CLARK-DRAIN

THE DRAINAGE COMPANY

DUCTILE IRON CASTINGS

50 years serving the construction industry

Welcome

Clark-Drain, a leading supplier of drainage products since 1962, offers a wide range of access covers and gratings to the highways, telecommunications, utilities, commercial and industrial markets.

At Clark-Drain we not only offer high quality products, linked to innovative design, but also the highest level of customer service, utilising our own fleet of delivery vehicles and carefully selected logistics providers.

CONTENTS

The Clark-Drain range of products provide complete choices for the specifier over access covers and gully gratings, whilst focusing on ease of use, long-term durability, low maintenance and safety for the installer and end-user.

THE BS EN 124 STANDARD

The European standard BS EN 124-2:2015 applies to gully tops and manhole tops with a clear opening up to and including 1000mm, for installation within areas subjected to pedestrian and/or vehicular traffic. All our ductile iron covers, gratings and frames meet the 2015 standard. Other ductile iron covers with steel or plastic frames comply to the 1994 standard. Further quality assurance is provided by the British Standard Kitemark on most of our covers and gratings.

- The diagram below shows the location of some of these groups in a highway environment.
- The various places of installation have been divided into groups numbered 1 to 6.
- A guide as to which class of manhole top or gully top should be used is shown in parenthesis for each group. Please note that in the Clark-Drain range of ductile iron manhole tops the D400 variants have been sub-divided into 3 further categories dependent on specific install location and traffic usage. Care should be taken to select the correct version for each application. Please see page 4 for further details.
- The selection of the appropriate class is the responsibility of the designer. Where there is any doubt the stronger class should be selected.

GROUP 1 (MIN CLASS A15)

Areas which can only be used by pedestrians and pedal cyclists.

GROUP 2 (MIN CLASS B125)

Recommended for use in footways, pedestrian areas and driveways.

GROUP 3 (MIN CLASS C250)

For gully tops installed in the area of kerbside channels of roads (see diagram above) which when measured from the kerb edge extend a maximum of 0.5m into the carriageway and a maximum of 0.2m into the footway.

GROUP 4 (MIN CLASS D400)

Carriageway of roads (including pedestrian streets), hard shoulders (see diagram above) and parking areas for all types of road vehicles.

GROUP 5 (MIN CLASS E600)

Areas imposing high wheel loads eg. docks.

GROUP 6 (MIN CLASS F900)

Areas imposing particularly high wheel loads eg. aircraft pavements.

FM 86830

D400 DUCTILE IRON MANHOLE COVER CATEGORIES

To ensure the right products are specified and selected we provide 3 types of D400 products:

Non-carriageway D400 products (e.g. CD 701 KMD, CD 1659 KMD, etc.)
Suitable for use in areas subjected to slow-moving vehicles only, including occasional HGVs. Car-parks, cul-de-sacs, retail delivery areas, private access roads, etc. Not suitable for use in carriageways.

Carriageway D400 products (CD 701H KMD, CD 695H KMD, etc.)
Suitable for use in carriageways subject to low-density traffic including HGVs, fast or slow-moving.

Heavy-duty D400 products (e.g. CD 901H KMD, CD 902H KMD, etc.)
Suitable for use in carriageways subject to high-density traffic, fast or slow-moving.

DESIGNED TO CONFORM

Many of our products have innovative design features to ensure long-lasting performance subject to high-density road-vehicle traffic.

For example, our High Max products are designed to be compliant to UK Highways Agency 'Design Manual for Roads and Bridges' (HA104/09).

They include the following features:

- An extra-strength frame with over-sized wall sections to increase durability
- Profiled corners to interlock with frame and minimise movement and noise
- Cover supports to reduce risk of failure even under the toughest of conditions
- Extra large flange to minimise load and stress transmission to the bedding area
- Kitemark certified to BS EN 124-2:2015

Using the pendulum test method the Polished Skid Resistance Value (PSRV) exceeds 60.

QUALITY ASSURANCE

Clark-Drain design and manufacture products of the highest standard in accordance with a certified BS EN 1S0 9001:2008 Quality Management System.

Double Tri Covers and Frames
High Max BS EN 124 Class F900

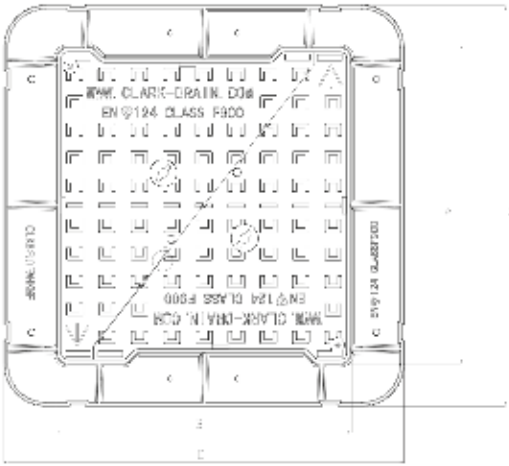
KM 98709

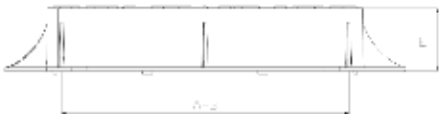
EN124 F900 [90T]

FEATURES INCLUDE:

- Extra heavy-duty double-triangular cover and frame
- Durable ductile iron
- Kitemark certified
- Closed keyways
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange

CD 802AH KMF





HA104/09 (HIGH RISK AREAS) COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 801AH KMF	600 x 600	906 x 906	150	145
CD 802AH KMF	675 x 675	952 x 952	150	172
CD 807AH KMF	750 x 750	1013 x 1013	150	200

Optional extras: badging, locking, safety grills, security plates

Double Tri Covers and Frames
High Max BS EN 124 Class E600

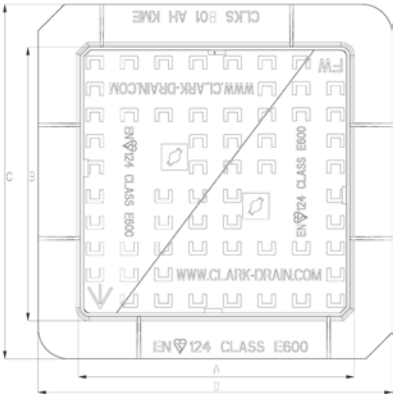
KM 98709

EN124 E600 [60T]

FEATURES INCLUDE:

- Heavy duty double triangular cover and frame
- Durable ductile iron
- Kitemark certified
- Closed keyways
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange

CD 801AH KME



HA104/09 (HIGH RISK AREAS) COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 801AH KME	600 x 600	813 x 813	150	102
CD 802AH KME	675 x 675	875 x 875	150	110
CD 808AH KME	1200 x 675	1365 x 835	150	200

Optional extras: badging, locking, safety grills, security plates

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Double Tri Covers and Frames
High Max BS EN 124 Class D400

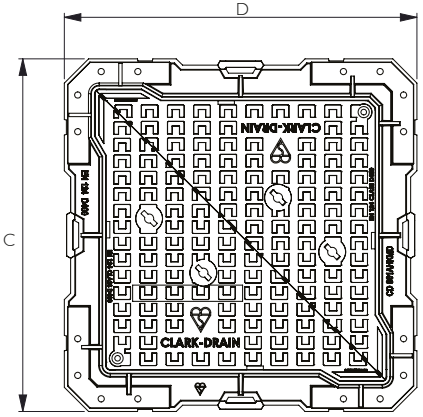
KM 98709

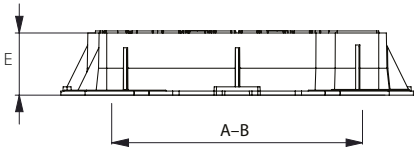
EN124 D400 [40T]

FEATURES INCLUDE:

- Heavy duty double triangular cover and frame
- Durable ductile iron
- Kitemark certified
- Non slip safety key holes
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange

CD 901AH KMD





HA104/09 (HIGH RISK AREAS) COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 807AH KMD^	750 x 750	900 x 900	150	115
CD 901H KMD	600 x 600*	847 x 847	100	104
CD 901AH KMD	600 x 600*	851 x 851	150	115
CD 902H KMD	675 x 675	915 x 915	100	125
CD 902AH KMD	675 x 675	925 x 925	150	137

^ Closed keyway only. Optional extras: badging, locking, safety grills, security plates *Will accommodate imperial 24"x24" pit size

Hinged D400 Covers and Frames
BS EN 124 CLASS D400

KM 98709

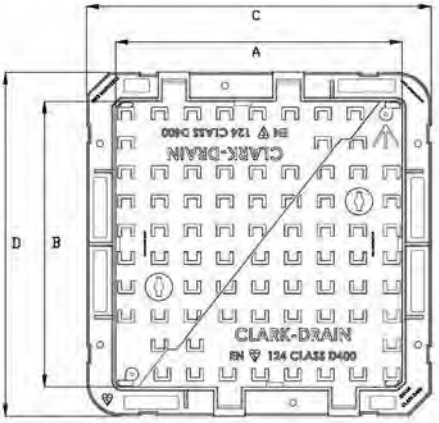
EN124 D400 [40T]

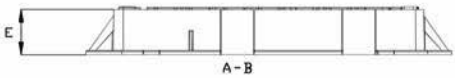
FEATURES INCLUDE:

- Durable ductile iron cover and frame
- Kitemark certified
- Hinged design reduces the effort required to lift the cover
- Integral hinge stop at 90° when in open position prevents accidental closing
- Closed keyways
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange

CD 1660H KMD

Each cover opens to 105° for optimum access





Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)	Cover Weight (Kg)
CD 1660H KMD	675 x 675	813 x 813	100	80	25
CD 1664AH KMD	900 x 600	1084 x 774	150	120	36
CD 1667AH KMD	900 x 900	1075 x 1075	150	170	55
CD 695H KMD	1500 x 750	1633 x 898	100	235	44

Circular D400 Covers and Frames
BS EN 124 Class D400

KM 98709

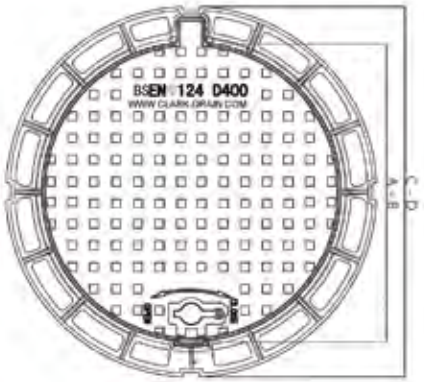
EN124 D400 [40T]

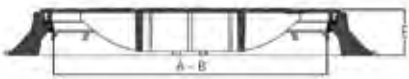
FEATURES INCLUDE:

- Durable ductile iron cover and frame
- Kitemark certified
- Closed keyways
- Black bitumen coated
- Skeleton flange
- Fitted with EPDM gasket to prevent movement/noise in service

CD 705 KMD

Integral hinge 'stop' when cover is in open position to prevent accidental closing





Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 705 KMD	600 diameter	820 diameter	100	55

Double Tri Covers and Frames
BS EN 124 Class D400

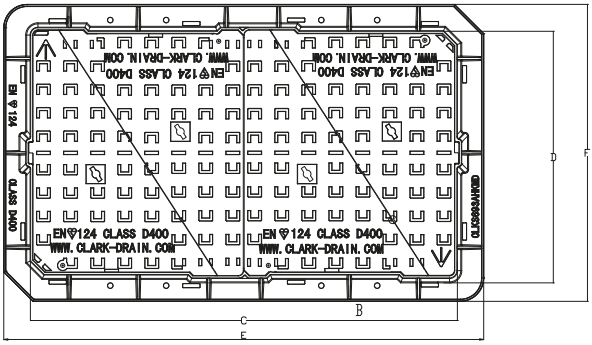
KM 98709

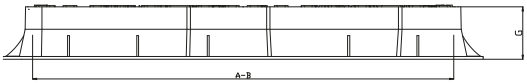
EN124 D400 [40T]

FEATURES INCLUDE:

- Durable ductile iron cover and frame
- Kitemark certified
- Closed keyways
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange

CD 693AH KMD





HA104/09 (LOW RISK AREAS) COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 693H KMD	1200 x 675	1345 x 820	100	145
CD 693AH KMD	1200 x 675	1374 x 850	150	160
CD 694AH KMD	1800 x 675	1940 x 820	150	260

Optional extras: badging, locking, safety grills, security plates

Double Tri Covers and Frames
BS EN 124 Class D400

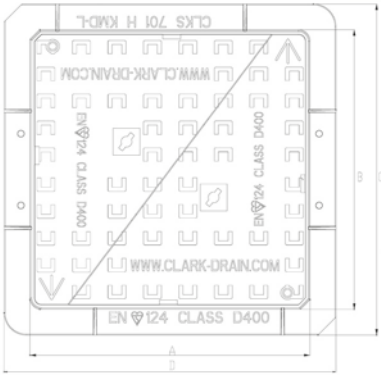
KM 98709

EN124 D400 [40T]

FEATURES INCLUDE:

- Durable ductile iron cover and frame
- Kitemark certified
- Closed keyways
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange

CD 701H KMD



HA104/09 (LOW RISK AREAS) COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 701H KMD	600 x 600	746 x 746	100	62
CD 701AH KMD	600 x 600	768 x 768	150	74
CD 1659H KMD	675 x 675	813 x 813	100	74
CD 1659AH KMD	675 x 675	815 x 815	150	88
CD 750H KMD	750 x 600	880 x 730	100	84
CD 750AH KMD	750 x 600	915 x 765	150	94
CD 753H KMD	750 x 750	910 x 910	100	110
CD 751H KMD	900 x 900	1050 x 1050	100	155
CD 752H KMD	900 x 600	1054 x 754	100	105
CD 752AH KMD	900 x 600	1065 x 765	150	118

Optional extras: badging (eg FW and SW), locking, safety grills, security plates

Double Tri Covers and Frames
BS EN 124 Class D400

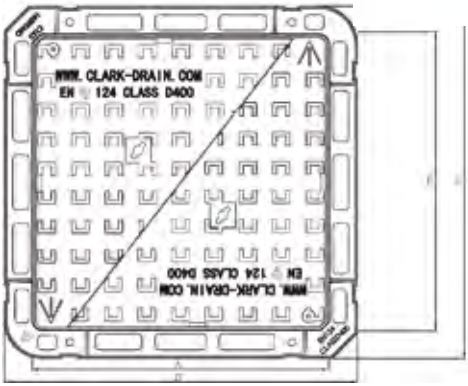
KM 98709

EN124 D400 [40T]

FEATURES INCLUDE:

- Durable ductile iron cover and frame
- Kitemark certified
- Closed keyways
- Black bitumen coated
- Non-rock 3 point suspension

CD 1659 KMD



Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 770 KMD	300 x 300	450 x 450	100	32
CD 755 KMD	450 x450	550 x 550	100	38
CD 756 KMD	600 x 450	735 x 585	100	47
CD 701 KMD	600 x 600	720 x 720	100	60
CD 701A KMD	600 x 600	750 x 750	150	70
CD 1659 KMD	675 x 675	827 x 827	100	76
CD 1659A KMD	675 x 675	835 x 835	150	85

Optional extras: badging (eg FW and SW), locking, safety grills, security plates

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THE DRAINAGE COMPANY

CALL DIRECT 01733 765317

Solid Top Covers and Frames (Double Sealed and Locking)
BS EN 124 Class D400

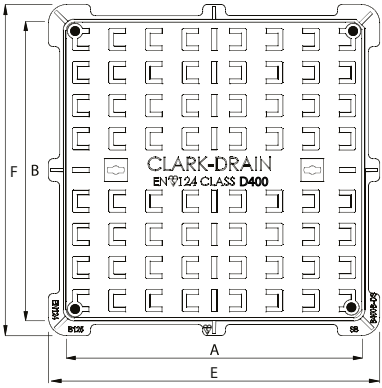
KM 98709

EN124 D400 [40T]

FEATURES INCLUDE:

- Ductile iron cover and frame
- Kitemark certified
- Double seal design for odour control. Requires 0.75kg of manhole grease. CD 285 sold separately (3kg tin)
- Fitted with locking screws for added security and stability in use
- Integral closed keyholes

CD D600H-DSL



Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD D600H-DSL	600 x 600	830 x 810	100	92

Recessed Covers and Frames
BS EN 124 D400

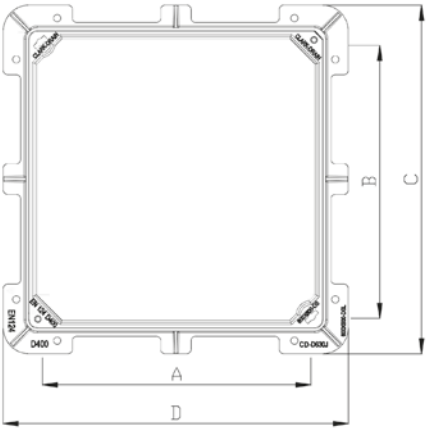
KM 98709

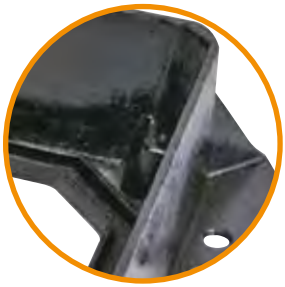
EN124 D400 [40T]

FEATURES INCLUDE:

- Kitemark certified
- Frame and tray is capable of exceeding a 40 tonne test load
- Two integral lifting points enable removal of the cover for utility acess using CD 552 lifting keys (available separately)
- Corner locking bolts counteract the problem of metal theft
- 100mm drop in recess tray provides flexibility over the choice of infill materials, including tarmac, paving and concrete

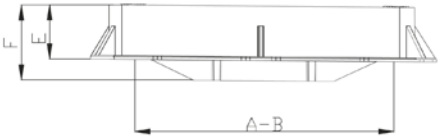
CD D630J – DSL





Odour prevention

Double sealed as standard for odour control. Requires 0.75kg of manhole grease. CD 285 sold separately (3kg tin)



Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Overall Depth (mm) F	Weight (Kg)
CD D630J – DSL	600 x 600	800 x 800	125	172	94

Optional extras: badging, locking, safety grills, security plates

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THE DRAINAGE COMPANY

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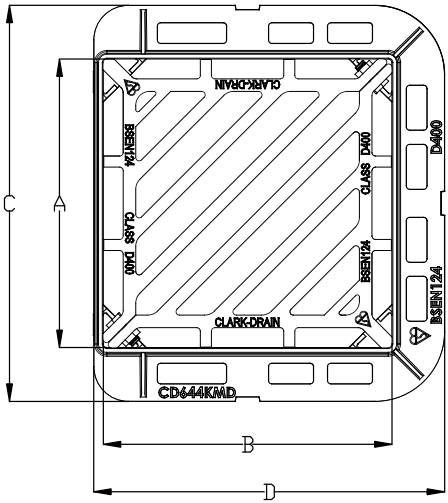
Double Tri Gully Gratings
BS EN 124 Class D400

KM 98709

EN124 D400 [40T]

FEATURES INCLUDE:

- Durable ductile iron gully grating and frame
- Kitemark certified
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange on 3 sides



CD 644 KMD

HA104/09 COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Waterway (cm^2)	HA Grating Type (HA102/00)	Weight (Kg)
CD 644 KMD	415 x 415	570 x 505	100	1097	R	31
CD 644A KMD	415 x 415	576 x 514	150	1097	R	36
CD 502 KMD	400 x 440	550 x 527	100	1208	R	31
CD 732 KMD	600 x 600	750 x 690	100	2203	P	65

Optional extras: badging, locking, safety grills, security plates

Double Tri Gully Gratings
BS EN 124 Class D400

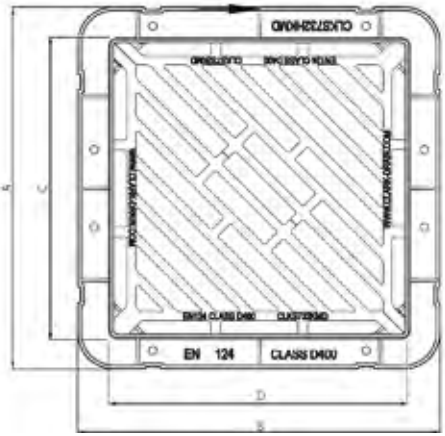
KM 98709

EN124 D400 [40T]

FEATURES INCLUDE:

- Durable ductile iron gully grating and frame
- Kitemark certified
- Black bitumen coated
- Non-rock 3 point suspension
- Solid flange on 4 sides

CD 732H KMD



HA104/09 COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Waterway (cm^2)	HA Grating Type (HA102/00)	Weight (Kg)
CD 732H KMD	600 x 600	748 x 748	100	2203	P	68

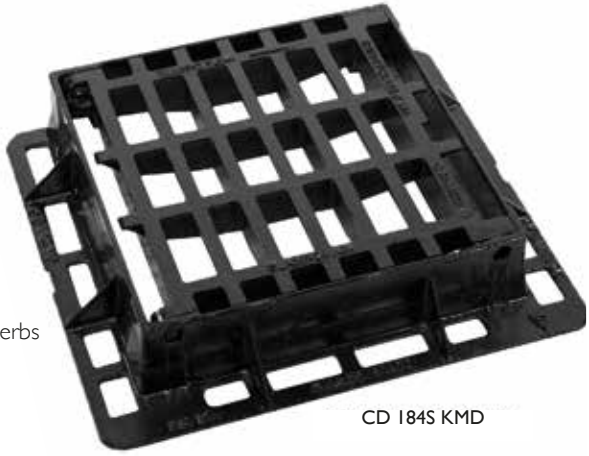
Hinged Gully Gratings
BS EN 124 Class D400

KM 98709

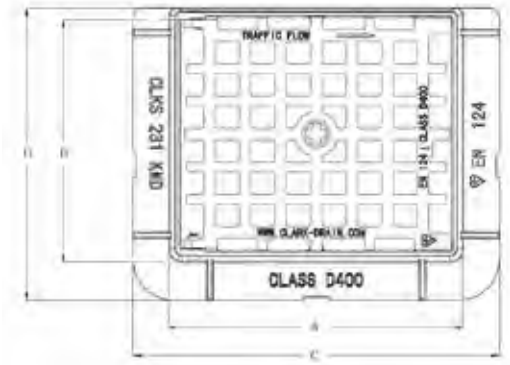
EN124 D400 [40T]

FEATURES INCLUDE:

- Durable ductile iron gully grating and frame
- Kitemark certi ied
- Black bitumen coated
- Theft-deterrent captive hinge
- Non-rock wedge seating
- 3-Sided flange for installation against kerbs
- CD 180 KMD, CD 184S KMD and CD 185S KMD can be provided complete with our 450mm diameter, high density polyethylene, HAPAS approved road gully system



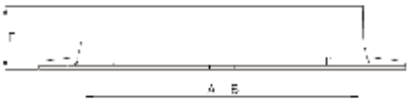
CD 184S KMD



450mm Road Gully

CD U220 (750mm depth)

CD U230 (900mm depth)



HA104/09 COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Waterway (cm²)	HA Grating Type (HA102/00)	Weight (Kg)
CD 178 KMD**	385 x 317	520 x 402	100	750	n/a*	22
CD 179 KMD	510 x 360	665 x 458	100	1184	R	32
CD 180 KMD	430 x 370	570 x 459	100	994	S	30
CD 180 KMDL	430 x 370	570 x 459	100	994	S	30
CD 180A KMD	430 x 370	580 x 466	150	994	S	35
CD 184S KMD**	425 x 425	580 x 521	100	1103	R	34
CD 185S KMD**	450 x 450	592 x 538	100	1258	R	36

CD 180 KMDL, CD 180A KMD and CD 185S KMD have a solid flange

Optional extras: locking (CD 180 KMDL supplied with locking screw)

*Not HA104/09 compliant. **Reversible hinge

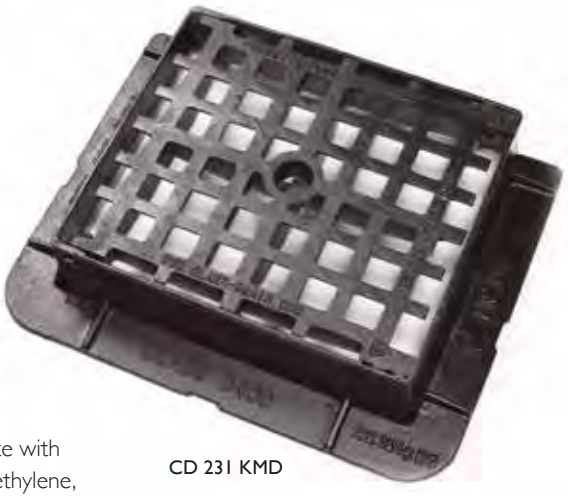
Mesh Gully Gratings
BS EN 124 Class D400

KM 98709

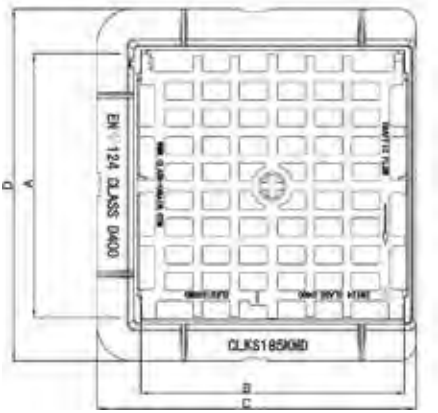
EN124 D400 [40T]

FEATURES INCLUDE:

- Durable iron grating and frame
- Kitemark certified
- Black bitumen coated
- Theft-deterrent captive hinge
- Non-rock wedge seating
- Solid flange on 3 sides
- Narrow grid mesh on CD 185 KMD designed for safe cycling
- Reversible grating for use in all road configurations
- CD 185 KMD can be provided complete with our 450mm diameter, high density polyethylene, HAPAS approved road gully system



CD 231 KMD



HA104/09 COMPLIANT

Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Waterway (cm^2)	HA Grating Type (HA102/00)	Weight (Kg)
CD 185 KMD†	452 x 452	592 x 538	100	996	R	37
CD 231 KMD†	430 x 370	580 x 463	100	818	n/a*	30

†Pedestrian area mesh grating

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Hinged Gully Gratings
BS EN 124 Class C250

KM 98709

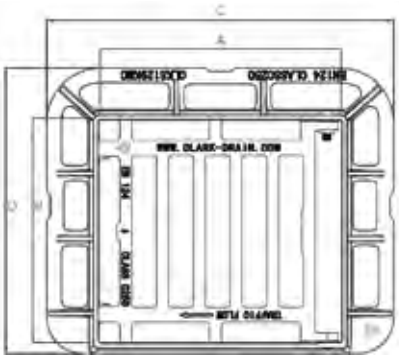
EN124 C250 [25T]

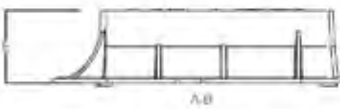
FEATURES INCLUDE:

- Ductile iron gully grating and frame
- Kitemark certified
- Black bitumen coated
- Theft-deterrent captive hinge
- Skeleton flange

CD 129 KMC

CD 131 DL KMC





Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Waterway (cm^2)	Weight (Kg)
CD 60DDI KMC	302 x 302	400 x 362	75	583	13
CD 128 KMC	336 x 308	480 x 393	75	686	17
CD 232 KMC†	336 x 308	486 x 400	100	505	26
CD 129 KMC	336 x 308	482 x 395	100	686	19
CD 131 DL KMC**	390 x 315	590 x 520	100	746	29
CD 127 KMC	440 x 335	530 x 495	75	866	29
CD 130 KMC	440 x 335	535 x 500	100	866	33

Optional extras: locking
†Pedestrian area mesh grating **Dished design

Recessed Covers and Frames (Double Sealed and Locking)
BS EN 124 C250

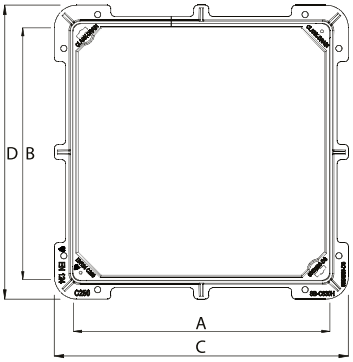
KM 98709

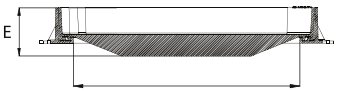
EN124 C250 [25T]

FEATURES INCLUDE:

- Kitemark certified to 25 tonne test load for use in Group 3 Class C250 environments
- Drop in recess tray with 70mm infill depth
- Two integral lifting points enable removal of the cover for utility access using CD 552 lifting keys, available separately
- Double seal design for odour control. Requires 0.75kg of manhole grease. CD 285 sold separately (3kg tin)
- Fitted with locking screws for added security and stability in use

CD C630H-DSL





Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD C630H-DSL	600 x 600	780 x 780	94	74

CLARK-DRAIN
THE DRAINAGE COMPANY

CALL DIRECT 01733 765317

Circular Solid Top Cover and Frame
BS EN 124 Class B125

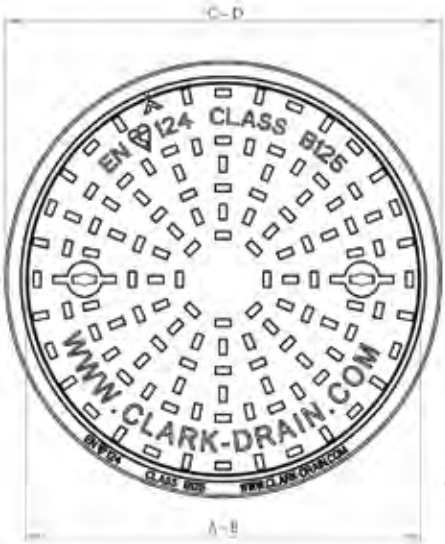
KM 98709

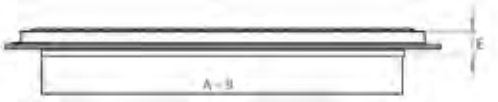
EN124 B125 [12.5T]

FEATURES INCLUDE:

- Durable ductile iron cover and frame
- Kitemark certified
- Closed keyways
- Black bitumen coated
- One piece solid top
- Available with optional skid-resistant coating on top surface
- Integral lifting keys available separately

CD 1657 KMB





Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 1657 KMB	450 diameter	550 diameter	30	16.5

Optional extras: badging, locking, safety grills, security plates

Solid Top Covers and Frames
BS EN 124 Class B125

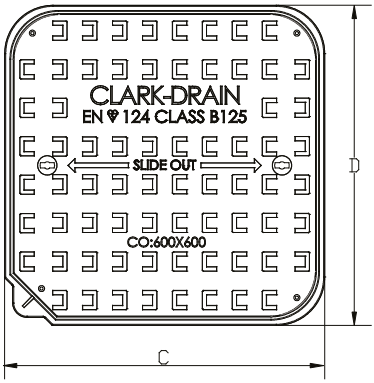
KM 98709

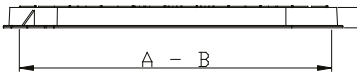
EN124 B125 [12.5T]

FEATURES INCLUDE:

- Durable ductile iron cover and frame
- Kitemark certified
- Closed keyways
- Black bitumen coated
- One piece solid top

CD 777 KMB





Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 761 KMB	450 x 450	510 x 510	40	20
CD 762 KMB	600 x 450	507 x 507	30	22
CD 761SR KMB+R	450 dia	507 x 507	40	22
CD 779 KMB	600 x 450	761 x 611	75	44
CD 759 KMB	600 dia	680 x 680	40	32
CD 777 KMB	600 x 600	663 x 663	40	34
CD 778 KMB	600 x 600	760 x 760	75	47
CD 780 KMB	675 x 675	760 x 760	40	49
CD 722 KMB	750 x 600	820 x 668	40	45
CD 752 KMB	900 x 600	970 x 670	40	47

CD 761SR KMB+R provides a square to round option c/w reducer for use when chamber depth is greater than 1.2m

Optional extras: badging, locking, safety grills, security plates

Slide out capability

CLARK-DRAIN
THE DRAINAGE COMPANY

CALL DIRECT 01733 765317

Solid Top Covers and Frames (Double Sealed)
BS EN 124 B125

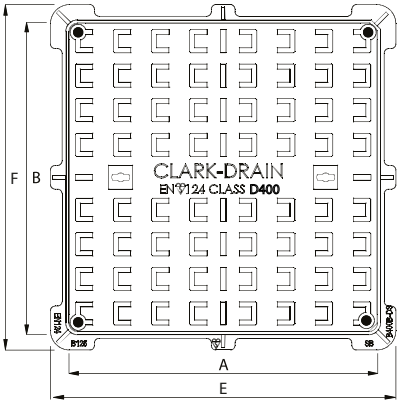
KM 98709

EN124 B125 [12.5T]

FEATURES INCLUDE:

- Ductile iron cover and frame
- Kitemark certified
- Double seal design
- Integral closed keyways (suitable for CD 553 or CD 556 lifting keys, available separately)

CD B400B-DSL



Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD B400B-DSL	450 x 450	590 x 590	40	31

Hinged Gully Gratings
BS EN 124 B125

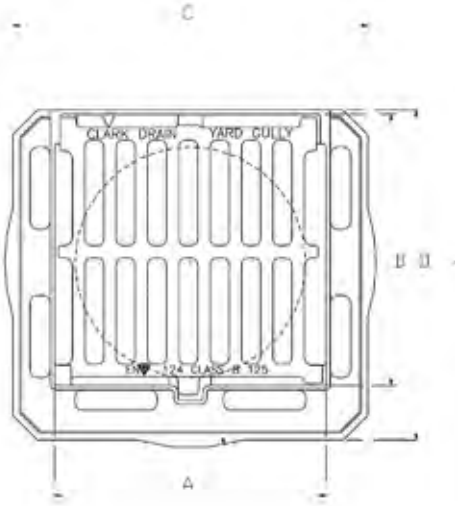
KM 98709

EN124 B125 [12.5T]

FEATURES INCLUDE:

- Ductile iron gully grating and frame
- Kitemark certified
- Flat grating
- Captive hinge to deter thieves
- 3-sided flange for installation against a kerb

CD 172 KMB



Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Waterway (cm^2)	Weight (Kg)
CD 172 KMB	280 Dia	450 x 410	50mm*	604	22

* Not including chamber locating ring

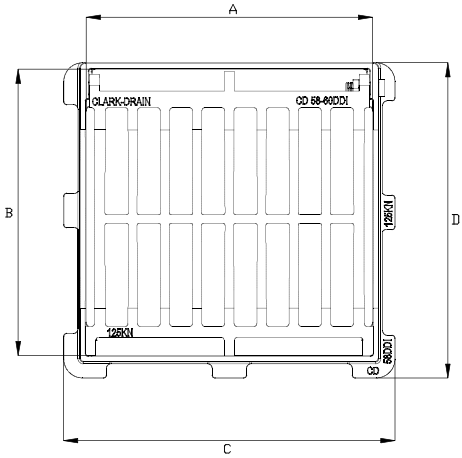
CLARK-DRAIN
THE DRAINAGE COMPANY

CALL DIRECT 01733 765317

Gully Gratings
125kN

- Dished grating
- Loading to 125kN
- Captive hinge to deter thieves
- 3-sided flange for installation against kerbs

CD 58DDI



Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Waterway (cm^2)	Weight (Kg)
CD 58DDI	302 x 302	350 x 333	50mm	583	10

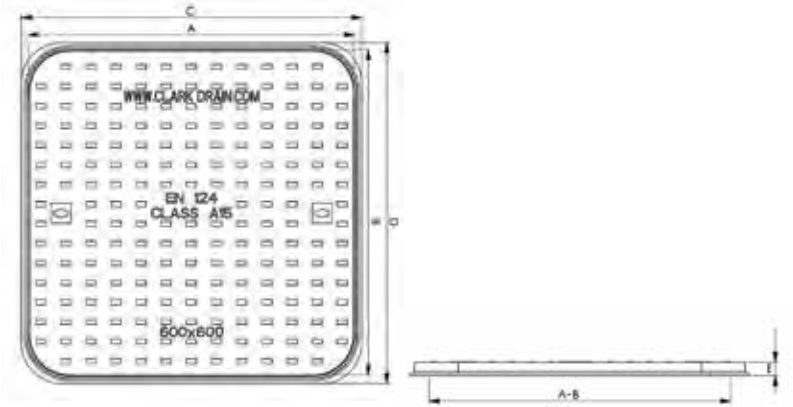
Solid Top Covers and Frames
15kN

15kN [1.5T]

FEATURES INCLUDE:

- Cast iron cover and frame
- Closed keyways
- Black bitumen coated
- One piece solid top

CD 62



Product Code	Clear Opening (mm) A/B	Overall Frame Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 62	600 x 450	678 x 528	27	22
CD 12	600 x 600	678 x 678	27	28

Optional extras: badging, locking, safety grills, security plates

CLARK-DRAIN
THE DRAINAGE COMPANY

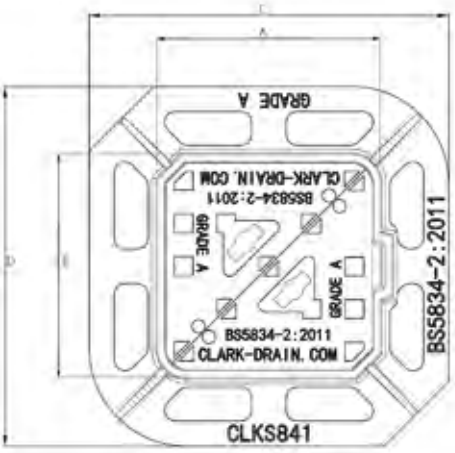
CALL DIRECT 01733 765317

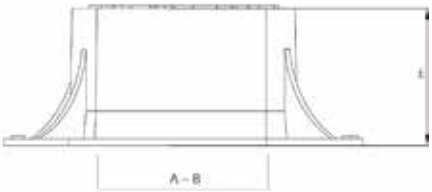
Double Tri Surface Box

FEATURES INCLUDE:

- Ductile iron cover and frame
- Manufactured to: BS 5834
- Black bitumen coated
- Skeleton flange
- Suitable for carriage ways carrying fast-moving vehicles with wheel loads up to 5 tonnes

CD 841





Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 841	150 x 150	262 x 262	100	7.5
CD 845	225 x 225	323 x 323	100	13
CD 843	300 x 300	408 x 408	100	18
CD 840	380 x 230	490 x 340	100	20
CD 842	430 x 280	540 x 390	100	26

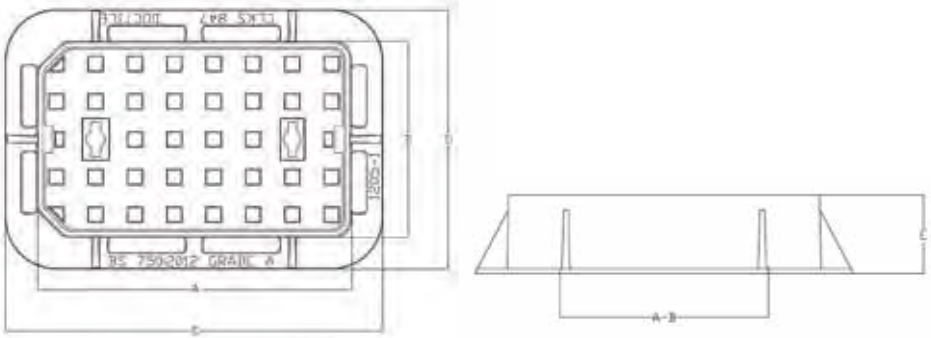
Optional extras: badging (selected products)

Solid Top Surface Box

FEATURES INCLUDE:

- Ductile iron cover and frame
- Manufactured to: BS 5834
- Black bitumen coated
- Skeleton flange
- Suitable for carriage ways carrying fast-moving vehicles with wheel loads up to 5 tonnes

CD 847



Product Code	Clear Opening (mm) A/B	Overall Size (mm) C/D	Depth (mm) E	Weight (Kg)
CD 847	380 x 230	480 x 330	100	18
CD 844	300 x 300	400 x 400	100	18

Optional extras: badging (selected products)

CLARK-DRAIN
THE DRAINAGE COMPANY

CALL DIRECT 01733 765317

Manhole Lifters, Keys and Irons

LIFTERS

The CD 281 hydraulic lifter is a powerful, fast lifter for heavy duty use. Quick to assemble and easy to use, this lifter can give up to 1.5 tons of lift, making easy work of the heaviest manhole cover.

CD 281

STEP IRONS

- Galvanised malleable step irons
- Manufactured to EN 13101:2002

Product Code	Length (mm)
CD 212	115 (Approx box qty 15)
CD 213	225 (Approx box qty 10)

CD 212

CD 213

LIFTING KEYS

Lifting keys are available separately for use with F900, E600, D400, C250 and B125 castings and surface boxes. See website for full lifting key list.

CD 552L

CD 556

Product Code	Length (mm)
CD 552	160mm length ductile iron heavy duty lifting keys
CD 552L	600mm length long handle heavy duty lifting keys
CD 553	145mm length ductile iron light to medium duty lifting keys
CD 556	Nylon light duty lifting keys

CD 552

Clark-Drain B125, C250, D400, E600 and F900 Ductile Iron Manhole Cover & Gully Grate Installation Guidelines

GENERAL ADVICE:

1. Before commencing works, ensure that the correct Clark-Drain product has been chosen in terms of:
   a. Clear-Opening size (measure *before* ordering)
   b. Depth
   c. Loading class (B125, C250, D400, E600 or F900)
   d. Specification (e.g. HA104-compliant, PSRV value, etc)
2. **For D400 manhole cover products, ensure the correct specification (non-Carriageway, Carriageway or High-Max specification) has been chosen/sourced.**
3. Manhole cover and gully grate replacement/installation should only be attempted by qualified and experienced contractors. If in doubt, seek advice.
4. The placement of manhole covers and gully grates directly onto a concrete 'biscuit' (i.e. without bedding mortar) is not recommended.
5. Exposed ironworks are vulnerable to damage by vehicles so should be protected at all times and not trafficked while they are proud of the surrounding surface. Ideally, manhole covers and gully grates should not be trafficked until such time as the final road course has been laid and all construction works has been completed. Ensure that ironworks are not directly trafficked by site construction machinery or vehicles at any time.
6. The orientation of hinged gully grates in their frames should be checked in accordance with intended traffic flow direction and corrected if needed **before** installation (all Clark-Drain gully grates are marked with an → arrow and "Traffic Flow" to indicate correct installation orientation).
7. Covers and grates should not be mixed & matched from one frame to another; doing so will have a detrimental effect on product performance.
8. Please note that the bitumen painted coating used on all Clark-Drain ductile iron products is a **temporary** coating only and is intended to wear off quickly once the product is being trafficked. Any surface oxidization of the iron that occurs has no detrimental effect upon the product's strength or its performance in service.

BEDDING MORTAR:

Whether carrying out a new or replacement installation the use of proprietary purpose-specific bedding mortar, such as those offered in the Instarmac Ultra-Crete range, is strongly recommended. Mixing up mortar on-site with an assumed sand/cement ratio is **not** recommended and likely to lead to early manhole failure. Two types of bedding mortar are recommended, depending on use:

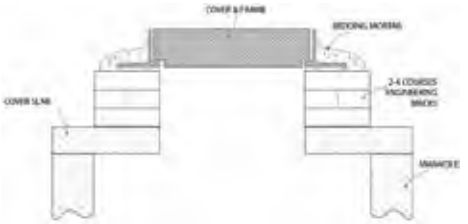
1. For general purpose installations in slow-moving (20mph or less) infrequently-trafficked areas a conventional cement-based mortar with a minimum compressive strength of 21N/mm^2 in 2 hours, such as Instarmac's M90 All Purpose Fast Set Mortar, should be used. For faster results a product such as Instarmac's M60 Rapid Strength Bedding Mortar (24N/mm^2 compressive strength in 1 hour) can be used.
2. For areas of fast-moving (above 20mph) and/or heavily trafficked (greater than 1500 vehicles per day) roads, or where bedding mortar compliant to the requirements of HA104/09 has been specified, a cement-based or thermosetting polymer resin based bedding mortar complying to HA104/09 (Tensile strength of >5N/mm^2 at 3 hours), such as Instarmac's Envirobed HA104 High Performance Bedding Mortar or PY4 Polyester Resin System, should be used.

Please note that resin-based mortars should only be used in dry conditions; in wet conditions the performance and durability of such mortars is affected dramatically. In all cases mixing should be carried out mechanically to ensure a thorough and consistent mix, and it is recommended that mixed batches of mortar are no greater than can be used in the time before the material starts to set. Always follow the manufacturer's instructions when mixing mortar, taking note of any PPE required when handling (gloves, goggles, etc.). Do not 'guess' the amount of water required for cementitious mortars, measure accurately as incorrect amounts can affect performance and durability significantly. Please note that the performance of such bedding materials is severely affected if the mating surfaces are not clean and dry. Any unused mortar should be disposed of appropriately according to COSHH regulations.

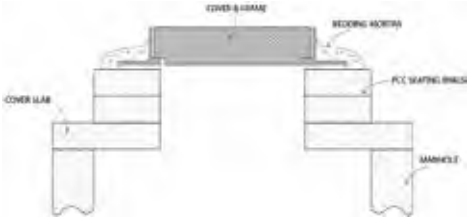
FOR NEW INSTALLATIONS:

Ensure the general work area is as clean as possible and free from debris. The manhole cover or gully grate frame should be placed on top of a layer of bedding mortar, which in turn is laid on top of 2-4 courses of 'blue' or 'red' solid engineering bricks or pre-cast concrete seating rings, as per the diagrams below:

On Engineering Bricks:



On Precast Concrete Rings:



The bedding material should be placed as soon as it is mixed, at a depth approximately 5-6mm greater than the required bedding thickness, and across the full width of

the brick or concrete bedding area. The top surface of the mortar should be smooth and even, with no deep trowel marks.

The frame should then be placed as soon as possible, having been separated from its cover/grate and using mechanical lifting aids where appropriate, onto the bedding layer such that it is fully supported around the full perimeter of the frame flange and there are no voids at any point. The frame can then be tamped down to the required level, using surrounding road surfaces or other height markers as guides. Take care to ensure that the top edge of the frame is level with the intended final road surface, as failure to do so will result in excessive noise in service and/or potentially early failure of the manhole cover/gully grate. Ensure that bedding material is not obstructing the cover seatings, cleaning off excess material where needed.

Any holes in the frame flange should be filled with bedding material and the top face of the flange should be then covered in at least 10mm of the same. More may be added, if desired, to use up excess bedding material as long as it will not affect the placement of any subsequent surfacing courses. Clean up any exposed areas of bedding material on the inside of the frame by pointing to a smooth finish.

The covers/grate should not be placed into their frame until such time as the bedding has achieved full cure. When doing so, use mechanical lifting aids where appropriate. Surrounding surface courses can be laid only when the bedding has achieved full cure. The use of bitumen-based sealant/tack spray between the vertical face of the manhole cover/gully grate frame and surrounding tarmac is strongly recommended.

Do not allow the manhole cover/gully grate to be trafficked in any way until all bedding materials used have fully cured or while the manhole cover/gully grate is proud of the surrounding road surface. Ideally, the manhole cover/gully grate should not be trafficked until the final road course is laid. Failure to follow this advice will result in irreparable damage to the manhole cover/gully grate.

FOR REPLACEMENT INSTALLATIONS:

Before commencing work, remove the existing covers from their frame and inspect the chamber below to assess size and condition. Do not commence work until it is assured that the correct-sized replacement manhole cover or gully grate plus all tools and materials to affect any necessary chamber repairs have been brought to site.

Start by using a disk-cutter to cut a 'picture frame' around the manhole cover/gully grate that is at least 300mm wide all the way around of the existing manhole cover/gully grate. Excavate around the existing manhole cover/gully grate to remove all old material, taking care not to damage the chamber below when doing so. Remove the existing covers from the frame then the frame itself. Remove all old bedding materials using hand-tools only. Inspect the existing chamber top (brick or pre-cast concrete) for signs of damage or failure and repair as needed. When replacing engineering bricks use 'red' or 'blue' solid types. The same bedding mortar that will be used for the new manhole cover/gully grate can be used for replacing engineering bricks.

The bedding material should be placed as soon as it is mixed, at a depth approximately 5-6mm greater than the required bedding thickness, and across the full width of the brick or concrete bedding area. The top surface of the mortar should be smooth and even, with no deep trowel marks.

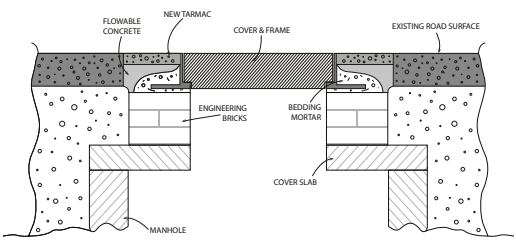
The frame should then be placed as soon as possible, having been separated from its covers/grate and using mechanical lifting aids where appropriate, onto the bedding layer such that it is fully supported around the full perimeter of the frame flange and there are no voids at any point. The frame can then be tamped down to the required level, using surrounding road surfaces or other height markers as guides. Take care to ensure that the top edge of the frame is level with the existing road surface, as failure to do so will result in excessive noise in service and/or potentially early failure of the manhole cover/gully grate. Ensure that bedding material is not obstructing the cover seatings, cleaning off excess material where needed.

Any holes in the frame flange should be filled with bedding material and the top face of the flange should be then covered in at least 10mm of the same. More may be added, if desired, to use up excess bedding material as long as it will not affect the placement of any subsequent surfacing courses. Clean up any exposed areas of bedding material on the inside of the frame by pointing to a smooth finish.

The use of a flowable concrete to surround the new frame and create a strong concrete ring is strongly recommended. A product that achieves a compressive strength of at least 20N/mm^2 in 2 hours, such as Instarmac's QC10F Rapid Set Flowable Concrete, should be used. Mix and pour according to the manufacturer's instructions to a depth of at least 60mm, but ensuring that a depth of at least 40mm remains to the top road surface to allow for tarmac.

Once the flowable mortar has cured the final layer of tarmac can be laid and compacted, although the use of bitumen-based sealant/tack spray between the vertical face of the manhole cover/gully grate frame and surrounding tarmac is strongly recommended before doing so. Ensure that the newly-laid tarmac is well compacted and that any loose debris is cleared away. Ensure that the top edge of the manhole cover/gully grate frame is not proud of the tarmac and hence exposed to impact from passing traffic as this will damage and shorten the life of the manhole cover/gully grate considerably. Do not allow the manhole cover/gully grate to be trafficked until such time as all materials have fully cured.

The finished result should be as per the diagram below:



This document is provided as guidance only – if in any doubt, consult an experienced professional contractor for further advice before commencing works.

CLARK-DRAIN

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