	60.0	72.0
71		135	9.26 Ton.	9,000	12.0	0.3	12.2	6.4	38.3	4.7	1.9	0.2	8.3	59.7	71.9
72		84	8.1 Ton.	8,200	8.9	0.2	9.1	7.1	28.3	2.9	1.2	0.7	8.3	48.4	57.6
73	Pata de Cabra Vibratorio Autopropulsado	100-135	11-13 Ton.	11,300	15.6	0.3	16.0	8.3	37.9	4.7	1.9				

## Costo Referencial de Posesión y Operación de Equipo Mecánico del MTC

\* Agosto 2008 \*

### Maquinaria

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación							Costo Horario de Posesión y Operación (a+b)
					Depreciación	Seguro 0.46%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador	Total (b)	
97	Chancadora Secundaria 24"S	M.E. 30	46-70 Ton/Hr.	22,000	18.0	0.6	18.5	9.0	0.0	1.5	0.6	0.1	8.3	19.5	38.0
98	Chancadora Secundaria 36"S	M.E. 75	46-70 Ton/Hr.	23,000	31.1	1.0	32.1	15.5	0.0	1.5	0.6	0.1	8.3	26.1	58.1
99	Chancadora Primaria-Secundaria (Incluye 5 faja)	M.E. 75	46-70 Ton/Hr.	39,000	63.0	2.1	65.1	33.6	112.5	1.6	0.6	0.1	8.3	156.7	221.8
100	Chancadora Primaria - Secundaria (Azteca)		40-80 Ton/Hr.		26.9	1.7	28.7	10.8	0.0	0.0	0.0	0.0	9.3	20.1	48.8
101	Chancadora Primaria - Secundaria (Escorpión)		60-120 Ton/Hr.		33.7	2.2	35.8	13.5	0.0	0.0	0.0	0.0	10.3	23.8	59.6
102	Zaranda Vibratoria 4"x6"x14'	M.E. 15	11 Kw	7,000	9.3	0.3	9.6	6.2	0.0	1.2	0.5	0.1	8.3	16.3	25.9
<b>Equipos para Obras de Concreto</b>															
103		M.E. 40	50 M <sup>3</sup> /Hr.	17,000	25.5	0.9	26.4	20.4	0.0	1.8	0.7	0.0	8.3	31.3	57.7
104	Dosificadora de Concreto	M.E. 45	50-90 M <sup>3</sup> /Hr.	20,000	30.3	1.0	31.3	24.3	0.0	1.8	0.7	0.0	8.3	35.1	66.4
105		M.E. 60	120 M <sup>3</sup> /Hr.	23,000	34.2	1.2	35.3	27.3	0.0	1.8	0.7	0.0	8.3	38.2	73.5
106	Mezcladora de Concreto Tipo Trompo	8	9 Pie <sup>3</sup>	500	2.7	0.1	2.7	1.9	0.0	0.0	0.0	0.1	0.0	2.1	4.8
107		18	7 Pie <sup>3</sup>	1,500	6.7	0.2	6.9	4.8	0.0	0.0	0.0	0.1	0.0	4.9	11.7
108	Mezcladora de Concreto Tipo Tambor	23	11-12 Pie <sup>3</sup>	2,200	11.0	0.3	11.3	8.0	0.0	0.0	0.0	0.1	0.0	8.0	19.3
109		20-35	16 Pie <sup>3</sup>	2,700	14.2	0.3	14.5	10.2	0.0	0.0	0.0	0.1	0.0	10.3	24.8
<b>Equipos para Refine y Afirmado</b>															
110		65-80		6,000	16.0	0.4	16.4	10.6	27.5	2.9	1.2	0.2	8.3	50.8	67.2
111		85-120		9,100	21.6	0.6	22.2	14.4	40.0	4.6	1.8	0.2	8.3	69.4	91.6
112		125		11,515	22.9	0.6	23.5	15.2	53.8	4.7	1.9	0.2	8.3	84.1	107.6
113	Motoniveladora	130-135		12,365	30.5	0.8	31.3	20.3	53.8	5.0	2.0	0.2	8.3	89.7	121.0
114		145-150		13,540	30.3	0.8	31.1	20.2	62.5	5.8	2.3	0.2	8.3	99.4	130.4
115		180-200		18,370	50.7	1.3	52.1	33.7	68.8	6.2	2.5	0.6	8.3	120.1	172.1
<b>Equipos para Pavimentación</b>															
116	Amasadora de Asfalto	23.5	5.4 M <sup>3</sup>	9,500	25.6	0.5	26.1	20.5	62.5	2.0	0.8	0.1	8.3	94.1	120.2
117	Barredora Mecánica	10-20	7 Pulg. LON	1,000	5.5	0.1	5.6	4.0	12.5	1.3	0.5	0.1	8.3	26.7	32.4
118	Calentador de Aceite 48-S	5	468 P <sup>3</sup>	5,700	9.9	0.2	10.1	6.0	0.0	0.0	0.0	0.0	8.3	14.3	24.4
119	Cocina de Asfalto		320 Gln	2,100	8.7	0.2	8.9	3.2	5.0	1.3	0.5	0.1	8.3	18.4	27.3
120	Planta de Asfalto en frío	M.E. 30	30-60 Ton/Hr.	9,000	19.4	0.7	20.0	15.5	0.0	1.5	0.6	0.2	8.3	26.0	46.0
121	Secador de Aridos	M.E. 50	30-64 Ton/Hr.	8,000	12.8	0.4	13.3	10.3	0.0	0.0	0.0	0.0	8.3	18.6	31.8
122	Planta de Asfalto en frío	M.E. 50	60-115 Ton/Hr.	9,000	27.7	0.9	28.6	22.1	0.0	1.5	0.6	0.2	8.3	32.6	61.2
123	Planta de Asfalto en Caliente (CYBER)		60 Ton/Hr.	32,350	65.5	2.1	67.6	0.0	1,237.5	5.2	2.1	0.0	8.3	1,253.1	1,320.7
124	Planta de Asfalto en Caliente (CIFALLI)		90-120 Ton/Hr.	46,800	63.3	2.0	65.3	0.0	1,987.5	5.2	2.1	0.0	8.3	2,003.1	2,068.5
125	Secador de Aridos	M.E. 70	60-115 Ton/Hr.	8,500	16.8	0.6	17.4	9.0	0.0	6.0	2.4	0.0	8.3	25.7	43.0
126	Pavimentadora sobre oruga	69	10 Pulg.	12,000	30.6	1.0	31.6	20.4	23.3	3.8	1.5	0.0	8.3	57.3	89.0

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### Vehículos y Camiones

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación							Costo Horario de Posesión y Operación (a+b)
					Depreciación	Seguro 2.19%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador	Total (b)	
1	Camioneta Pick-Up 4X2 - C. Simple	90	1,000 Kg	2,100	4.7	0.3	5.0	3.7	21.6	4.3	1.7	0.2	7.8	39.4	44.4
2		90	2,000 Kg	3,000	6.1	0.5	6.6	4.9	23.0	4.6	1.8	0.3	7.8	42.4	48.9
3	Camioneta Pick-Up 4X4 - C. Simple	107	1,000 Kg	2,450	5.2	0.4	5.6	4.2	27.0	4.3	1.7	0.2	7.8	45.2	50.8
4	Camioneta Pick-Up 4X2 - C. Doble	90	750 Kg	1,850	5.7	0.4	6.1	4.5	21.6	4.3	1.7	0.3	7.8	40.2	46.3
5		118	5 Pas.	1,850	5.4	0.4	5.8	4.3	24.3	4.3	1.7	0.3	7.8	42.7	48.5
6	Camioneta Rural 4X4	135	5 Pas.	1,882	7.2	0.5	7.7	5.7	35.8	4.3	1.7	0.3	7.8	55.6	63.3
7	Camioneta Station Wagon 4x2	100	6 Pas.	1,800	4.6	0.3	4.9	3.6	27.0	4.3	1.7	0.3	7.8	44.7	49.6
8		122	1,500 Gln	9,900	15.4	1.5	16.9	11.5	48.8	4.7	1.9	0.4	7.8	75.0	91.8
9	Cisterna de Agua 4X2	145-165	2,000 Gln	13,000	17.6	1.7	19.3	13.2	50.0	4.7	1.9	0.4	7.8	77.9	97.2
10		178-210	3,000 Gln	19,000	21.7	2.1	23.8	13.5	70.0	7.2	2.9	0.6	7.8	102.0	125.8
11	Cisterna de Combustible 4X2	122	2,000 Gln	13,000	18.5	1.8	20.3	11.5	41.3	4.7	1.9	0.4	7.8	67.5	87.8
12	Cisterna de Asfalto 4X2	178-210	2,000 Gln	13,000	21.3	2.1	23.3	13.3	69.9	7.2	2.9	0.5	7.8	101.6	124.9
13	Concretero 4X2	178-210	4 M <sup>3</sup>	19,000	42.5	4.1	46.6	26.5	69.9	8.9	3.6	0.5	7.8	117.2	163.8
14	Concretero 6X4	300	6 M <sup>3</sup>	26,000	49.0	4.7	53.7	30.6	100.0	10.7	4.3	0.5	7.8	153.9	207.6
15	Dumper 6X4	146-240	12 M <sup>3</sup>	32,200	44.1	4.3	48.3	27.5	48.3	5.0	2.0	1.0	7.8	91.5	139.8
16	Dumper 6x6	146-240	13 M <sup>3</sup>	38,400	52.8	5.1	57.9	32.9	69.9	7.2	2.9	1.5	7.8	122.1	180.0
17	Camión Imprimador 6X2	178-210	1,800 Gln	16,475	21.4	2.1	23.5	13.4	69.9	10.6	4.2	0.2	7.8	106.1	129.6
18		122	8 Ton.	13,000	23.2	2.2	25.5	14.5	32.5	10.5	4.2	0.4	7.8	69.8	95.3
19	Plataforma 4X2	178-210	12 Ton.	19,000	29.4	2.8	32.2	18.3	35.0	10.5	4.2	0.4	7.8	76.2	108.4
20	Plataforma 6X4	300	19 Ton.	26,000	58.8	5.6	64.5	36.7	81.3	17.6	7.0	0.5	7.8	150.9	215.4
21		330	35 Ton.	42,600	43.2	4.2	47.4	32.4	97.4	17.8	7.1	0.4	7.8	162.9	210.2
22	Semitrayler 6X4	330	40 Ton.	54,420	44.1	4.2	48.3	33.0	97.4	17.8	7.1	0.5	7.8	163.6	212.0
23		120-140	4 M <sup>3</sup>	11,500	12.3	1.2	13.5	12.3	60.0	7.2	2.9	0.4	7.8	90.5	104.0
24	Volquete 4X2	140-210	6 M <sup>3</sup>	15,000	16.6	1.6	18.2	16.5	69.9	10.7	4.3	0.5	7.8	109.7	127.9
25		210-280	8 M <sup>3</sup>	19,000	22.9	2.2	25.1	22.8	93.3	14.2	5.7	1.0	7.8	144.7	169.8
26	Volquete 6X4	330	10 M <sup>3</sup>	26,000	23.4	2.3	25.6	23.3	109.9	17.8	7.1	1.0	7.8	166.9	192.5

3135.6

### Equipos Diversos

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación							Costo Horario de Posesión y Operación (a+b)
					Depreciación	Seguro 0.46%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador	Total (b)	
1	Faja Transportadora 18"X40'	M.E. 3	150 Ton/Hr.	4,000	5.4	0.5	5.9	3.6	0.0	0.2	0.1	0.0	0.0	3.9	9.8
2	Faja Transportadora 18"X50'	M.E. 3	150 Ton/Hr.	4,000	5.8	0.5	6.4	3.9	0.0	0.2	0.1	0.0	0.0	4.1	10.5
3	Faja Transportadora 30"X40'	M.E. 5	550 Ton/Hr.	7,800	6.1	0.5	6.7	4.1	0.0	0.2	0.1	0.0	0.0	4.3	11.0
4	Faja Transportadora 30"X50'	M.E. 5	800 Ton/Hr.	12,000	6.9	0.6	7.5	4.6	0.0	0.2	0.1	0.0	0.0	4.9	12.4
5	Faja Transportadora 30"X60'	M.E. 7	800 Ton/Hr.	15,000	9.2	0.8	10.0	6.1	0.0	0.2	0.1	0.0	0.0	6.4	16.4
6		38	20 Kw	500	3.4	0.3	3.7	3.1	0.0	0.0	0.0	0.0	0.0	3.1	6.9
7		56	37.5 Kw	720	3.9	0.4	4.2	3.6	0.0	0.0	0.0	0.0	0.0	3.6	7.8
8		89	50 Kw	1,150	4.6	0.5	5.1	4.3	0.0	0.0	0.0	0.0	0.0	4.3	9.4
9		116	75 Kw	1,500	5.5	0.6	6.0	5.1	0.0	0.0	0.0	0.0	0.0	5.1	11.1
10	Grupo Eléctrico	140	90 Kw	1,700	6.9	0.7	7.6	6.5	0.0	0.0	0.0	0.0	0.0	6.5	14.1
11		230	150 Kw	2,000	16.4	1.7	18.0	15.3	0.0	0.0	0.0	0.0	0.0	15.3	33.3
12		380	250 Kw												