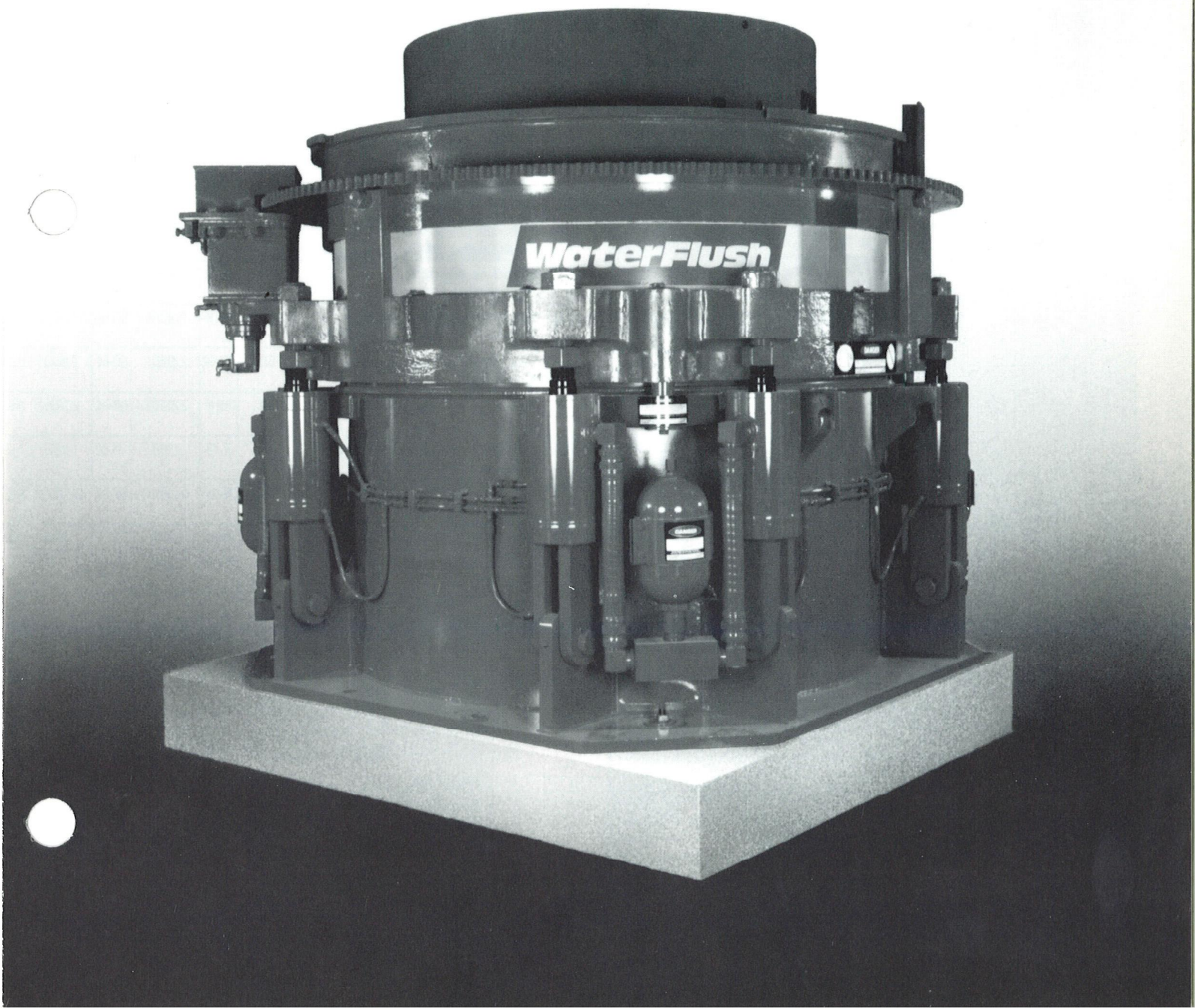
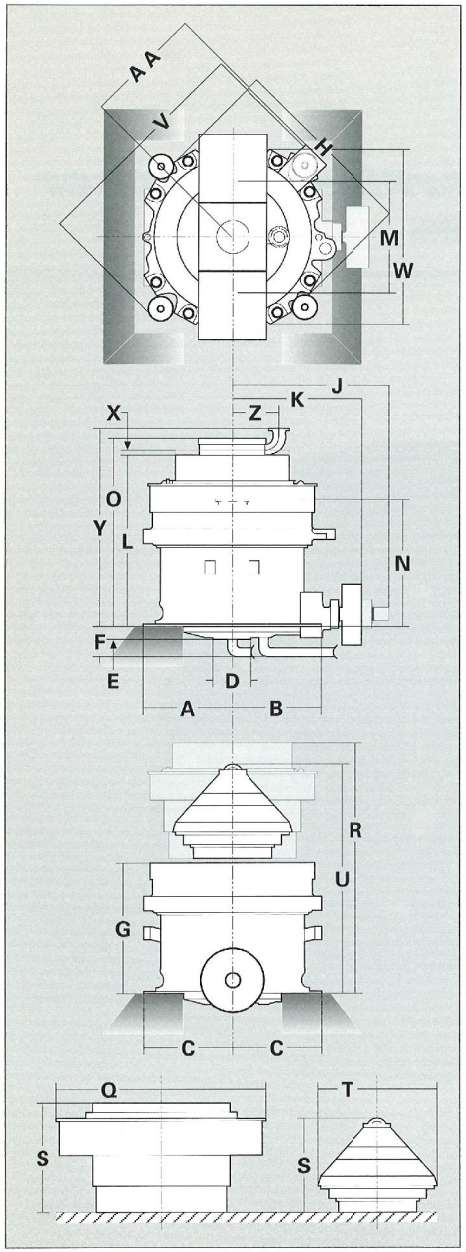
Nordberg®

A Nordberg Group Company

WaterFlush® Crusher Series





Clearance Dimensions

		WF200		WF300		WF400		WF500		WF800	
		mm	in	mm	in	mm	in	mm	in	mm	in
A	Main Frame Flange	875	34-½	1,030	40-½	1,060	41-¾	1,225	48-½	1,630	64-½
B	Main Frame Flange	875	34-½	910	35-⅞	1,060	41-¾	1,225	48-½	1,630	64-½
C	Main Frame Flange	875	34-½	1,030	40-½	1,060	41-¾	1,225	48-½	1,630	64-½
D	Main Frame Hub Diameter	380	15	450	17-¾	500	19-¾	580	22-⅞	700	27-⅝
E	To Bottom of Main Frame Hub	65	2-⅝	60	2-⅜	160	5-⅜	140	5-½	378	14-⅞
F	To Bottom of Oil Piping	290	11-⅜	270	10-⅝	315	12-½	300	12-⅞	708	27-¼
G	To Top of Dust Collar	1,290	50-¾	1,455	59-¼	1,560	61-½	1,795	70-¾	2,235	88
H	Adjustment Ring Maximum Diameter	1,760	69-½	2,020	79-½	2,580	101-¾	2,900	114-¼	3,150	124
J	Clearance Required for Removing Countershaft Assembly	1,865	73-⅜	2,020	79-½	2,440	96	2,675	105-⅜	3,450	135-⅞
K	To End of Countershaft	1,160	45-⅝	1,349	53-⅛	1,640	64-½	1,758	69-¼	2,225	87-⅝
L	Maximum Height to Top of Feed Hopper	1,810	71-¼	2,105	82-⅞	2,115	83-¼	2,550	100-⅜	3,140	123-⅝
M	Inside Diameter of Feed Hopper	940	37	1,104	43-½	1,384	54-½	1,586	62-½	1,840	72-½
N	To Top of Feed Plate	1,190	46-¾	1,475	58	1,420	56	1,710	67-⅜	2,080	81-⅞
O	To Top of Feed Platform	1,875	73-⅞	2,318	91-¼	2,325	91-½	2,711	106-¾	3,432	135-⅛
P	Overall Height of Bowl Assembly	990	39	1,200	47-¼	1,225	48-¼	1,367	53-⅞	1,815	71-½
Q	Adjustment Cap Maximum Diameter	1,580	62-¼	1,870	73-⅝	2,180	85-⅞	2,376	93-½	2,670	105-⅛
R	Clearance Required for Removing Bowl Assembly	2,360	92-¾	2,680	105-½	2,810	110-⅝	3,212	126-½	4,230	166-½
S	Overall Height of Head Assembly	800	31-½	950	37-⅜	[illegible]	36-⅛	[illegible]	48-¼	1,617	63-⅝
T	Head or Mantle Maximum Diameter	980	38-⅝	1,160	45-⅝	1,345	53	1,560	61-½	1,836	72-¼
U	Clearance Required for Removing Head Assembly	2,115	83-¼	2,430	95-¾	2,525	99-¾	3,070	120-⅞	3,730	146-⅞
V	Tramp Release Across Corners	1,750	68-⅞	2,040	80-½	2,570	101-¼	2,900	114-¼	3,500	137-⅞
W	Tramp Release Side to Side	1,750	68-⅞	2,040	80-½	2,100	82-⅝	2,410	94-⅞	3,225	127
X	Additional Upward Travel Due to Clearing Stroke	76	3	98	3-⅞	70	2-¾	120	4-¾	195	7-¾
Y	Maximum Height to Top of Inlet Flange	1,945	76-½	2,480	97-⅝	2,485	97-⅞	2,868	112-⅞	3,586	141-⅛
Z	To Center of Inlet Flange	460	18-⅛	552	21-¾	618	24-⅜	640	25-⅛	830	32-⅝
AA	To Outside of Adjustment Mechanism	1,240	48-¾	1,370	53-⅞	—	—	1,687	72-½	1,850	72-⅞

Installation Requirements

Material Transport

WaterFlush Technology is a wet crushing process. Significant field experience in several recent installations has provided Nordberg with recommended material handling procedures. Please consult Nordberg Inc. for our latest information on material transport.

Maintenance

Support structures and feeding arrangement should be designed to allow quick and easy disassembly for maintenance of crusher. The WaterFlush crusher and supporting equipment should have easy access to an overhead crane.

Working Environment

Conventional dust collection is not required. Also, noise levels associated with WaterFlush crushing are in an acceptable range relative to operating grinding mills.

Weights

Complete Crusher and Assemblies

	WF200		WF300		WF400		WF500		WF800	
	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.
Crusher Complete	10,850	23,870	15,255	33,560	20,500	45,100	29,935	65,857	61,900	136,500
Main Frame, Adjustment Ring, Clamping Ring, Clamping Cylinders, Tramp Release, Eccentric, Socket, Countershaft Box, Countershaft and Crusher Sheave	6,360	13,990	10,057	22,125	12,405	27,290	17,510	38,520	36,000	79,200
Main Frame, Adjustment Ring, Clamping Ring, Clamping Cylinders and Tramp Release	5,400	11,880	7,450	16,390	10,025	22,060	14,370	31,610	28,220	62,084
Main Frame, *Including* Main Shaft and Main Frame Liner	2,960	6,512	3,975	8,745	5,675	12,490	8,550	18,810	18,390	40,458
Bowl, Bowl Liner, Adjustment Cap and Hopper	2,650	5,830	3,309	7,280	4,950	10,890	7,820	17,200	16,000	35,200
Head, Mantle and Feed Plate	1,050	2,315	1,825	4,020	2,710	5,970	4,330	9,530	8,400	18,480
Countershaft and Crusher Sheave	200	440	545	1,200	915	2,010	1,040	2,290	1,820	4,004
Eccentric	660	1,455	920	2,030	1,280	2,820	1,850	4,070	5,160	11,352
Socket and Socket Liner	60	130	100	220	180	400	250	550	420	924
Mantle	355	780	615	1,355	830	1,830	1,340	2,950	2,300	5,060
Bowl Liner	565	1,245	885	1,950	1,250	2,750	1,870	4,110	3,000	6,600
Feed Platform	225	495	240	528	425	940	275	605	320	704

Since various assembly combinations are available in each crusher size, and because of manufacturing variations, the weights shown above are approximate. All weights can vary ± 5%.

Recommended Power	150 KW	200 HP	200 KW	250 HP	300 KW	400 HP	375 KW	500 HP	525 KW	700 HP

Crusher Capacity

WaterFlush System Capacities in tons (2,000 lbs.) per hour

P80 of WaterFlush System Product

Size	8,000 microns	6,000 microns	4,000 microns	3,500 microns
WF200	80	60	45	35
WF300	135	110	75	65
WF400	200	150	120	105
WF500	300	250	200	135
WF800	550	450	300	210
WF1200	CONSULT FACTORY			

- Tonnages shown are based on instantaneous performance at recommended operating conditions.
- Pilot test facilities are available to determine projected performance for a given ore type.

Nordberg®

A Nordberg Group Company

Over 100 years of new technology

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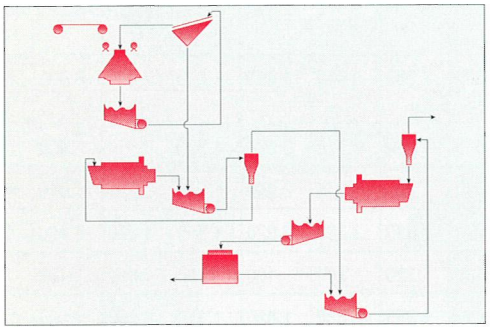


Primary Grinding - Gold Ore

Commissioned: October 1990

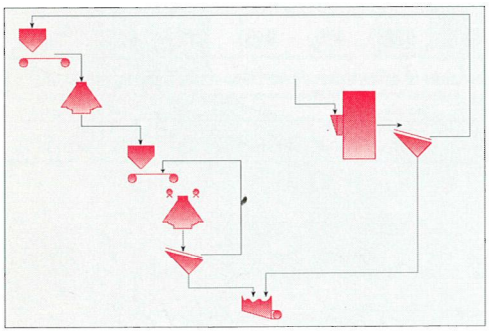
Two WF400 WaterFlush Crushers. One operating and one standby.

Design capacity: 88 stph per machine

Current capacity: Exceeds 110 stph per machine

Objective: Increase milling productivity by 15%

Screen undersize product: P80 = 4,000 microns



Oversize Grinding - Multicomponent Copper Ore

Commissioned: February 1992

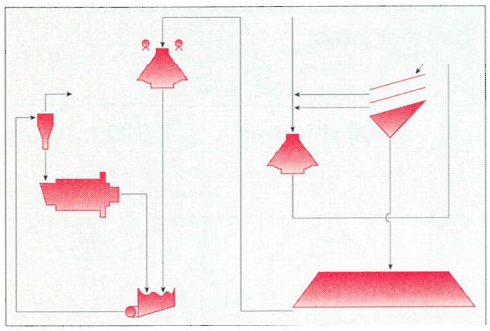
Four WF500 WaterFlush Crushers.

Design capacity: 300 stph per machine

Current capacity: Exceeds 350 stph per machine

Objective: Increase production and improve recovery

Screen undersize product: P80 = 4,000 microns



Primary Grinding - Gold Ore

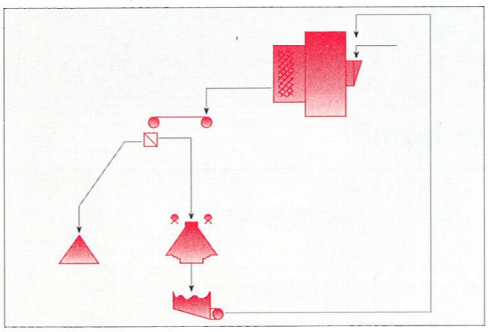
Commissioned: July 1992

One WF500 WaterFlush Crusher.

Design capacity: 165 stph

Current capacity: Limited by permit

Objective: Perform primary grinding function versus SAG mill. Open circuit processing of wet and sticky ore.



Trommel Oversize Grinding - Iron Ore

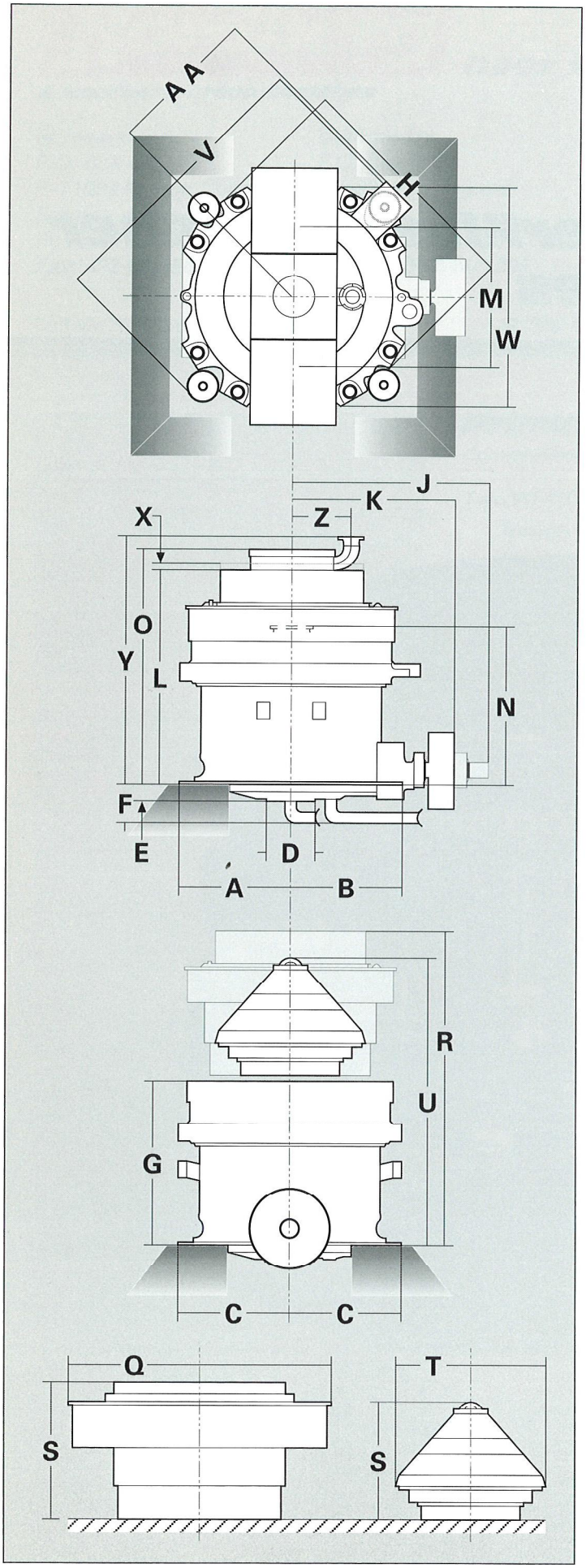
Commissioned: August 1992

One WF300 WaterFlush Crusher.

Design capacity: 150 stph

Current capacity: Exceeds 185 stph

Objective: Pilot circuit for future expansion to a WF800 WaterFlush crusher installation



Clearance Dimensions

		WF200		WF300		WF400	
		mm	in	mm	in		
A	Main Frame Flange	875	34-½	1,030	40-½	1,060	41
B	Main Frame Flange	875	34-½	910	35-13/16	1,060	41
C	Main Frame Flange	875	34-½	1,030	40-½	1,060	41
D	Main Frame Hub Diameter	380	15	450	17-¾	500	19
E	To Bottom of Main Frame Hub	65	2-5/8	60	2-3/8	160	5
F	To Bottom of Oil Piping	290	11-3/8	270	10-3/8	315	12
G	To Top of Dust Collar	1,290	50-¾	1,455	59-¼	1,560	61
H	Adjustment Ring Maximum Diameter	1,760	69-¼	2,020	79-½	2,580	101
J	Clearance Required for Removing Countershaft Assembly	1,865	73-3/8	2,020	79-½	2,440	
K	To End of Countershaft	1,160	45-5/8	1,349	53-1/32	1,640	64
L	Maximum Height to Top of Feed Hopper	1,810	71-¼	2,105	82-7/8	2,115	83
M	Inside Diameter of Feed Hopper	940	37	1,104	43-½	1,384	54
N	To Top of Feed Plate	1,190	46-7/8	1,475	58	1,420	
O	To Top of Feed Platform	1,875	73-7/8	2,318	91-¼	2.325	91
P	Overall Height of Bowl Assembly	990	39	1,200	47-¼	1,225	48
Q	Adjustment Cap Maximum Diameter	1,580	62-¼	1,870	73-5/8	2,180	85
R	Clearance Required for Removing Bowl Assembly	2,360	92-7/8	2,680	105-½	2,810	110
S	Overall Height of Head Assembly	800	31-½	950	37-3/8		36
T	Head or Mantle Maximum Diameter	980	38-5/8	1,160	45-5/8	1,345	
U	Clearance Required for Removing Head Assembly	2,115	83-¼	2,430	95-5/8	2,525	99
V	Tramp Release Across Corners	1,750	68-7/8	2,040	80-¼	2,570	101
W	Tramp Release Side to Side	1,750	68-7/8	2,040	80-¼	2,100	82
X	Additional Upward Travel Due to Clearing Stroke	76	3	98	3-7/8	70	2
Y	Maximum Height to Top of Inlet Flange	1,945	76-½	2,480	97-5/8	2,485	97-
Z	To Center of Inlet Flange	460	18-1/8	552	21-¾	618	24
AA	To Outside of Adjustment Mechanism	1,240	48-¾	1,370	53-7/8	—	

Installation Requirements

Material Transport

WaterFlush Technology is a wet crushing process. Significant fie installations has provided Nordberg with recommended materia consult Nordberg Inc. for our latest information on material transp

Maintenance

Support structures and feeding arrangement should be d ned sembly for maintenance of crusher. The WaterFlush cr nd have easy access to an overhead crane.

Working Environment

Conventional dust collection is not required. Also, noise level crushing are in an acceptable range relative to operating grinding

	WF500		WF800	
in		in	mm	in
-¾	1,225	48-¼	1,630	64-¼
-¾	1,225	48-¼	1,630	64-¼
-¾	1,225	48-¼	1,630	64-¼
-¾	580	22-⅞	700	27-⅝
-⅜	140	5-½	378	14-⅞
-½	300	12-⅞	708	27-⅞
-½	1,795	70-¾	2,235	88
-⅝	2,900	114-¼	3,150	124
96	2,675	105-⅜	3,450	135-⅞
-½	1,758	69-¼	2,225	87-⅝
-¼	2,550	100-⅜	3,140	123-⅝
-½	1,586	62-½	1,840	72-½
56	1,710	67-⅜	2,080	81-⅞
-½	2,711	106-¾	3,432	135-⅛
-¼	1,367	53-⅞	1,815	71-½
-⅞	2,376	93-½	2,670	105-⅛
-⅝	3,212	126-½	4,230	166-½
-⅛	[illegible]	48-¼	1,617	63-⅝
53	1,560	61-½	1,836	72-¼
-⅜	3,070	120-⅞	3,730	146-⅞
-¼	2,900	114-¼	3,500	137-⅞
-¾	2,410	94-⅞	3,225	127
-¾	120	4-¾	195	7-¾
3/16	2,868	112-15/16	3,586	141-⅛
-⅜	640	25-3/16	830	32-⅝
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Weights

Complete Crusher and Assemblies

	WF200		WF300		WF400		WF500		WF800	
	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.
Crusher Complete	10,850	23,870	15,255	33,560	20,500	45,100	29,935	65,857	61,900	136,500
Main Frame, Adjustment Ring, Clamping Ring, Clamping Cylinders, Tramp Release, Eccentric, Socket, Countershaft Box, Countershaft and Crusher Sheave	6,360	13,990	10,057	22,125	12,405	27,290	17,510	38,520	36,000	79,200
Main Frame, Adjustment Ring, Clamping Ring, Clamping Cylinders and Tramp Release	5,400	11,880	7,450	16,390	10,025	22,060	14,370	31,610	28,220	62,084
Main Frame, *Including* Main Shaft and Main Frame Liner	2,960	6,512	3,975	8,745	5,675	12,490	8,550	18,810	18,390	40,458
Bowl, Bowl Liner, Adjustment Cap and Hopper	2,650	5,830	3,309	7,280	4,950	10,890	7,820	17,200	16,000	35,200
Head, Mantle and Feed Plate	1,050	2,315	1,825	4,020	2,710	5,970	4,330	9,530	8,400	18,480
Countershaft and Crusher Sheave	200	440	545	1,200	915	2,010	1,040	2,290	1,820	4,004
Eccentric	660	1,455	920	2,030	1,280	2,820	1,850	4,070	5,160	11,352
Socket and Socket Liner	60	130	100	220	180	400	250	550	420	924
Mantle	355	780	615	1,355	830	1,830	1,340	2,950	2,300	5,060
Bowl Liner	565	1,245	885	1,950	1,250	2,750	1,870	4,110	3,000	6,600
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Crusher Capacity

WaterFlush System Capacities in tons (2,000 lbs.) per hour				
P80 of WaterFlush System Product				
Size	**8,000 microns**	**6,000 microns**	**4,000 microns**	**3,500 microns**
WF200	80	60	45	35
WF300	135	110	75	65
WF400	200	150	120	105
WF500	300	250	200	135
WF800	550	450	300	210
WF1200	CONSULT FACTORY			

- Tonnages shown are based on instantaneous performance at recommended operating conditions.
- Pilot test facilities are available to determine projected performance for a given ore type.