LAMINITE®

Extreme resistance plus protection

Long-life Laminite® offers the ultimate in protection for extreme applications resulting in increased production, less down time + reduced maintenance costs

LAMINITE®

CQMS RAZER
Mining's Edge

LAMINITE®

EXTREME PROTECTION FOR EXTREME APPLICATIONS

EXTEND YOUR ASSET LIFE AND REDUCE YOUR MAINTENANCE COSTS

Laminite® is a combination of high chromium white iron metallurgically bonded to a mild steel backing plate achieving a high strength joint. The white iron modified AS 2027 (5) 3 CrMo has a nominal hardness of 700 Brinell (63 Rc) and contains primary carbides up to 1500HV providing maximum abrasion resistance protection for your equipment. The mild steel is easily weldable with minimal preparation and acts as a cushion for white iron, enabling it to handle impact and abrasion in the most extreme applications.

PROVEN IN THE FIELD 7

success stories using LAMINITE® wear packages designs and layouts

Surge bin protection using 50mm square bars, DLP 1101, DLP 125, to create dead-box effect, supplied on large pre-made panels. Still in service after 10 years

Chute lined with Laminite® Mk2 Rock box liners

Gyratory Primary crusher, Svelda 60x89, Spider arms and hub are enhanced with Laminite® buttons, chocky bars and skid bars and thus gives a considerable increase in wear life

Arm guard liners for a 60x89 Superior Cone crusher protection, with custom Laminite® parts welded to cast steel frames, giving years of protection

Long-life Laminite® offers the ultimate in protection for extreme applications resulting in increased production, less down time + reduced maintenance costs.

This unique product was created for the Australian mining and quarry industries by Mason & Cox Pty Ltd in 1971 and now manufactured and marketed worldwide through authorised distributors for CQMS Razer.

Laminite® has established a reputation as the solution for impact and high abrasion in the mining and quarry industries, and has numerous applications in the sugar cane, recycling, cement, mineral processing and dredging industries among others.

- **Alloy rich chemistry delivering industry leading wear life**
- **The right microstructure, critical for performance**
- **Superior bond strength for impact resistance and field life**

Application

- Dragline/shovel buckets
- Loader/excavator buckets
- Chute liners/rock box bars
- Feeder pan liners
- Quarry and mining grizzly screens
- Shredder/grinder tips
- Cane knife edges
- Adapters wear caps
- Dredging industry wear

Technical Support and Advice

- Offer long life wear solutions, based on existing successful applications
- Liner material upgrade and improvement
- Design capability and recommendations
- Wear audits in liaison with mine and design personnel
- Regular visits and inspections to discuss wear problems and solutions
- On-site product trials to prove product performance
- Wear packages, design and layouts for draglines,excavators, rope shovels and dippers

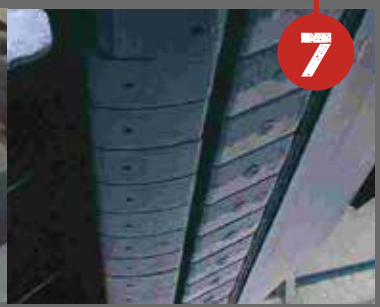
Product, Service and Size

- Fast delivery and service
- Standard and custom-made parts available
- An extensive range of sizes existing
- Large stock of pieces ready for assembly
- Emergency supply conditions possible, through negotiation

Laminite® Wear protection on Tunnel borer

Coal sizer using Laminite® tips, replacing conventional hard-facing and high labour maintenance costs

Dredge blocks on suction Drag head replacing Nihard castings which would wear out prematurely or fall off



CHOCKY BARS

- **Most popular for replacing hardfacing and clad plate**
- **Easy to cut and shape over contoured surfaces**

See pages 12 and 13 for procedures

WEAR BUTTONS + DONUTS

- **Ideal for smaller areas requiring wear resistant material**
- **Requires less welding time and material than conventional wear plate**

See pages 12 and 13 for procedures

STANDARD WEAR BARS

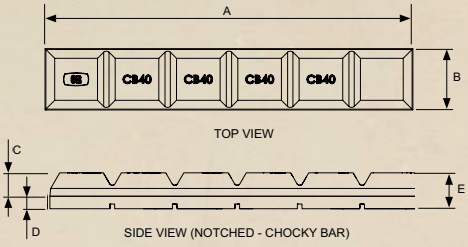
- **Popular for rock-box protection, impact areas and transfer points**
- **Chute protection in both low and high stress abrasion**
- **Many other shapes and sizes available**

See pages 12 and 13 for procedures

EXTEND YOUR ASSET LIFE AND REDUCE YOUR MAINTENANCE COSTS

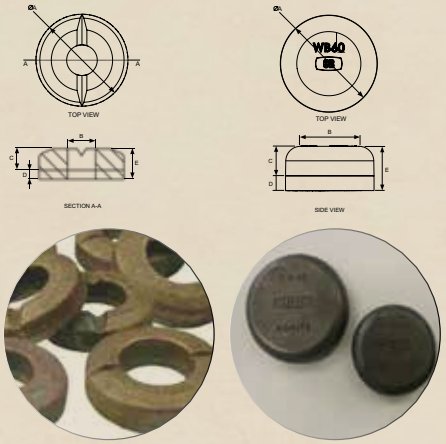
DIMENSIONS In (mm) | WEIGHT Lbs (Kgs)

PART	A	B	C	D	E	Lbs (kgs)
CB25N	9 7/16 (240)	1 (25)	9/16 (15)	5/16 (8)	7/8 (23)	2.0 (0.9)
CB40N	9 7/16 (240)	1 9/16 (40)	9/16 (15)	5/16 (8)	7/8 (23)	3.3 (1.5)
CB50N	9 7/16 (240)	1 15/16 (50)	9/16 (15)	5/16 (8)	7/8 (23)	4.2 (1.9)
CB65N	9 7/16 (240)	2 9/16 (65)	9/16 (15)	5/16 (8)	7/8 (23)	5.5 (2.5)
CB90N	9 7/16 (240)	3 9/16 (90)	9/16 (15)	5/16 (8)	7/8 (23)	8.8 (4)
CB100N	9 7/16 (240)	3 15/16 (100)	9/16 (15)	5/16 (8)	7/8 (23)	9.5 (4.3)
CB130N	9 7/16 (240)	5 1/8 (13)	9/16 (15)	5/16 (8)	7/8 (23)	12.3 (5.6)



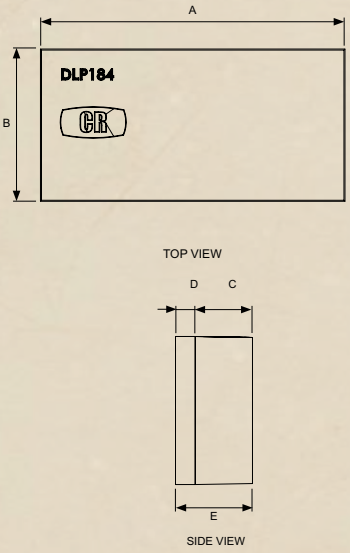
DIMENSIONS In (mm) | WEIGHT Lbs (Kgs)

PART	A	B	C	D	E	Lbs (kgs)
WEAR BUTTONS						
WB60	2 3/8 (60)	1 9/16 (40)	13/16 (20)	3/8 (10)	1 3/16 (30)	1.5 (0.7)
WB75	2 15/16 (75)	2 3/16 (55)	13/16 (20)	3/8 (10)	1 3/16 (30)	2.2 (1)
WB90	3 9/16 (90)	2 3/4 (70)	13/16 (20)	3/8 (10)	1 3/16 (30)	3.3 (1.5)
WB115	4 1/2 (115)	3 3/4 (95)	13/16 (20)	1/2 (12)	1 1/4 (32)	5.7 (2.6)
WB150	5 7/8 (150)	5 1/8 (130)	1 (25)	5/8 (16)	1 5/8 (41)	12.6 (5.7)
DONUTS						
DLP1920	2 15/16 (75)	1 (25)	11/16 (17)	5/16 (8)	1 (25)	1.5 (0.7)
DLP1921	3 15/16 (100)	1 15/16 (50)	11/16 (17)	5/16 (8)	1 (25)	2.2 (1)
DLP1994	3 15/16 (100)	2 3/4 (70)	15/16 (24)	5/16 (8)	1 1/4 (32)	2.2 (1)
DLP2196	5 1/8 (130)	3 1/8 (80)	9/16 (15)	5/16 (8)	7/8 (23)	2.9 (1.3)



DIMENSIONS In (mm) | WEIGHT Lbs (Kgs)

PART	A	B	C	D	E	Lbs (kgs)
DLP919	7 7/8 (200)	1 (25)	9/16 (15)	3/8 (10)	1 (25)	2.2 (1)
DLP1191	11 13/16 (300)	1 (25)	9/16 (15)	3/8 (10)	1 (25)	3.3 (1.5)
DLP295	153 6 (153)	1 1/2 (38)	1 (25)	5/16 (8)	1 5/16 (33)	3.3 (1.5)
DLP4	11 13/16 (300)	1 1/2 (38)	1 (25)	5/16 (8)	1 5/16 (33)	6.6 (3)
DLP184	5 7/8 (150)	2 15/16 (75)	1 1/8 (29)	3/8 (10)	1 9/16 (39)	7.5 (3.4)
DLP337	5 (127)	2 (51)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	5.5 (2.5)
DLP369	8 1/4 (210)	1 15/16 (50)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	9.0 (4.1)
DLP125	9 1/16 (230)	1 15/16 (50)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	9.9 (4.5)
DLP201A	17 (432)	1 15/16 (50)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	18.7 (8.5)
DLP1101	5 7/8 (150)	1 15/16 (50)	1 9/16 (40)	3/8 (10)	1 15/16 (50)	6.4 (2.9)
DLP343	7 1/2 (190)	1 15/16 (50)	1 9/16 (40)	3/8 (10)	1 15/16 (50)	8.2 (3.7)
DLP453	11 9/16 (294)	1 15/16 (50)	1 9/16 (40)	3/8 (10)	1 15/16 (50)	12.1 (5.5)
DLP2017	11 13/16 (300)	1 15/16 (50)	1 9/16 (40)	3/8 (10)	1 15/16 (50)	13.0 (5.9)
DLP352	8 1/8 (206)	8 (203)	1 1/2 (38)	13/16 (20)	2 5/16 (58)	41.9 (19)
DLP392/20	9 1/2 (241)	3 15/16 (100)	1 1/2 (38)	13/16 (20)	2 5/16 (58)	24.3 (11)
DLP619	5 7/8 (150)	2 15/16 (75)	1 15/16 (50)	3/8 (10)	2 3/8 (60)	11.7 (5.3)
DLP5008	11 13/16 (300)	3 15/16 (100)	2 15/16 (75)	1 (25)	3 15/16 (100)	52.0 (23.6)
DLP5009	17 7/8 (454)	3 15/16 (100)	2 15/16 (75)	1 (25)	3 15/16 (100)	78.5 (35.6)



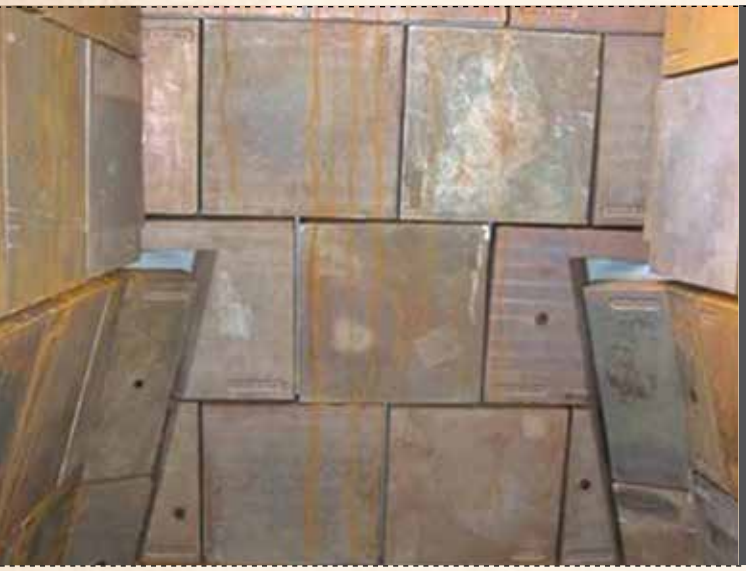
Contact CQMS Razer or your authorised Dealer for price and availability

LAMINITE® MICRO-LEDGE

Designed specifically for chutes, bins, transfer points and hoppers which handle and store fine, crushed ores

- **Creates a "dead-box" effect in these applications, extending the maintenance life of bins, chutes, transfer points and hoppers, with ore on ore wear effect**
- **Reduces the need for added wear plate inventory and costs in these applications**
- **Cost effective wear solution and ease of installation and use**

See pages 12 and 13 for procedures



STANDARD WEAR PLATES

Standard wear plates are used in specific wear applications providing excellent protection of

- **Chutes and Conveyor transfer points**

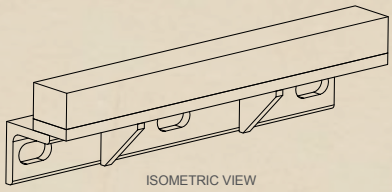
ROCKBOX

Rockbox liners offers wear protection for areas subject to wash out and premature failure

- **Suitable for use in bins, hoppers, chutes and other transfer points**

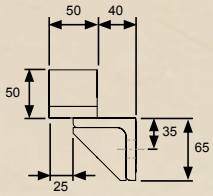
DIMENSIONS In (mm) WEIGHT Lbs (Kgs)

PART	LENGTH A	B	C	WIDTH	THICKNESS	Lbs (kgs)
SDP304	5 (128)	2 11/16 (68)	-	2 (50)	2 (50)	7.9 (3.6)
SDP296	7 1/2 (190)	5 1/8 (130)	-	2 (50)	2 (50)	12.1 (5.5)
SDP299	8 1/4 (210)	5 7/8 (150)	-	2 (50)	2 (50)	13.2 (6)
SDP297	9 (230)	6 11/16 (170)	-	2 (50)	2 (50)	14.6 (6.6
SDP298	17 (432)	7 5/16 (186)	7 5/16 (186)	2 (50)	2 (50)	27.6 (12.5)

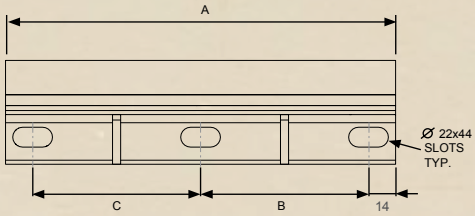


ISOMETRIC VIEW

Five popular sizes available or custom designed to suit specific needs



SIDE VIEW (in mm)



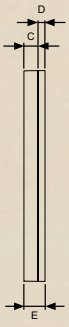
FRONT VIEW

DIMENSIONS In (mm) WEIGHT Lbs (Kgs)

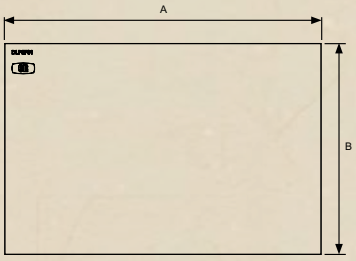
PART	A	B	C	D	E	Lbs (kgs)
DLP5701	11 13/16 (300)	17 11/16 (450)	3/16 (20)	3/8 (10)	1 3/16 (30)	70.1 (31.8)
DLP4677	11 13/16 (300)	11 13/16 (300)	13/16 (20)	3/8 (10)	1 3/16 (30)	46.7 (21.2)
DLP4682	11 13/16 (300)	5 7/8 (150)	13/16 (20)	3/8 (10)	1 3/16 (30)	23.4 (10.6)

Wear liners can be manufactured to custom shapes and sizes. Refer CQMS Razer.

Nelson studs are fitted according to customer specification at additional charge.



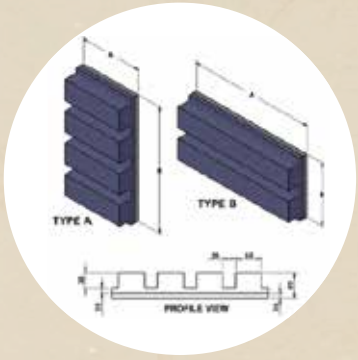
SIDE VIEW



TOP VIEW

DIMENSIONS In (mm) WEIGHT Lbs (Kgs)

PART	A	B	Lbs (kgs)
DLP2460	11 13/16 (300)	11 13/16 (300)	61.73 (28)
DLP2461	5 14/16 (148)	11 13/16 (300)	30.86 (14)
DLP2463	11 13/16 (300)	5 14/16 (148)	30.86 (14)
DLP2462	17 13/16 (452)	5 14/16 (148)	44.09 (20)



Contact CQMS Razer or your authorised Dealer for price and availability

SKID BARS

- **Far superior to standard Q&T wear plates offering greater wear life**
- **Available in straight, herringbone or domed shapes**
- **Geometrically designed to increase wear life**
- **Excellent for bucket protection and fixed plant applications**

See pages 12 and 13 for procedures

GRIZZLY BARS

- **The table highlights the list of standard Grizzly bars**
- **Custom-made Grizzly bars are available on request**
- **Significantly improved wear life and reduced downtime**

See pages 12 and 13 for procedures

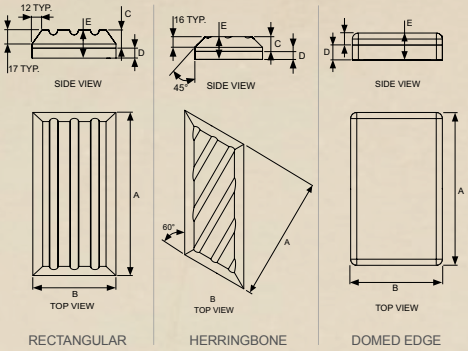
SHREDDER /GRINDER TIPS

- **Cost effective as compared to hard facing**
- **Superior edge retention and sharpness**
- **No need to rebuild edges**
- **Increased production and cutting efficiency**
- **Easy to install and maintain**

See pages 12 and 13 for procedures

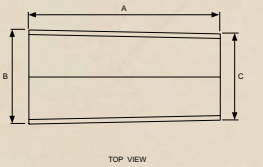
DIMENSIONS In (mm) | WEIGHT Lbs (Kgs)

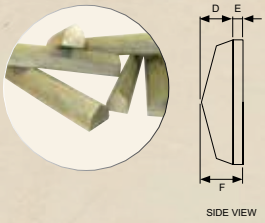
PART	TYPE	A	B	C	D	E	Lbs (kgs)
RECTANGULAR							
SB403	1	8 7/16 (214)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	11.2 (5.1)
SB406	1	11 7/8 (302)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	16.1 (7.3)
SB409	1	6 1/16 (154)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	8.2 (3.7)
SB205	1	11 (279)	2 15/16 (75)	7/8 (22)	1/2 (12)	1 5/16 (34)	13.4 (6.1)
HERRINGBONE							
SB404L	2	9 3/4 (247)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	13.0 (5.9)
SB405R	2	9 3/4 (247)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	13.0 (5.9)
SB407L	2	13 3/4 (349)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	18.5 (8.4)
SB408R	2	13 3/4 (349)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	18.5 (8.4)
SB410L	2	6 7/8 (175)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	9.3 (4.2)
SB411R	2	6 7/8 (175)	4 (101)	7/8 (22)	1/2 (12)	1 5/16 (34)	9.3 (4.2)
DOMED EDGE							
SB412	3	9 13/16 (250)	5 7/8 (150)	9/16 (15)	1 (25)	1 9/16 (40)	28.9 (13.1)
SB413	3	7 7/8 (200)	5 7/8 (150)	13/16 (20)	1 (25)	1 3/4 (45)	23.1 (10.5)
SB414	3	9 13/16 (250)	9 13/16 (250)	13/16 (20)	1 (25)	1 3/4 (45)	48.3 (21.9)



DIMENSIONS In (mm) | WEIGHT Lbs (Kgs)

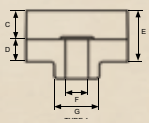
PART	A	B	C	D	E	F	Lbs (kgs)
TYPE A - 150/50 TAPER							
DLP2067	12 (305)	5 7/8 (150)	5 7/16 (137.5)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	30.0 (13.6)
DLP2068	12 (305)	5 7/16 (137.5)	4 15/16 (125)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	27.6 (12.5)
DLP2069	12 (305)	4 15/16 (125)	4 7/16 (112.5)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	24.7 (11.2)
DLP2070	12 (305)	4 7/16 (112.5)	3 15/16 (100)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	22.0 (10)
DLP2071	12 (305)	3 15/16 (100)	3 7/16 (87.5)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	19.4 (8.8)
DLP2072	12 (305)	3 7/16 (87.5)	2 15/16 (75)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	16.5 (7.5)
DLP2073	12 (305)	2 15/16 (75)	2 7/16 (62.5)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	13.9 (6.3)
DLP2074	12 (305)	2 7/16 (62.5)	1 15/16 (50)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	11.2 (5.1)
TYPE B - 150/75 TAPER							
DLP2075	12 (305)	5 7/8 (150)	5 9/16 (141)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	30.4 (13.8)
DLP2076	12 (305)	5 9/16 (141)	5 3/16 (131)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	28.4 (12.9)
DLP2077	12 (305)	5 3/16 (131)	4 13/16 (122)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	26.2 (11.9)
DLP2078	12 (305)	4 13/16 (122)	4 7/16 (113)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	24.5 (11.1)
DLP2079	12 (305)	4 7/16 (113)	4 1/16 (103)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	22.3 (10.1)
76/38 TAPER							
DLP1886	12 1/4 (311)	3 (76)	2 5/8 (66.5)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	14.6 (6.6)
DLP1887	12 1/4 (311)	2 5/8 (67)	2 1/4 (57)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	12.3 (5.6)
DLP1888	12 1/4 (311)	2 1/4 (57)	1 7/8 (47.5)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	10.4 (4.7)
DLP1889	12 1/4 (311)	1 7/8 (48)	1 1/2 (38)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	8.4 (3.8)

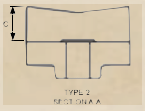


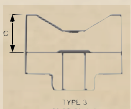


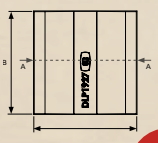
DIMENSIONS In (mm) | WEIGHT Lbs (Kgs)

PART	TYPE	A	B	C	D	E	F	G	Lbs (kgs)
PLAIN									
DLP653	1	3 9/16 (90)	3 9/16 (90)	1 (25)	13/16 (20)	1 3/4 (45)	7/8"-14 UNF	1 9/16 (40)	6.4 (2.9)
DLP920	1	3 9/16 (90)	1 15/16 (50)	1 (25)	13/16 (20)	1 3/4 (45)	7/8"-14 UNF	1 9/16 (40)	3.5 (1.6)
DLP996	1	1 15/16 (50)	1 15/16 (50)	13/16 (20)	11/16 (18)	1 1/2 (38)	3/4"-16 UNF	1 1/4 (32)	1.5 (0.7)
DLP1052	1	3 1/8 (80)	3 1/8 (80)	1 (25)	13/16 (20)	1 3/4 (45)	7/8"-14 UNF	1 9/16 (40)	5.3 (2.4)
DLP1115	1	3 15/16 (100)	3 15/16 (100)	1 (25)	13/16 (20)	1 3/4 (45)	7/8"-14 UNF	1 9/16 (40)	7.9 (3.6)
DLP1208	1	2 1/2 (64)	2 1/2 (64)	13/16 (20)	13/16 (20)	1 9/16 (40)	3/4"-16 UNF	1 1/4 (31.3)	2.6 (1.2)
DLP1340	1	3 1/8 (80)	2 3/16 (56)	1 (25)	13/16 (20)	1 3/4 (45)	M20 x 1.5P	1 3/8 (35)	3.5 (1.6)
FLARED									
DLP1654	2	3 9/16 (90)	3 9/16 (90)	1 3/16 (30)	13/16 (20)	1 15/16 (50)	7/8"-14 UNF	1 9/16 (40)	6.6 (3)
DLP2038	2	3 1/8 (80)	2 3/16 (56)	1 3/16 (30)	13/16 (20)	1 15/16 (50)	M20 x 1.5P	1 3/8 (35)	4.0 (1.8)
BUTTERFLY									
DLP1927	3	3 9/16 (90)	3 9/16 (90)	1 3/8 (35)	13/16 (20)	2 3/16 (55)	7/8"-14 UNF	1 9/16 (40)	6.8 (3.1)
DLP2014	3	3 9/16 (90)	1 15/16 (50)	1 3/8 (35)	13/16 (20)	2 3/16 (55)	7/8"-14 UNF	1 9/16 (40)	4.0 (1.8)
DLP2039	3	3 1/8 (80)	2 3/16 (56)	1 3/8 (35)	13/16 (20)	2 3/16 (55)	M20 x 1.5P	1 3/8 (35)	4.2 (1.9)









Contact CQMS Razer or your authorised Dealer for price and availability

KNIFE EDGES

- **Cost effective as compared to hard facing**
- **Superior edge retention and sharpness**
- **No need to rebuild edges**
- **Increased production and cutting efficiency**
- **Easy to install and maintain**

See pages 12 and 13 for procedures

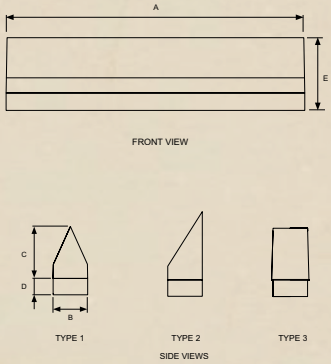
WAFER STRIPS

- **Metallurgically bonded martensitic white iron bonded to a weldable, impact resistant backing plate offering superior wear**
- **Manufactured to be easily cut and shaped to fit over contoured surfaces**
- **Thinner and lighter than standard Laminite® chocky bars**
- **Significant increase in wear life and less downtime**

See pages 12 and 13 for procedures

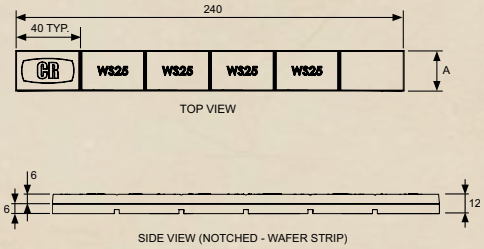
DIMENSIONS In (mm) WEIGHT Lbs (Kgs)

PART	TYPE	A	B	C	D	E	Lbs (kgs)
ARROWHEAD							
DLP1065-16	1	8 (203)	5/8 (16)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	2.0 (0.9)
DLP1065-19	1	8 (203)	3/4 (19)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	2.4 (1.1)
DLP1065-22	1	8 (203)	7/8 (22)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	2.9 (1.3)
DLP1065-25	1	8 (203)	1 (25)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	3.3 (1.5)
DLP1265-16	1	12 (305)	5/8 (16)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	3.1 (1.4)
DLP1265-19	1	12 (305)	3/4 (19)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	3.5 (1.6)
DLP1265-22	1	12 (305)	7/8 (22)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	4.2 (1.9)
DLP1265-25	1	12 (305)	1 (25)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	4.9 (2.2)
HALF ARROWHEAD							
DLP1065A-16	2	8 (203)	5/8 (16)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	2.2 (1)
DLP1065A-25	2	8 (203)	1 (25)	1 15/16 (50)	1/2 (12)	2 7/16 (62)	3.7 (1.7)
DLP1265A-25	2	12 (305)	1 (25)	1 9/16 (40)	5/8 (16)	2 3/16 (56)	5.5 (2.5)
BLUNT							
DLP1301-19	3	8 (203)	3/4 (19)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	3.5 (1.6)
DLP1301-25	3	8 (203)	1 (25)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	4.6 (2.1)
DLP1301-28	3	8 (203)	1 1/8 (28)	1 1/2 (38)	1/2 (12)	1 15/16 (50)	5.1 (2.3)



DIMENSIONS In (mm) WEIGHT Lbs (Kgs)

PART	TYPE	A	Lbs (kgs)
WS25N	NOTCHED	1 (25)	1.3 (0.6)
WS40N	NOTCHED	1 9/16 (40)	2.0 (0.9)
WS50N	NOTCHED	1 15/16 (50)	2.6 (1.2)
WS65N	NOTCHED	2 9/16 (65)	3.5 (1.6)



Contact CQMS Razer or your authorised Dealer for price and availability

LAMINITE® FITTING PROCEDURE

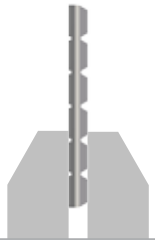
CUTTING DETAILS

CAUTION. Extreme care must be taken when cutting to minimize local pre-heating. Failure to do so may result in cracking or delamination.

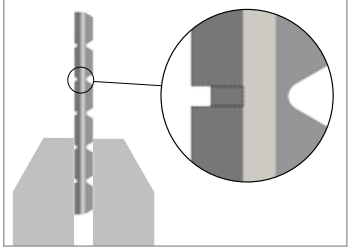
High pressure abrasive water jet cutting is the preferred cutting method. Thermal cutting using an oxyacetylene torch, arc-air or plasma is NOT recommended due to high localized heat input and high risk of cracking and delamination. Submerged plasma cutting is acceptable for Laminite® up to 30mm total thickness. For Laminite® no greater than 25mm section thickness, cutting by abrasive disc or saw is an accepted practice.

Cutting Procedure
25mm Section Thickness

1 Secure the Laminite® piece to be cut in a vice or clamp.

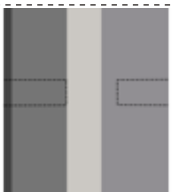


2 Notch the backing plate. See also shown in (Fig 1).



3 Notch the backing plate through to white iron casting. If white iron is not already notched eg.chocky bar is already notched, notch the white iron a minimum of 3mm deep opposite the notch in the backing plate, as per (Fig 2).

Chocky Bar Example

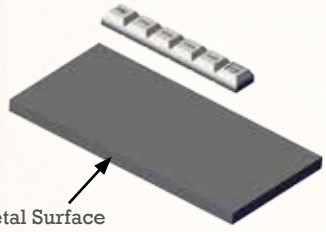


Wear Bar Example

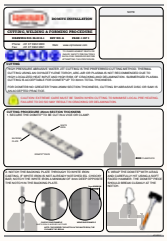
WELDING PROCEDURE

CAUTION. Temperature must not exceed 392°F. Excessive heat input may cause cracking and delamination.

1 Ensure that the Laminite® backing plate and mating metal surface is clean and flat



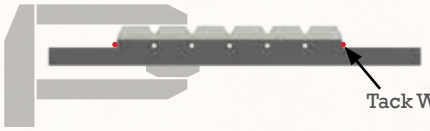
2 Contact a CR representative for the appropriate procedure



Reference WPS TD-0069 Weld Procedure

DO NOT PRE-HEAT DOMITE®

4 Clamp and tack weld Laminite® into position

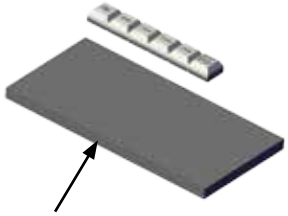


FORMING PROCEDURE

This practice is suitable for Chocky bars and Wafer Strips only.

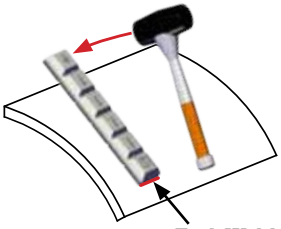
NOTE: For severe curves with a radius of less than 305mm, or inside curves, it is advisable to notch the mild steel backing plate opposite the 'V' to assist forming. (Fig A) The Chocky Bar may crack during bending. This is normal.

1 Clean the surface to which chocky bar will be welded



2 Tack weld one end of the chocky bar (as per the welding procedure) in at least 3 places by 15mm minimum length per weld.

Outside Curves: Hammer down welded end of bar with a soft face hammer to bend bar to match mating radius



PRODUCT SAFETY

Any fitting or falbrication work should be carried out in accordance with applicalble site safety standards, ensuring use of approved hard hats, eye protection, steel-toed shoes and protective gloves. Always use a soft faced hammer when performing the work as descri lbed in these instructions.

4. Wrap the Laminite® with a rag and carefully hit using a soft faced hammer. The piece should break cleanly at the notch.

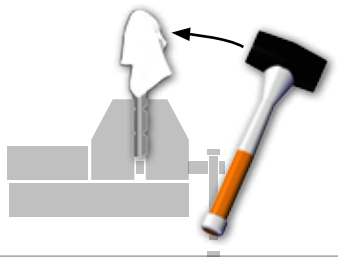


Fig. 1

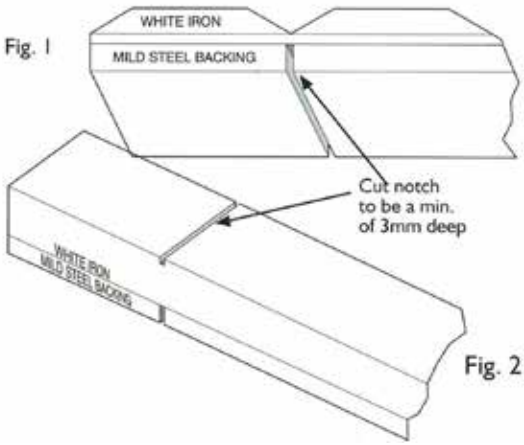


Fig. 2

Note: The deeper the notch in the White Iron, the cleaner the break.

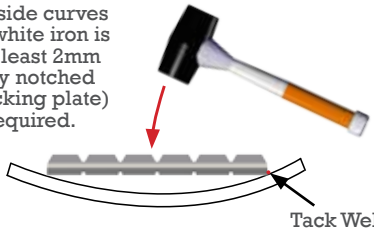
Use suitably calibrated device to monitor temperature. Do not weld continuously. Continuous weld may cause warping, delamination, and cracking.

5 Stitch weld, laying 50mm maximum length on each run, alternating ends or sides to minimize heat input

6 Do not deposit weld within 2mm from joint line between Laminite® and steel backing plate, as shown.

Inside curves: Starting in the center strike bar with a soft face hammer to bend bar to match mating radius

Note: For inside curves ensure the white iron is notched at least 2mm (preferably notched down to backing plate) where required.



3 Stitch weld as per the weld procedure

CUSTOM PRODUCTS

Laminite® is available in over 2,500 standard shapes and sizes and can be used in combination to protect any impact and high abrasion areas. In addition, certain Laminite® products can be cut or bent to suit application prior to welding, to help customize the protection on the machine. Custom Laminite® parts can be designed to user's specifications.

CHUTE

- **Reverse engineered and built to suit any mine site scope**
- **Wear Liner packages are designed to give ultimate protection for the application**

CASE STUDY

Laminite® Skirt Boards

Enables a major WA Diamond miner to eliminate 53 out of 88 confined space events per chute

LAMINITE® VS OVERLAY PLATE

Challenge

Maintenance costs and downtime, to eliminate confined space work, as well as reduce maintenance on a Skirt Board conveyor section from chute discharge

They were facing

Plant down time for wear plant change out is 88 days per annum – Overlay Plates only lasting 4 weeks

Our Solution

- Replace Overlay Plates with Laminite® Skirt Board
- Laminite® Skirt Board lasted 10 weeks
- Plant down time for Wear Plate change out is now 35 days per annum

CASE STUDY

Laminite® Engineered Rotary Breaker Screens

Enables the elimination of 25 out of 30 confined space events per Rotary Breaker Screens

LAMINITE® VS CARBIDE OVERLAY

Challenge

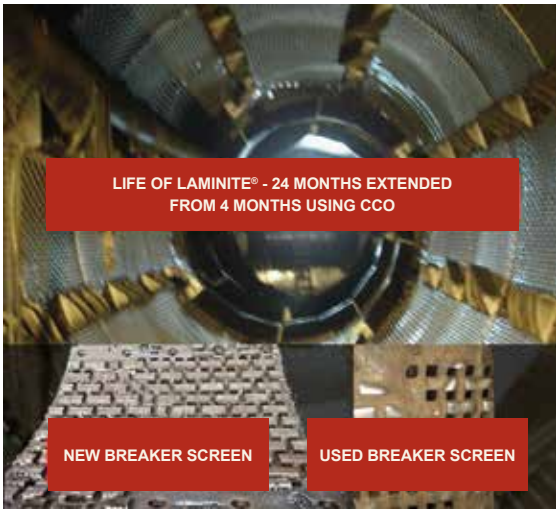
Maintenance costs and downtime, to eliminate confined space work, as well as reduce maintenance on 3 Rotary Breaker Trommels consisting of 64 Rotary Breaker Screens in each with various impact row sections

They were facing

Plant down time for Rotary Breaker Screens change out is 10 days at each maintenance shut down and a total 30 days per annum

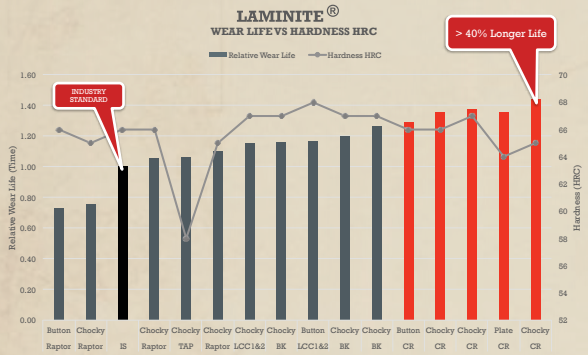
Our Solution

- Replace Carbide Overlay Screens with specific engineered Laminite® screens
- Laminite® Breaker Screens lasted 24 months with minor repairs
- Plant down time for Rotary Breaker Screens has now reduced to 5 days per annum



TEST AND HARDNESS RESULTS

Chemistry and wear tests give a complete picture of a products wear life. Chemistry, and an alloy-rich mixture will deliver the right carbide fraction and equilibrium. The industry standard G65 wear tests show that the right alloy mix and heat treatment will deliver longer wear life and more consistent product, than lean alloy products, despite both achieving the same hardness specifications.



BOND STRENGTH IS THE FOUNDATION

TEST STANDARD: AS1391-2007

- Sample tested was wire cut to 23.52mm x 1.7mm
- Total brazed area of the sample tested was 39.98mm³

2 TESTS WERE CARRIED OUT AND RESULTS ARE:

- Test 1 457MPA
- Test 2 460MPA

Ultrasonic Testing of Bond from every load produced

MATERIAL HARDNESS

TYPE	TYPE/ IDENTITY	THICK - MM	HARDNESS - HB	DESCRIPTION
Rolled reference steel	Q&T100	19.05	240	ASTM A 514 Grade B
Structural steel	Q&T100	25.40	232	ASTM A 514 Grade B
Rolled AR steel	AR400	19.05	384	CMnB abrasion resistant (AR) steels, quenched & tempered to various nominal hardness levels.
	AR450	19.05	390	
	AR500	19.05	462	
	AR600	19.05	552	
Austenitic manganese steel casting	MnSt	19.05	205	Solution treated ASTM A 128 Grade A
White Iron castings	CrMo WI	19.05	730	ASTM A532 11B (WCI) (15% Cr 3% Mo 3% C) iron plates
Laminated White Iron plates	Laminite®	25.4	755	ASTM A532 11B (15% Cr 3% Mo 3% C) WCI brazed to a steel backing plate
	Laminated Hyperchrome®	19.05	640	Proprietary hypereutectic high Cr WCI brazed to a steel backing plate
White Iron / laminate	Rubbadex	25.4	750	ASTM A532 11B rubber laminate (15% Cr 3% Mo 3% C) WCI bonded to a rubber / steel layer
CrC weld overlays	CrC SOL	25.4	564	6.4mm thick single pass ~30%Cr 4%C bal. Fe deposit.
	CrC DOL	25.4	595	9.6 mm thick, double pass ~30%Cr4%C bal. Fe deposit.
PTAW tungsten	WC 1	19.05	478	4mm thick 60Wt.%, cast overlays carbide & crushed (eutectic)
	WC 2	19.05	397	4mm thick 60Wt.% macrocrystalline (monolithic) WC in a 30HRC nickel alloy matrix
	WC 3	19.05	491	4mm thick 60Wt.% macrocrystalline (monolithic) WC in a 50HRC nickel alloy matrix

From mining, milling and smelting, to bulk materials handling and more, CQMS Razer's plate block + wear products meet the needs of multiple industries. CQMS Razer designs and manufactures a range of plate, block and wear products and custom wear solutions for specific projects and applications. Marketed world-wide through authorized distributors.

Tunnel Boring Machine (TBM) operating in Gotthard tunnel project in Europe, which is the longest tunnel ever constructed in the world. There are 4 tunnels in total, each being 59 km long and each having a TBM operating from each end and each TBM were either completely Lamitized or partly protected with LAMINITE®. The project took 10 years and is nearly completed. LAMINITE® achieved a superior wear life over AR 450 BHN hardness steels by a factor of at least 5 times and thus saved the contractors millions of $ in less downtime and TBM maintenance during the project life.

CQMS RAZER
Mining's Edge

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CQMS RAZER | SAFETY ALWAYS

CQMS Razer is committed to safety, quality and the environment. We embrace sustainable manufacturing processes and materials to minimise emissions, reduce waste and improve the safety of our people and clients. We work to ISO 9001 quality assurance standards across all of our operations and actively support regional and remote communities with local programs and initiatives such as local sponsorships and community events.