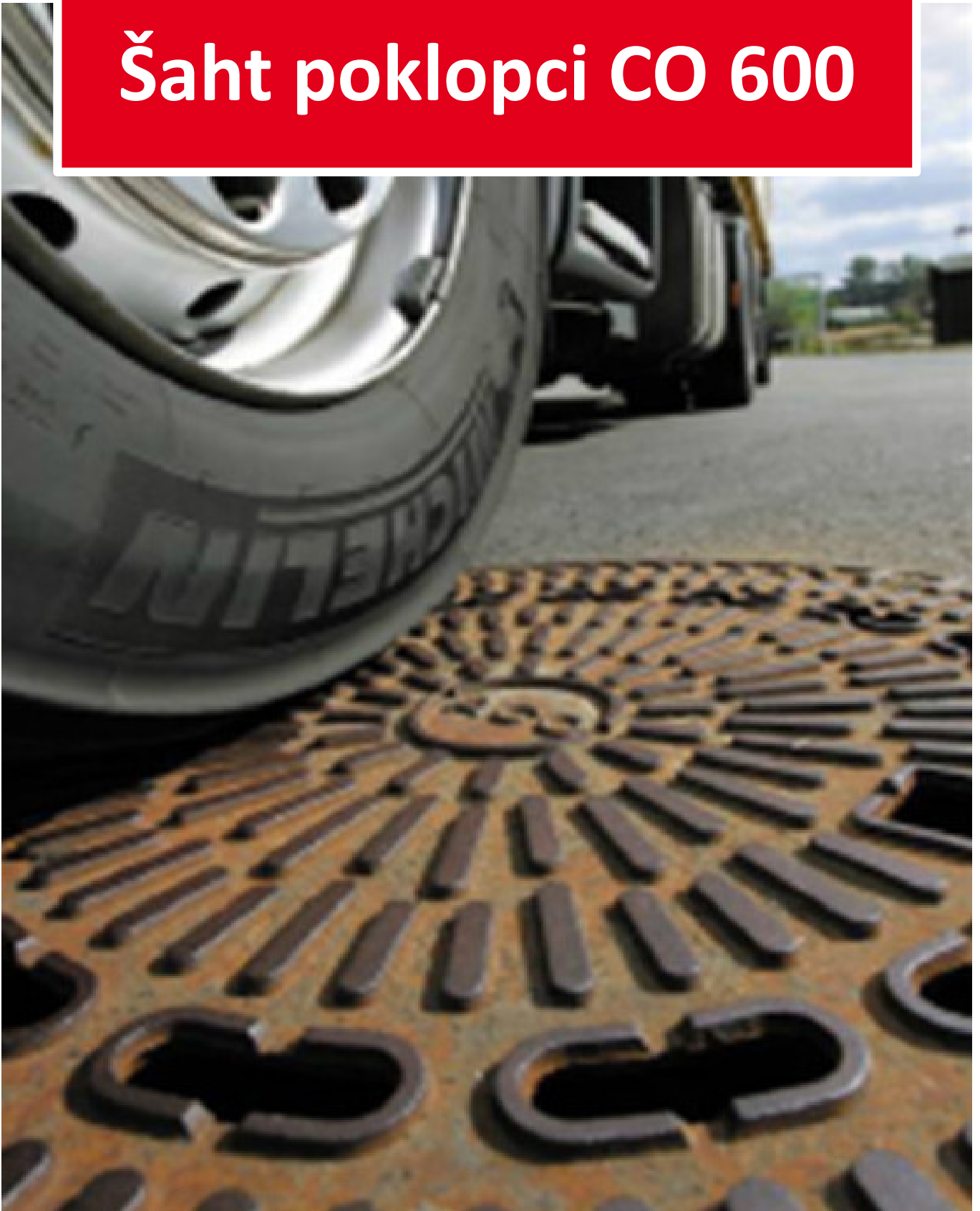







Šaht poklopci CO 600



How to choose the right product? (1)

As per EN 124 all these areas are load class D400!


| | |
|---|--|
| <p>Highway</p>  <p>> 29.000 vehicles per day ~30% truck share</p> | <p>Residential area</p>  <p>< 1.000 vehicles per day < 2% truck share</p> |
| <p>Industrial area</p>  <p>> 3.000 vehicles per day ~80% truck share</p> | <p>Commercial area</p>  <p>> 4.000 vehicles per day ~5% truck share</p> |



How are these areas classified?

The german guideline for standardization of superstructures (**RStO**) contains a classification of roads depending on the different amount of 10-t axle transmissions. Using this model it's possible to separate the areas of application for the cast iron portfolio of **ACO Passavant Guss**.

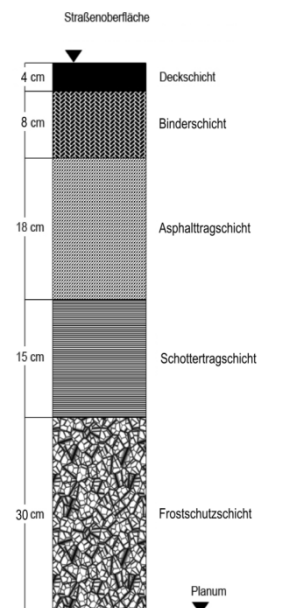
Road and Transportation Research Association
Working Group Infrastructure Management



Guidelines for the standardisation of pavement structures of traffic areas
R 1
RStO 12

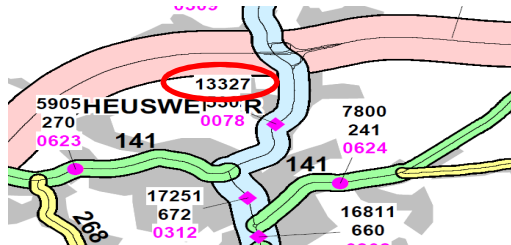
Edition 2012
Translation 2015

| | | |
|---|------|-------|
| Million of equivalent 10-t axle transmissions | >32 | BK100 |
| | <32 | BK32 |
| | <10 | BK10 |
| | <3.2 | BK3.2 |
| | <1.8 | BK1.8 |
| | <1.0 | BK1.0 |
| | <0.3 | BK0.3 |



How to choose the right product? (2)

What is the traffic load ?



$$1 \times \text{Truck} = 67.667 \times \text{Car}$$

1 truck has the same impact than 68.000 cars !

(You will find a detail calculation in Chapter „Compendium“)

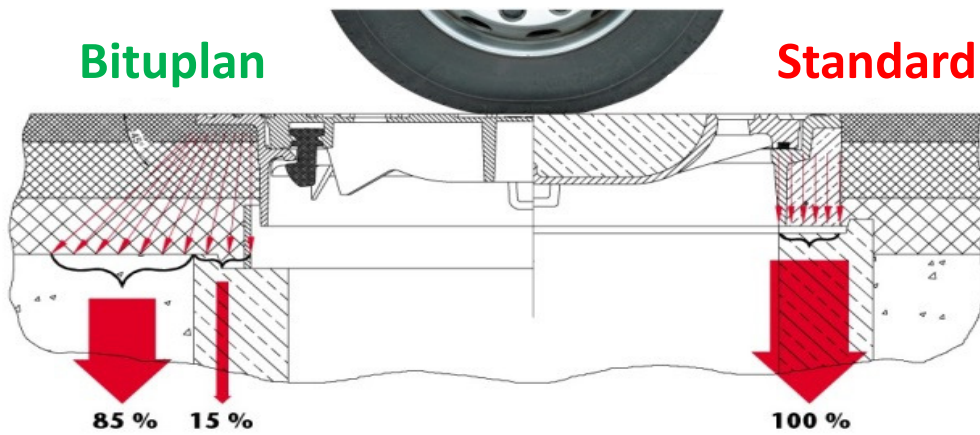
Right load class = road construction

| Line | Load class | BK100 | | | | BK32 | | | | BK10 | | | | BK3.2 | | | | BK1.8 | | | | BK1.0 | | | | BK0.3 | | | | | | | | | | | | | | | | | | | | | |
|------|---|---|------------------|----|----|------------------|----|----|----|----------------------|----|----|----|-------|------------------|----|----|----------------------|----|----|----|-------|----|----|----|----------------------|----|----|----|----|----|----|----|----------------------|--|--|--|--|--|--|--|----------------------|--|--|--|--|--|
| | | B [million of ESALs] | | | | | | | | B [million of ESALs] | | | | | | | | B [million of ESALs] | | | | | | | | B [million of ESALs] | | | | | | | | B [million of ESALs] | | | | | | | | B [million of ESALs] | | | | | |
| | Thickness of frost resistant pavement structure ¹⁾ | 55 | 65 | 75 | 85 | 55 | 65 | 75 | 85 | 55 | 65 | 75 | 85 | 45 | 55 | 65 | 75 | 45 | 55 | 65 | 75 | 45 | 55 | 65 | 75 | 45 | 55 | 65 | 75 | 35 | 45 | 55 | 65 | | | | | | | | | | | | | | |
| 1 | Asphalt base course on frost blanket course | Asphalt base course on frost blanket course | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Asphalt surface course | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Asphalt base course | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Frost blanket course | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Thickness of frost blanket course | - | 31 ²⁾ | 41 | 51 | 25 ³⁾ | 35 | 45 | 55 | 29 ³⁾ | 39 | 49 | 59 | - | 33 ²⁾ | 43 | 53 | 25 ³⁾ | 35 | 45 | 55 | 27 | 37 | 47 | 57 | 21 | 31 | 41 | 51 | | | | | | | | | | | | | | | | | | |
| | | heavy | | | | | | | | mid | | | | | | | | low | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

ACO Range Solution

How to choose the right product? (3)

How to choose the right frame?

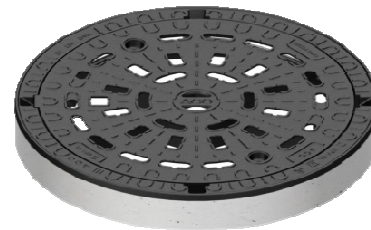


Less load into the concrete shaft:



The Bituplan frame

All time equivalent conditions between the frame and the surrounding asphalt is the perfect definition for the ACO Passavant Guss Bituplan frame. In respect of increased traffic volumes and the demand after a high durability, Bituplan is always the right solution.



The Lift frame

The combination of cast iron and concrete is a long-time proven solution in the field of standard installations of manhole covers. The concrete used for the frame corresponds to compressive strength class C 35/45 is conforming to the highest classification of exposure conditions with freeze-thaw and de-icing resistance.



The fix frame

A single frame that fits to the most of the given conditions in infrastructure installations is the fix frame. Not only mortared, but additionally fixed onto the top of the manhole shaft is this frame the most taken solution for urban areas.

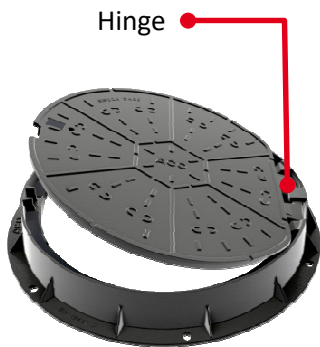
How to choose the right product? (4)

How to choose the right cover?

Good

CityTop Q

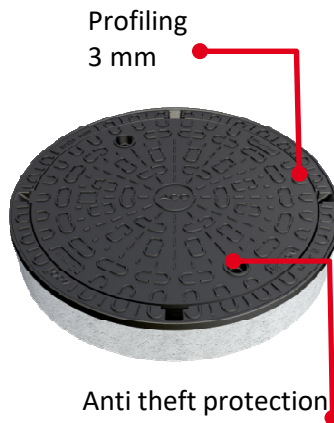
- Profiling 3 mm
- Very light cover
- Only non-ventilated
- Hinge possible



Better

CityTop S

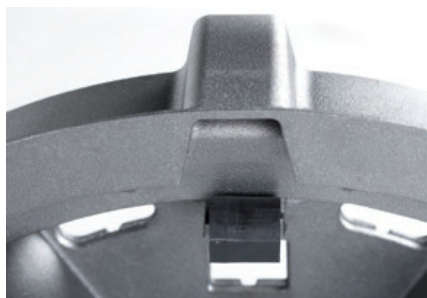
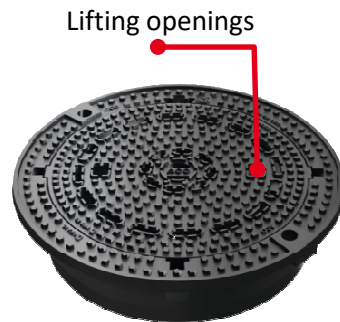
- Profiling 3 mm
- Anti theft protection
- Ventilated and non-ventilated



Best

CityTop P MultiTop plus

- Profiling 5 mm
- Lifting Openings
- Ventilated and non-ventilated



CityTop Q, CityTop S, CityTop P and MultiTop plus covers are secured within the frame with locking devices to avoid ejection and/or inappropriate movements. The screwless and non-integrally cast locking devices are engineered and tested to withstand highest vertical ejection forces. Contrary to screws or cast spring bars ACO securing features assure durable and reliable operation.

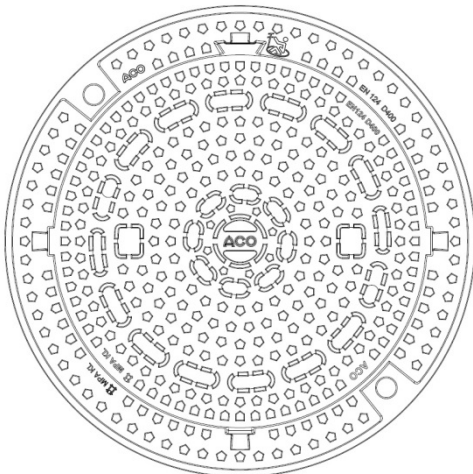
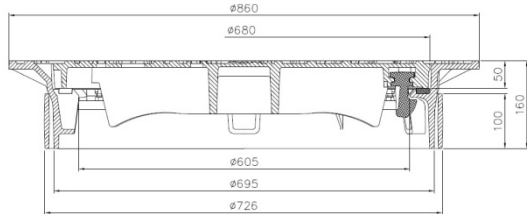
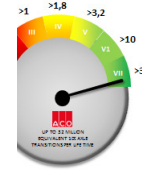
How to choose the right product? (6)

| Road construction class | BK100 > 32 | BK32 > 10 – 32 | BK10 > 3.2 – 10 | BK3.2 > 1.8 – 3.2 | BK1.8 > 1.0 – 1.8 | BK1.0 > 0.3 – 1.0 | BK0.3 ≤ 0.3 |
|---|------------------|-------------------|---|----------------------|--|----------------------|----------------|
| | heavy | | mid | | low | | |
| Best Premium <ul style="list-style-type: none">Long life performanceSelf leveling / floating (Bituplan) | MultiTop | | MultiTop: <ul style="list-style-type: none">Best gripMinimum noise impactCover and frame mached | | CityTop P: <ul style="list-style-type: none">For all applicationsFull range of features | | |
| Better Standard <ul style="list-style-type: none">Good performanceExcellent value for moneyCushioning inserts | | | CityTop P | | | | |
| | | | CityTop S: <ul style="list-style-type: none">Optimized weightFor most applicationsanti-theft-device | | CityTop S | | |
| Good Basic <ul style="list-style-type: none">Price attractiveNo extra features | | | CityTop Q: <ul style="list-style-type: none">Reduced to minimum weightFixed frames | | | | |
| | | | | | CityTop Q | | |

How to choose the right product? (7)

| Road construction class | BK100 > 32 | BK32 > 10 - 32 | BK10 > 3.2 - 10 | BK3.2 > 1.8 - 3.2 | BK1.8 > 1.0 - 1.8 | BK1.0 > 0.3 - 1.0 | BK0.3 ≤ 0.3 |
|-------------------------|--|-------------------|--|----------------------|-------------------------------------|----------------------|----------------|
| | heavy | | mid | | low | | |
| Best Premium | <p>MultiTop plus Bituplan 160</p> | | | | | | |
| | <p>CityTop P Bituplan 160</p> | | <p>CityTop P Bituplan 140</p> | | <p>CityTop P BEGU square</p> | | |
| Better Standard | | | <p>CityTop S Bituplan 120</p> <p>CityTop S Lift 125</p> <p>CityTop S Fix 100</p> <p>CityTop S Fix 75</p> | | | | |
| Good Basic | | | <p>CityTop Q+ hinge Fix 100</p> <p>CityTop Q+ Fix 75</p> <p>CityTop Q Fix 75</p> | | | | |

MultiTop plus Bituplan 160



Product description

ACO MultiTop plus Bituplan manhole cover

Class D 400 according to DIN EN 124

MultiTop plus manhole cover, round, with two maintenance free, screwless, non-integrally cast and traffic-safe securing features made of high-strength plastic, cover made of spheroidal graphite cast iron (GJS), weight approx. 44/ 47kg

Bituplan self-leveling frame, round, height 160 mm, external diameter 860 mm, max. bearing pressure 1,6 N/mm²,

Adapter ring of cast iron, h100 mm total weight approx. 106 kg

Product information

Variations

- Black hydro-based coating
- Logo cover

Accessories

- Operating tool **600643**
- Installation shuttering **210132**

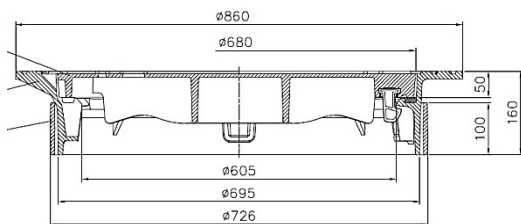
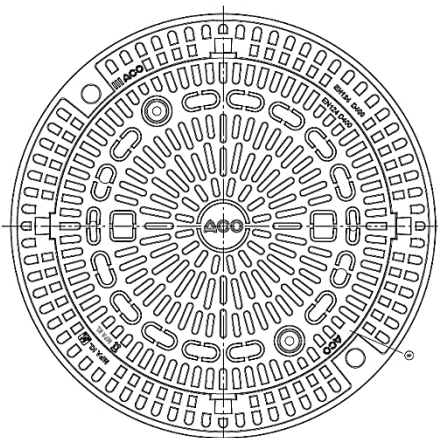
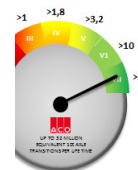
Advantages

- Self-leveling frame with a max. bearing pressure of 1,6 N/mm²
- Safe positioning of the cover due to an additional stabilization groove
- Easy installation also in case of refurbishment with the 160mm Bituplan frame
- Durable PEWEPREN cushioning insert

- ✓ **EN 124**
- ↓ **D400**
- ⊘ **605mm**
- △ **Anti slip**

| Weight [kg] | Pcs / pallet | Ventilation holes | Black coating | Item-no. with adapter ring |
|-------------|--------------|-------------------|---------------|----------------------------|
| 106 | 5 | x | - | 210500 |
| 106 | 5 | - | - | 210501 |

CityTop P Bituplan 160



Opis proizvoda

ACO CityTop P Bituplan šaht poklopac
 Klasa opte. D 400 u skladu sa SRPS DIN EN 124
CityTop P šaht poklopac, okrugli, sa dva elementa za zaključavanje bez šrafljenja od poliuretana visoko otpornog na habanje koji obezbeđuje saobraćajnu sigurnost, poklopac od livenog gvožđa sferoidni grafit (GJS), Težina cc. 41/ 44kg
Bituplan samonivelišući- plivajući ram za ugradnju u asfalt, okrugli, visina 160 mm, spoljni prečnik 860 mm, max. nosivi pritisak 1,6 N/mm², ukupna težina cc. 103-106 kg.

Dodatne informacije

Opcije

- Crni zaštitni sloj na vodenoj bazi
- Poklopac sa logom

Dodatni pribor

- Poluga za otvaranje **600643**
- Set za zaključavanje **210248**
- Adaptacioni prsten od livenog gvožđa, čelika i betona

Prednosti

- Self-leveling frame with a max. bearing pressure of 1,6 N/mm²
- Safe positioning of the cover due to an additional stabilization groove
- Easy installation also in case of refurbishment with the 140mm Bituplan frame
- Durable PEWEPREN cushioning insert

✓ EN 124

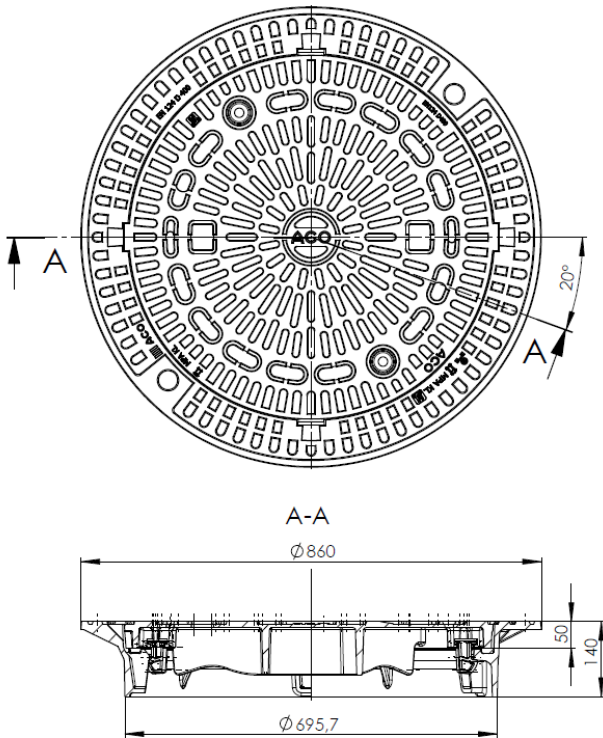
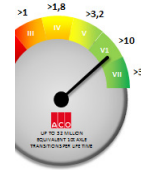
↓ D400

⊘ 605mm

⬡ Anti-theft

| Weight [kg] | Pcs / pallet | Ventilation holes | Black coating | Item-no. with adapter ring |
|-------------|--------------|-------------------|---------------|----------------------------|
| 103 | 12 | x | - | 210313 |
| 106 | 12 | - | - | 210314 |
| 103 | 12 | x | x | 604045 |
| 106 | 12 | - | x | 604046 |

CityTop P Bituplan 140



- EN 124**
- D400**
- 605mm**
- Anti-theft**

Product description

ACO CityTop P Bituplan manhole cover
 Class D 400 according to DIN EN 124
CityTop P manhole cover, round, with two maintenance free, screwless, non-integrally cast and traffic-safe securing features made of high-strength plastic, cover made of spheroidal graphite cast iron (GJS), weight approx. 41/ 44kg
Bituplan self-leveling frame, round, height 140 mm, external diameter 860 mm, max. bearing pressure 1,6 N/mm², total weight approx. 84-86 kg

Product information

Variations

- Black hydro-based coating
- Logo cover

Accessories

- Operating tool **600643**
- Anti-theft protection kit **210248**
- Adaptor ring of cast iron, steel or concrete

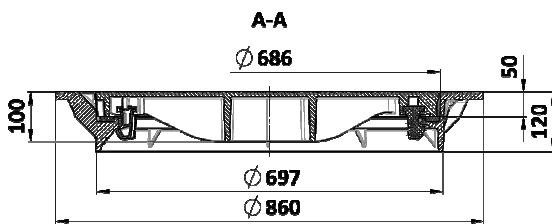
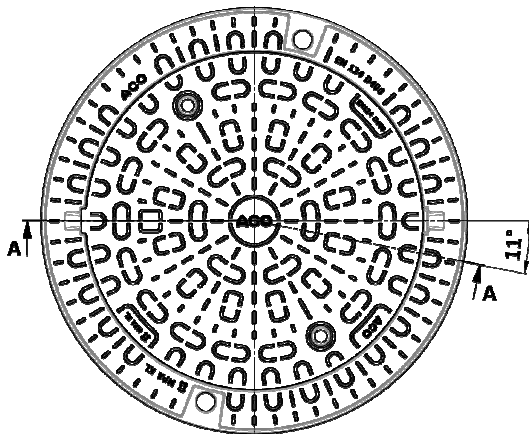
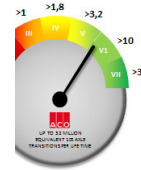
Advantages

- Self-leveling frame with a max. bearing pressure of 1,6 N/mm²
- Safe positioning of the cover due to an additional stabilization groove
- Easy installation also in case of refurbishment with the 140mm Bituplan frame
- Durable PEWEPREN cushioning insert

| Weight [kg] | Pcs / pallet | Ventilation holes | Black coating | Item-no. w/o adapter ring |
|-------------|--------------|-------------------|---------------|---------------------------|
| 84 | 16 | x | - | 605157 |
| 86 | 16 | - | - | 605139 |
| 84 | 16 | x | x | 210320 |
| 86 | 16 | - | x | 210321 |

Item-nos for version with adapter ring on request

CityTop S Bituplan 120



Product description

ACO CityTop S Bituplan manhole cover
 Class D 400 according to DIN EN 124
CityTop S manhole cover, round, with two maintenance free, screwless, non-integrally cast and traffic-safe securing features made of high-strength plastic, cover made of spheroidal graphite cast iron (GJS), weight approx. 36/ 41kg
Bituplan self-leveling frame, round, height 120 mm, external diameter 860 mm, max. bearing pressure 1,6 N/mm², total weight approx. 78,5-81 kg

Product information

Variations

- Black hydro-based coating
- Logo cover

Accessories

- Operating tool **600643**
- Anti-theft protection kit **210248**
- Adaptor ring h80 of Cast iron, steel or concrete

Advantages

- Self-leveling frame with a max. bearing pressure of 1,6 N/mm²
- Safe positioning of the cover due to an additional stabilization groove
- Easy installation also in case of refurbishment with the 120mm Bituplan frame
- Durable PEWEPREN cushioning insert

- ✓ EN 124
- ↓ D400
- ⊘ 605mm
- ⬡ Anti-theft

| Weight [kg] | Pcs / pallet | Ventilation holes | Black coating | Item-no. w/o adapter ring |
|-------------|--------------|-------------------|---------------|---------------------------|
| 78,5 | 18 | x | - | 1202998 |
| 78,5 | 18 | - | - | 1202999 |
| 81 | 18 | x | X | 1203000 |
| 81 | 18 | - | x | 1203001 |

Item-nos for version with adapter ring on request