



McCloskey[®]
INTERNATIONAL

Crusher Wear Parts Selection Guide

JAW, CONE & IMPACT CRUSHERS

issue 003

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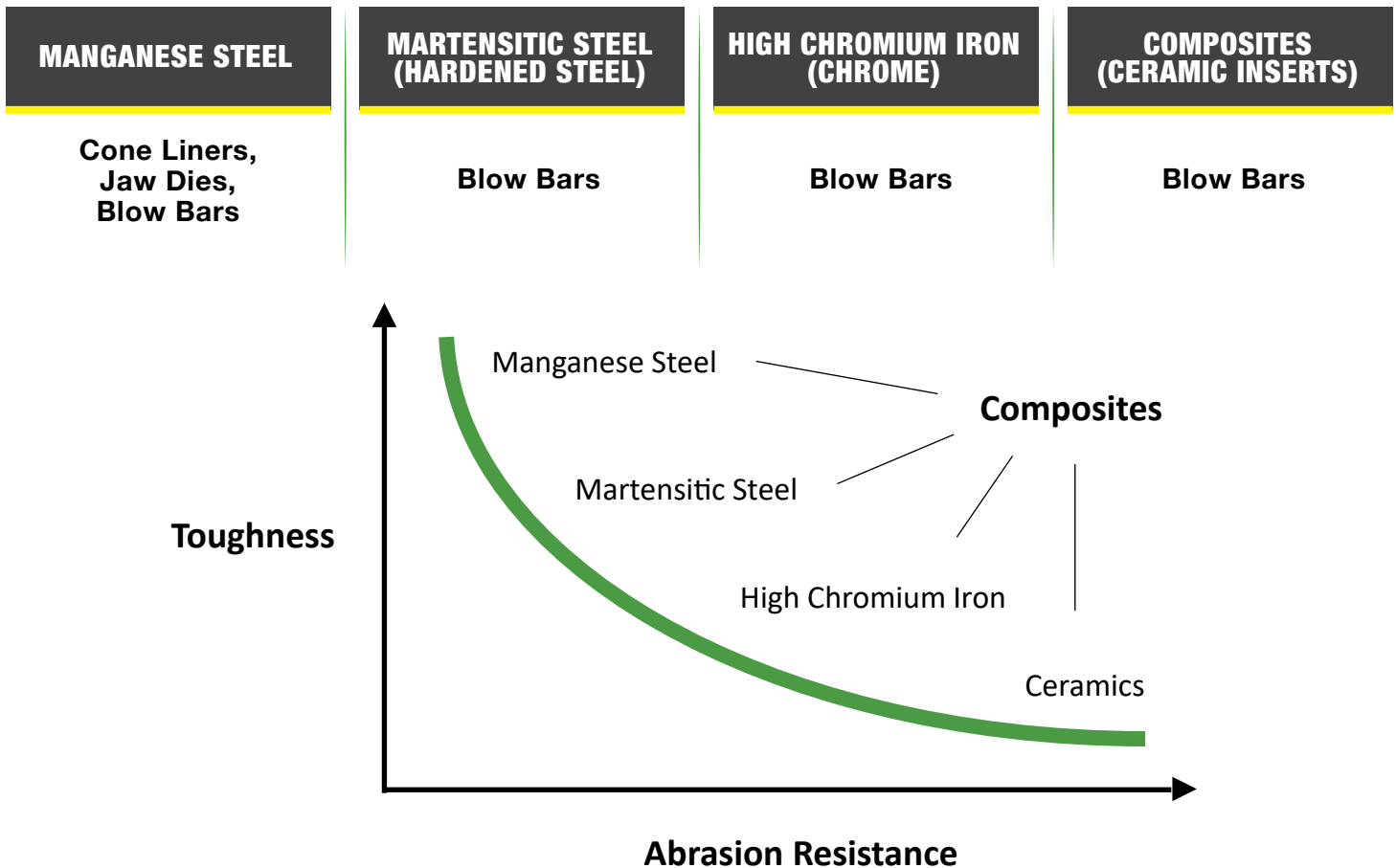
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WEAR PARTS MATERIALS AND PROPERTIES



MANGANESE

Manganese steel is the most common material for crusher wears. The wear resistance of manganese steel is based on a work hardening phenomenon. When the surface of manganese steel is under heavy impact or a compressive load, it hardens from the surface while the base material remains tough. The depth and hardness of work hardened surface vary depending on application and manganese steel grade.

Standard all round manganese level and the most common for all jaws and cone liners is **18%**. Low manganese grade steel (**14%**) work hardens slower than higher grade, but is more impact resistant. Higher levels (**22%**) are used in very hard and abrasive applications where significant wear resistance is needed.



WEAR MECHANISMS IN CRUSHING CHAMBERS

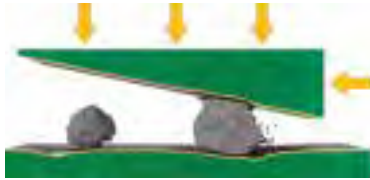
Wear is material loss on surfaces by means of several different mechanisms. The two main wearing mechanisms in the crushing chamber are **Abrasive wear** & **Fatigue wear**.

The main wearing mechanism in the crushing chamber is abrasive wearing. Fatigue wear is also present as wear are subjected to multiple compression or impact loads.

During the crushing cycle, gouging or high stress abrasion is present depending on the particle size of feed material. Between the crushing cycles when particles of feed material are sliding against wear parts, low stress abrasion is present.



1



GOUGHING ABRASION

- Large particles
- High impact or compression loads
- Good work hardening on manganese

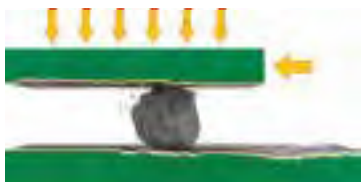
2



LOW STRESS OR SCRATCHING ABRASION

- No compression load
- Scratching abrasion while material is sliding at the surface of wear part
- Less work hardening on manganese

3



HIGH STRESS OR GRINDING ABRASION

- Smaller particles
- High compression load
- Less work hardening on manganese

WEAR FACTORS

ENVIRONMENTAL FACTORS	TYPE OF WEAR	CRUSHER PARAMETERS	FEED	WEAR MATERIAL ITSELF
<ul style="list-style-type: none"> • Moisture • Temperature 	<ul style="list-style-type: none"> • Adhesive • Fatigue • Corrosive • Abrasive 	<ul style="list-style-type: none"> • CSS • Speed • Stroke 	<ul style="list-style-type: none"> • Distribution • Rock Types & Characteristics • Wearing Particles 	<ul style="list-style-type: none"> • Wear material type/ Chemical Composition • Wear Part Manuf. Quality



Several different factors affect the life of wear parts. Type of wear, environmental factors, crusher operating parameters, feed material and wear part properties are just a few of these.

Two of the most notable factors in the wear of crusher wear parts are **abrasiveness** and **crushability** of feed material.



FEED MATERIAL PROPERTIES

ABRASIVENESS CLASSIFICATION

Abrasiveness of the feed material can be determined in rock laboratories using a test for abrasiveness. The following table indicates the abrasiveness of rock based on this test.

CLASSIFICATION		FRENCH ABRASIVENESS (g/ton)
Non-Abrasive	*	0 - 100
Slightly Abrasive	**	101 - 600
Medium Abrasive	***	601 - 1200
Abrasive	****	1201 - 1700
Very Abrasive	*****	1701+



CRUSHABILITY CLASSIFICATION

Crushability indicates how easily the rock material breaks down. Difficult rock with a low crushability value requires more crushing energy than easier rocks with a higher crushability value.

CLASSIFICATION		CRUSHABILITY (%)
Very Easy	*	50 +
Easy	**	40 - 49
Medium	***	30 - 39
Difficult	****	20 - 29
Very Difficult	*****	- 19



MATERIAL PROPERTIES

APPLICATION	ABRASIVENESS		CRUSHABILITY	
BASALT	500-2500	****	20-50	***
DOLOMITE	0-500	**	30-60	**
GRANITE	900-1900	****	30-90	*
GRAVEL	300-2500	***	30-55	**
LIMESTONE	0-500	**	30-65	**
RECYCLED CONCRETE	600-1200	***	20-50	***
RECYCLED ASPHALT	1500-2400	*****	30-50	***



Recycled Concrete



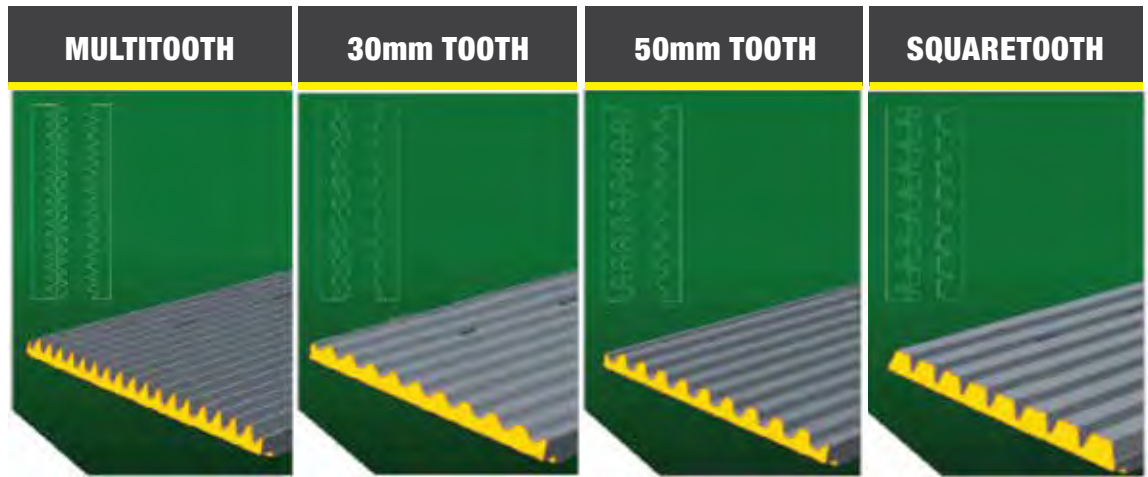
Gravel



Limestone

JAW CRUSHER WEAR PARTS

JAW DIE SELECTION



APPLICATION

Hard rock, Crushability Difficult		**	***
Soft rock, Crushability Easy		**	***
Gravel		***	*
Slabby soft rock, Crushability Easy		*	
Asphalt recycling		*	
Concrete recycling	**	***	
Demolition waste recycling	**	***	

* Note: The more green bullets the better choice.

** Note: Not all profiles are available for all crusher models. For more detailed information and related parts, please consult your nearest McCloskey dealer.

FEATURES



MULTITOOTH

Suitable for recycled concrete and demolition waste

Sharp tooth profile creates good grip on feed material

Good for fines removal

30mm TOOTH

Suitable for recycled concrete, asphalt and demolition waste

Resists dirt packing

Can be fed with dirt and fines

More wearable Mn-steel

High production

50mm TOOTH

Suitable for gravel, hard and slabby rock

Good for fines removal

Less slabby product

High production

SQUARETOOTH

Good in abrasive and very hard feed materials

Flat tooth profile maximises lifetime

More wearable Mn-steel

Less space for fines to go through

V2 JAWS

J50v2

SWING		FIX	
501-023-081-18	Multi Tooth (18%)	501-023-086-18	Multi Tooth (18%)
501-023-081-22	Multi Tooth (22%)	501-023-086-22	Multi Tooth (22%)
501-023-082-18	30mm Corrugated (18%)	501-023-087-18	30mm Corrugated (18%)
501-023-082-22	30mm Corrugated (22%)	501-023-087-22	30mm Corrugated (22%)
501-023-083-18	50mm Corrugated (18%)	501-023-088-18	50mm Corrugated (18%)
501-023-083-22	50mm Corrugated (22%)	501-023-088-22	50mm Corrugated (22%)
501-023-084-18	Square Tooth (18%)	501-023-089-18	Square Tooth (18%)
501-023-084-22	Square Tooth (22%)	501-023-089-22	Square Tooth (22%)

J45

SWING		FIX	
551-015-081-18	Multi Tooth (18%)	551-015-086-18	Multi Tooth (18%)
551-015-081-22	Multi Tooth (22%)	551-015-086-22	Multi Tooth (22%)
551-015-082-18	30mm Corrugated (18%)	551-015-087-18	30mm Corrugated (18%)
551-015-082-22	30mm Corrugated (22%)	551-015-087-22	30mm Corrugated (22%)
551-015-083-18	50mm Corrugated (18%)	551-015-088-18	50mm Corrugated (18%)
551-015-083-22	50mm Corrugated (22%)	551-015-088-22	50mm Corrugated (22%)
551-015-084-18	Square Tooth (18%)	551-015-089-18	Square Tooth (18%)
551-015-084-22	Square Tooth (22%)	551-015-089-22	Square Tooth (22%)

J40v2

SWING		FIX	
504-015-081-18	Multi Tooth (18%)	504-015-086-18	Multi Tooth (18%)
504-015-081-22	Multi Tooth (22%)	504-015-086-22	Multi Tooth (22%)
504-015-082-18	30mm Corrugated (18%)	504-015-087-18	30mm Corrugated (18%)
504-015-082-22	30mm Corrugated (22%)	504-015-087-22	30mm Corrugated (22%)
504-015-083-18	50mm Corrugated (18%)	504-015-088-18	50mm Corrugated (18%)
504-015-083-22	50mm Corrugated (22%)	504-015-088-22	50mm Corrugated (22%)
504-015-084-18	Square Tooth (18%)	504-015-089-18	Square Tooth (18%)
504-015-084-22	Square Tooth (22%)	504-015-089-22	Square Tooth (22%)

J35

SWING		FIX	
525-007-036	Multi Tooth (18%)	525-007-041	Multi Tooth (18%)
525-007-037	25mm Corrugated (18%)	525-007-042	25mm Corrugated (18%)
525-007-038	45mm Corrugated (18%)	525-007-043	45mm Corrugated (18%)
525-007-039	Square Tooth (18%)	525-007-044	Square Tooth (18%)

* Note: For more detailed information and related parts, please consult your nearest McCloskey dealer.

V2 CHEEK PLATES

J50v2

501-023-023	Cheek plate upper RH
501-023-024	Cheek plate upper LH
501-023-025	Cheek plate lower RH
501-023-026	Cheek plate lower LH

J45

501-015-023	Cheek plate upper RH
501-015-024	Cheek plate upper LH
501-015-025	Cheek plate lower RH
501-015-026	Cheek plate lower LH

J40v2

504-015-023	Cheek plate upper RH
504-015-024	Cheek plate upper LH
504-015-025	Cheek plate lower RH
504-015-026	Cheek plate lower LH

J35

525-007-023	Cheek plate upper RH
525-007-024	Cheek plate upper LH
525-007-025	Cheek plate lower RH
525-007-026	Cheek plate lower LH

* Note: For more detailed information and related parts, please consult your nearest McCloskey dealer.



V1 JAWS & CHEEK PLATES

SWING & FIX JAW DIE

J50v1

501-015-036-14	Quarry (14%)
501-015-036-18	Quarry (18%)
501-015-036-22	Quarry (22%)
501-015-051-14	Recycle (14%)
501-015-051-18	Recycle (18%)
501-015-051-22	Recycle (22%)

J44

551-003-036-14	Quarry (14%)
551-003-036-18	Quarry (18%)
551-003-036-22	Quarry (22%)

J40v1

504-003-022-14	Quarry (14%)
504-003-022-18	Quarry (18%)
504-003-022-22	Quarry (22%)
504-003-071-14	Recycle (14%)
504-003-071-18	Recycle (18%)
504-003-071-22	Recycle (22%)

CHEEK PLATES

J50v1

501-016-041	Cheek plate upper RH
501-016-042	Cheek plate upper LH
501-016-043	Cheek plate lower RH
501-016-044	Cheek plate lower LH

J44

551-003-023	Cheek plate upper RH
551-003-024	Cheek plate upper LH
551-003-025	Cheek plate lower RH
551-003-026	Cheek plate lower LH

J40v1

504-003-023	Cheek plate upper RH
504-003-024	Cheek plate upper LH
504-003-025	Cheek plate lower RH
504-003-026	Cheek plate lower LH

* Note: For more detailed information and related parts, please consult your nearest McCloskey dealer.

CONE CRUSHER WEAR PARTS

CSS & FEED OPENING

	CAVITY		MINIMUM SETTING	FEED OPENING
C2	FINE	F	14 mm (0.55 in)	95 mm (3.74 in)
	MEDIUM	M	17 mm (0.67 in)	125 mm (4.92 in)
	COARSE	C	19 mm (0.75 in)	185 mm (7.28 in)
C3	FINE	F	13 mm (0.51 in)	107 mm (4.21 in)
	MEDIUM	M	16 mm (0.63 in)	150 mm (5.91 in)
	COARSE	C	20 mm (0.79 in)	211 mm (8.31 in)
C4	MEDIUM	M	20 mm (0.79 in)	198 mm (7.80 in)
	COARSE	C	25 mm (0.98 in)	252 mm (9.92 in)
	EXTRA COARSE	EC	30 mm (1.18 in)	299 mm (11.77 in)



* Minimum setting (CSS - Closed Side Setting) is the minimum distance between mantle and bowl liner for required product

** Feed opening is measured at the minimum setting and maximum feed size can vary from 80% to 100% of feed opening

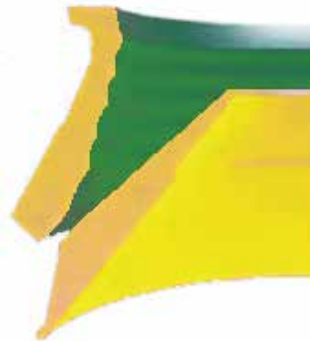
FINE (F)



MEDIUM (M)



COARSE (C)



EXTRA COARSE (EC)



MANTLE & BOWL LINERS

C2		C3		C4	
552-033-010	MC200 Mantle F/M/C (18%)	528-013-040	MC300 Mantle F/M/C (18%)	509-023-060	MC400 Mantle M/C/EC (18%)
552-033-011	MC200 Bowl Liner Std F (18%)	528-013-041	MC300 Bowl Liner Std F (18%)	509-023-061	MC400 Bowl Liner Std M (18%)
552-033-012	MC200 Bowl Liner Std M (18%)	528-013-042	MC300 Bowl Liner Std M (18%)	509-023-062	MC400 Bowl Liner Std C (18%)
552-033-013	MC200 Bowl Liner Std C (18%)	528-013-043	MC300 Bowl Liner Std C (18%)	509-023-063	MC400 Bowl Liner Std EC (18%)
528-003-669	MC200 Torch Ring	528-003-697	MC300 Torch Ring	528-003-743	MC400 Torch Ring
552-033-010-22	MC200 Mantle F/M/C (22%)	528-013-040-22	MC300 Mantle F/M/C (22%)	509-023-060-22	MC400 Mantle M/C/EC (22%)
552-033-011-22	MC200 Bowl Liner Std F (22%)	528-013-041-22	MC300 Bowl Liner Std F (22%)	509-023-061-22	MC400 Bowl Liner Std M (22%)
552-033-012-22	MC200 Bowl Liner Std M (22%)	528-013-042-22	MC300 Bowl Liner Std M (22%)	509-023-062-22	MC400 Bowl Liner Std C (22%)
552-033-013-22	MC200 Bowl Liner Std C (22%)	528-013-043-22	MC300 Bowl Liner Std C (22%)	509-023-063-22	MC400 Bowl Liner Std EC (22%)

* Note: For more detailed information and related parts, please consult your nearest McCloskey dealer.

CSS & FEED OPENING

	CAVITY	MINIMUM SETTING	FEED OPENING
C38	COARSE - MEDIUM	16 mm (0.63 in)	86 mm (3.39 in)
	COARSE - COARSE	16 mm (0.63 in)	98 mm (3.96 in)
	COARSE - X-COARSE	25 mm (0.98 in)	146 mm (5.75 in)
	FINE - FINE	10 mm (0.40 in)	44 mm (1.73 in)
	FINE - MEDIUM	13 mm (0.51 in)	57 mm (2.24 in)
	FINE - COARSE	16 mm (0.63 in)	73 mm (2.87 in)
C44	COARSE - MEDIUM	16 mm (0.63 in)	89 mm (3.50 in)
	COARSE - COARSE	19 mm (0.75 in)	108 mm (4.25 in)
	COARSE - X-COARSE	25 mm (0.98 in)	165 mm (6.50 in)
	FINE - FINE	10 mm (0.40 in)	44 mm (1.73 in)
	FINE - MEDIUM	13 mm (0.51 in)	57 mm (2.24 in)
	FINE - COARSE	16 mm (0.63 in)	67 mm (2.64 in)



* Minimum setting (CSS - Closed Side Setting) is the minimum distance between mantle and bowl liner for required product
 ** Feed opening is measured at the minimum setting and maximum feed size can vary from 80% to 100% of feed opening








MANTLE & BOWL LINERS

C38		C44	
552-003-063	C38 Mantle (18%)	502-003-063	C44 Mantle (18%)
552-003-060	C38 Bowl Liner Coarse-Medium (18%)	502-003-060	C44 Bowl Liner Coarse-Medium (18%)
552-003-061	C38 Bowl Liner Coarse-Coarse (18%)	502-003-061	C44 Bowl Liner Coarse-Coarse (18%)
552-003-062	C38 Bowl Liner Coarse-X-Coarse (18%)	502-003-062	C44 Bowl Liner Coarse-X-Coarse (18%)
552-003-064	C38 Bowl Liner Fine - Fine (18%)	502-003-064	C44 Bowl Liner Fine - Fine (18%)
552-003-065	C38 Bowl Liner Fine - Medium (18%)	502-003-065	C44 Bowl Liner Fine - Medium (18%)
552-003-066	C38 Bowl Liner Fine - Coarse (18%)	502-003-066	C44 Bowl Liner Fine - Coarse (18%)
502-003-100	Torch Ring (18%)	502-003-100	Torch Ring (18%)

* Note: For more detailed information and related parts, please consult your nearest McCloskey dealer.

IMPACT CRUSHER WEAR PARTS

BLOW BAR SELECTION

MATERIAL	APPLICATIONS	FEED SIZE	TRAMP IRON	LIFE COMPARISON	COLOUR CODE
MANGANESE	Primary	Large	YES	1X	
MARTENSITIC STEEL	Secondary/ Concrete	Medium	SOME	1.2 - 1.5X	
MARTENSITIC CERAMIC	Secondary/ Concrete	Medium	SOME	2.4 - 6X	
CHROME	Secondary/ Asphalt	Well prepared small	NO	2 - 4X	
CHROME CERAMIC	Secondary/ Asphalt	Well prepared small	NO	4 - 16X	

BLOW BARS

I54

503-003-056-CR	Chrome (Black)
503-003-056-CR-CER	Chrome/Ceramic (Yellow)
503-003-056-MR	Martensitic (Red)
503-003-056-MR-CER	Martensitic/Ceramic (Blue)
503-003-206-MR	Half - Martensitic (Red)

I44

550-003-056-CR	Chrome (Black)
550-003-056-CR-CER	Chrome/Ceramic (Yellow)
550-003-056-MR	Martensitic (Red)
550-003-056-MR-CER	Martensitic/Ceramic (Blue)
550-003-267-MR	Half - Martensitic (Red)

I4C

526-003-048-CR	Chrome (Black)
526-003-048-CR-CER	Chrome/Ceramic (Yellow)
526-003-048-MR	Martensitic (Red)
526-003-048-MR-CER	Martensitic/Ceramic (Blue)
526-003-131-MR	Half - Martensitic (Red)

I34

525-003-011-CR	Chrome (Black)
525-003-011-CR-CER	Chrome/Ceramic (Yellow)
525-003-011-MR	Martensitic (Red)
525-003-011-MR-CER	Martensitic/Ceramic (Blue)
525-003-072-MR	Half - Martensitic (Red)



* Note: For more detailed information and related parts, please consult your nearest McCloskey dealer.

CURTAIN LINERS

I54v3

503-003-044-HS	Hardened Steel	
503-003-044-MN	Manganese	4
503-003-044-CR	Chrome	

I44v3

550-003-070-HS	Hardened Steel	
550-003-070-MN	Manganese	4
550-003-070-CR	Chrome	

I4C

526-003-070	Upper Manganese	6
526-003-071	Lower Manganese	4
526-003-072	Lower Wear Plate, Hardened Steel	1

I34

525-003-070-MN	Upper Manganese	3
525-003-071-MN	Upper Manganese	2



* Note: For more detailed information and related parts, please consult your nearest McCloskey dealer.

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