

COUNTERBALANCE EFFECT AT POLISH ROD WITH #4850-B CRANKS

STRUCTURE UNBALANCE OF 500# INCLUDED BELOW

	<u>With #50 Main &amp; Filler Weights</u>		<u>With #46 Main &amp; Filler Weights</u>	
	<u>Pounds</u>		<u>Pounds</u>	
	<u>CBE</u>	<u>Actual Weight</u>	<u>CBE</u>	<u>Actual Weight</u>
	<u>@</u>	<u>of</u>	<u>@</u>	<u>of</u>
	<u>48" Stroke</u>	<u>Counterweights</u>	<u>48" Stroke</u>	<u>Counterweights</u>
Cranks Only	3,270		3,270	
Cranks Plus 1 Main Weight	4,040	550	3,950	475
Cranks Plus 2 Main Weights	4,810	1,100	4,630	950
Cranks Plus 3 Main Weights	5,580	1,650	5,310	1,425
Cranks Plus 4 Main Weights	6,350	2,200	5,990	1,900
Cranks Plus 4 Main Weights and 1 Filler Weight	6,740	2,485	6,330	2,150
Cranks Plus 4 Main Weights and 2 Filler Weights	7,130	2,770	6,675	2,400
Cranks Plus 4 Main Weights and 3 Filler Weights	7,520	3,055	7,015	2,650
Cranks Plus 4 Main Weights and 4 Filler Weights	7,910	3,340	7,360	2,900
Cranks Plus 4 Main Weights and 5 Filler Weights	8,300	3,625	7,700	3,150
Cranks Plus 4 Main Weights and 6 Filler Weights	8,690	3,910	8,045	3,400
Cranks Plus 4 Main Weights and 7 Filler Weights	9,072	4,195	8,385	3,650
Cranks Plus 4 Main Weights and 8 Filler Weights	9,460	4,480	8,730	3,900
Cranks Plus 4 Main Weights and 9 Filler Weights	9,850	4,765	9,070	4,150
Cranks Plus 4 Main Weights and 10 Filler Weights	10,240	5,050	9,415	4,400
Cranks Plus 4 Main Weights and 11 Filler Weights	10,630	5,335	9,755	4,650
Cranks Plus 4 Main Weights and 12 Filler Weights	11,020	5,620	10,100	4,900
Cranks Plus 4 Main Weights and 13 Filler Weights			10,440	5,150
Cranks Plus 4 Main Weights and 14 Filler Weights			10,780	5,400

COUNTERBALANCE EFFECT AT POLISH ROD AT MAXIMUM STROKE  
AS WEIGHTS ARE MOVED TOWARD CRANKSHAFT FROM END OF CRANK

STRUCTURE UNBALANCE OF 500# INCLUDED BELOW

Distance of Counterweights From Crank End	4 Main Weights Only #50	4 Main and 4 Filler Wts. #50	4 Main and 8 Filler Wts. #50	4 Main and 12 Filler Wts. #50	1 Filler Weight Only #50
0"	6,350	7,910	9,460	11,020	390
6"	5,800	7,075	8,340	9,615	320
12"	5,250	6,240	7,220	8,210	245
18"	4,700	5,405	6,100	6,805	175
21" (Max.)	4,425	4,990	5,540	6,100	140

Distance of Counterweights From Crank End	4 Main Weights Only #46	4 Main and 4 Filler Wts. #46	4 Main and 8 Filler Wts. #46	4 Main and 14 Filler Wts. #46	1 Filler Weight Only #46
0"	5,990	7,360	8,730	10,785	340
6"	5,515	6,635	7,755	9,435	275
12"	5,040	5,910	6,780	8,085	215
18"	4,565	5,185	5,805	6,735	150
21" (Max.)	4,330	4,825	5,320	6,060	120

For 40" Stroke Multiply Above CBE Values By 1.19

For 32" Stroke Multiply Above CBE Values By 1.47

For 24" Stroke Multiply Above CBE Values By 1.94

COUNTERBALANCE EFFECT AT POLISH ROD WITH #4850-B CRANKS

STRUCTURE UNBALANCE OF 400# INCLUDED BELOW

	<u>With #50 Main &amp; Filler Weights</u>		<u>With #46 Main &amp; Filler Weights</u>	
	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>
	<u>CBE</u> <u>@</u> <u>54" Stroke</u>	<u>Actual Weight</u> <u>of</u> <u>Counterweights</u>	<u>CBE</u> <u>@</u> <u>54" Stroke</u>	<u>Actual Weight</u> <u>of</u> <u>Counterweights</u>
Crank Only	2,860		2,860	
Crank Plus 1 Main Weight	3,550	550	3,465	475
Crank Plus 2 Main Weights	4,230	1,100	4,070	950
Crank Plus 3 Main Weights	4,920	1,650	4,675	1,425
Crank Plus 4 Main Weights	5,600	2,200	5,280	1,900
Crank Plus 4 Main Weights and 1 Filler Weight	5,950	2,485	5,585	2,150
Crank Plus 4 Main Weights and 2 Filler Weights	6,290	2,770	5,890	2,400
Crank Plus 4 Main Weights and 3 Filler Weights	6,640	3,055	6,195	2,650
Crank Plus 4 Main Weights and 4 Filler Weights	6,980	3,340	6,500	2,900
Crank Plus 4 Main Weights and 5 Filler Weights	7,330	3,625	6,805	3,150
Crank Plus 4 Main Weights and 6 Filler Weights	7,680	3,910	7,110	3,400
Crank Plus 4 Main Weights and 7 Filler Weights	8,020	4,195	7,415	3,650
Crank Plus 4 Main Weights and 8 Filler Weights	8,370	4,480	7,720	3,900
Crank Plus 4 Main Weights and 9 Filler Weights	8,720	4,765	8,020	4,150
Crank Plus 4 Main Weights and 10 Filler Weights	9,060	5,050	8,320	4,400
Crank Plus 4 Main Weights and 11 Filler Weights	9,410	5,335	8,630	4,650
Crank Plus 4 Main Weights and 12 Filler Weights	9,750	5,620	8,930	4,900
Crank Plus 4 Main Weights and 13 Filler Weights	10,100	5,905	9,230	5,150
Crank Plus 4 Main Weights and 14 Filler Weights	10,440	6,190	9,540	5,400

COUNTERBALANCE EFFECT AT POLISH ROD AT MAXIMUM STROKE  
 AS WEIGHTS ARE MOVED TOWARD CRANKSHAFT FROM END OF CRANK

STRUCTURE UNBALANCE OF 400# INCLUDED BELOW

Distance of Counterweights From Crank End	4 Main Weights Only #50	4 Main and 4 Filler Wts. #50	4 Main and 8 Filler Wts. #50	4 Main and 14 Filler Wts. #50	1 Filler Weight Only #50
0"	5,600	6,980	8,370	10,440	350
6"	5,110	6,237	7,375	9,065	285
12"	4,620	5,495	6,375	7,685	225
18"	4,130	4,750	5,380	6,310	160
21" (Max.)	3,890	4,380	4,885	5,625	130

Distance of Counterweights From Crank End	4 Main Weights Only #46	4 Main and 4 Filler Wts. #46	4 Main and 8 Filler Wts. #46	4 Main and 14 Filler Wts. #46	1 Filler Weight Only #46
0"	5,280	6,500	7,720	9,540	305
6"	4,855	5,855	6,855	8,340	250
12"	4,435	5,210	5,985	7,140	195
18"	4,010	4,665	5,120	5,940	140
21" (Max.)	3,800	4,245	4,685	5,340	110

For 45" Stroke Multiply Above CBE Values By 1.19

For 36" Stroke Multiply Above CBE Values By 1.47

For 27" Stroke Multiply Above CBE Values By 1.95

COUNTERBALANCE EFFECT AT POLISH ROD WITH #6468-B CRANKS

STRUCTURE UNBALANCE OF 600# INCLUDED BELOW

	<u>With #50 Main &amp; Filler Weights</u>		<u>With #46 Main &amp; Filler Weights</u>	
	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>
	<u>CBE</u>	<u>Actual Weight</u>	<u>CBE</u>	<u>Actual Weight</u>
	<u>@</u>	<u>of</u>	<u>@</u>	<u>of</u>
	<u>64" Stroke</u>	<u>Counterweights</u>	<u>64" Stroke</u>	<u>Counterweights</u>
Cranks Only	4,680		4,680	
Cranks Plus 1 Main Weight	5,570	550	5,470	475
Cranks Plus 2 Main Weights	6,470	1,100	6,255	950
Cranks Plus 3 Main Weights	7,360	1,650	7,045	1,425
Cranks Plus 4 Main Weights	8,250	2,200	7,830	1,900
Cranks Plus 4 Main Weights and 1 Filler Weight	8,710	2,485	8,230	2,150
Cranks Plus 4 Main Weights and 2 Filler Weights	9,170	2,770	8,630	2,400
Cranks Plus 4 Main Weights and 3 Filler Weights	9,620	3,055	9,030	2,650
Cranks Plus 4 Main Weights and 4 Filler Weights	10,080	3,340	9,430	2,900
Cranks Plus 4 Main Weights and 5 Filler Weights	10,540	3,625	9,830	3,150
Cranks Plus 4 Main Weights and 6 Filler Weights	10,990	3,910	10,230	3,400
Cranks Plus 4 Main Weights and 7 Filler Weights	11,450	4,195	10,635	3,650
Cranks Plus 4 Main Weights and 8 Filler Weights	11,900	4,480	11,040	3,900
Cranks Plus 4 Main Weights and 9 Filler Weights	12,360	4,765	11,440	4,150
Cranks Plus 4 Main Weights and 10 Filler Weights	12,820	5,050	11,840	4,400
Cranks Plus 4 Main Weights and 11 Filler Weights	13,270	5,335	12,240	4,650
Cranks Plus 4 Main Weights and 12 Filler Weights	13,730	5,620	12,640	4,900

COUNTERBALANCE EFFECT AT POLISH ROD AT MAXIMUM STROKE  
AS WEIGHTS ARE MOVED TOWARD CRANKSHAFT FROM END OF CRANK

STRUCTURE UNBALANCE OF 600# INCLUDED BELOW

Distance of Counterweights From Crank End	4 Main Weights Only #50	4 Main and 4 Filler Wts. #50	4 Main and 8 Filler Wts. #50	4 Main and 12 Filler Wts. #50	1 Filler Weight Only #50
0"	8,250	10,080	11,900	13,730	460
6"	7,840	9,455	11,060	12,675	410
12"	7,425	8,825	10,220	11,620	355
18"	7,015	8,200	9,380	10,570	300
24"	6,600	7,570	8,540	9,515	250
30"	6,190	6,945	7,700	8,460	195
36"	5,775	6,320	6,860	7,410	140
38" (Max.)	5,640	6,115	6,580	7,055	120

Distance of Counterweights From Crank End	4 Main Weights Only #46	4 Main and 4 Filler Wts. #46	4 Main and 8 Filler Wts. #46	4 Main and 12 Filler Wts. #46	1 Filler Weight Only #46
0"	7,830	9,430	11,040	12,640	400
6"	7,500	8,930	10,370	11,800	360
12"	7,140	8,380	9,625	10,865	310
18"	6,775	7,825	8,880	9,930	265
24"	6,415	7,275	8,140	9,000	215
30"	6,050	6,720	7,395	8,065	170
36"	5,690	6,170	6,650	7,130	120
38" (Max.)	5,570	5,985	6,405	6,820	100

For 54" Stroke Multiply Above CBE Values By 1.17

For 44" Stroke Multiply Above CBE Values By 1.43

For 34" Stroke Multiply Above CBE Values By 1.83

COUNTERBALANCE EFFECT AT POLISH ROD WITH #5456-B CRANKS

STRUCTURE UNBALANCE OF 400# INCLUDED BELOW

	With #50 Main & Filler Weights	
	Pounds	
	CBE @ 64" Stroke	Actual Weight of Counterweights
Crank Only	2,630	
Crank Plus 1 Main Weight	3,340	550
Crank Plus 2 Main Weights	4,040	1,100
Crank Plus 3 Main Weights	4,750	1,650
Crank Plus 4 Main Weights	5,450	2,200
Crank Plus 4 Main Weights and 1 Filler Weight	5,810	2,485
" " 4 " " 2 " "	6,170	2,770
" " 4 " " 3 " "	6,530	3,055
" " 4 " " 4 " "	6,890	3,340
" " 4 " " 5 " "	7,250	3,625
" " 4 " " 6 " "	7,610	3,910
" " 4 " " 7 " "	7,960	4,195
" " 4 " " 8 " "	8,320	4,480
" " 4 " " 9 " "	8,680	4,765
" " 4 " " 10 " "	9,040	5,050
" " 4 " " 11 " "	9,400	5,335
" " 4 " " 12 " "	9,760	5,620
" " 4 " " 13* " "	10,120	5,905
" " 4 " " 14* " "	10,480	6,190

\*For 114 Reducer only  
Also only for Ground Level Power Assemblies not for Elevated Motors.

COUNTERBALANCE EFFECT AT POLISH ROD AT MAXIMUM STROKE  
 AS WEIGHTS ARE MOVED TOWARD CRANKSHAFT FROM END OF CRANK

STRUCTURE UNBALANCE OF 400# INCLUDED BELOW

<u>Distance of Counterweights From Crank End</u>	<u>4 Main Weights Only #50</u>	<u>4 Main and 4 Filler Wts. #50</u>	<u>4 Main and 8 Filler Wts. #50</u>	<u>4 Main and 12 Filler Wts. #50</u>	<u>1 Filler Weight Only #50</u>
0"	5,450	6,890	8,320	9,760	360
6"	5,040	6,265	7,480	8,705	305
12"	4,625	5,640	6,640	7,650	250
18"	4,213	5,010	5,800	6,600	200
24"	3,800	4,385	4,960	5,545	145
25" (Max.)	3,720	4,280	4,820	5,370	135

For 52" Stroke Multiply Above CBE Values By 1.21

For 40" Stroke Multiply Above CBE Values By 1.55

For 28" Stroke Multiply Above CBE Values By 2.18



COUNTERBALANCE EFFECT AT POLISH ROD WITH #5456-B CRANKS

STRUCTURE UNBALANCE OF 550# INCLUDED BELOW

	<u>With #50 Main &amp; Filler Weights</u>	
	<u>Pounds</u>	
	<u>CBE</u> <u>@</u> <u>54" Stroke</u>	<u>Actual Weight</u> <u>of</u> <u>Counterweights</u>
Crank Only	3,150	
Crank Plus 1 Main Weight	3,970	550
Crank Plus 2 Main Weights	4,790	1,100
Crank Plus 3 Main Weights	5,610	1,650
Crank Plus 4 Main Weights	6,430	2,200
Crank Plus 4 Main Weights and 1 Filler Weight	6,850	2,485
" " 4 " " " 2 " "	7,270	2,770
" " 4 " " " 3 " "	7,690	3,055
" " 4 " " " 4 " "	8,110	3,340
" " 4 " " " 5 " "	8,530	3,625
" " 4 " " " 6 " "	8,950	3,910
" " 4 " " " 7 " "	9,360	4,195
" " 4 " " " 8 " "	9,780	4,480
" " 4 " " " 9 " "	10,200	4,765
" " 4 " " " 10 " "	10,620	5,050
" " 4 " " " 11 " "	11,040	5,335
" " 4 " " " 12 " "	11,460	5,620
" " 4 " " " 13* " "	11,880	5,905
" " 4 " " " 14* " "	12,300	6,190

\*For 114 Reducer Only

Also only for Ground Level Power Assembly not for Elevated Motors.

COUNTERBALANCE EFFECT AT POLISH ROD AT MAXIMUM STROKE  
AS WEIGHTS ARE MOVED TOWARD CRANKSHAFT FROM END OF CRANK

STRUCTURE UNBALANCE OF 550# INCLUDED BELOW

Distance of Counterweights From Crank End	4 Main Weights Only #50	4 Main and 4 Filler Wts. #50	4 Main and 8 Filler Wts. #50	4 Main and 12 Filler Wts. #50	1 Filler Weight Only #50
0"	6,430	8,110	9,780	11,460	420
6"	5,940	7,370	8,785	10,210	355
12"	5,450	6,525	7,790	8,960	290
18"	4,965	5,883	6,795	7,715	230
24"	4,475	5,140	5,800	6,465	165
25" (Max.)	4,390	5,020	5,630	6,255	155

For 44" Stroke Multiply Above CBE Values by 1.21

For 34" Stroke Multiply Above CBE Values By 1.55

For 24" Stroke Multiply Above CBE Values By 2.17