Australian designed anchors for earth engineers

How a Tighter Anchor is developed

The Tighter Anchor is a modern version of a 'dead man' anchor. Instead of burying a large mass of concrete or timber to create a resistance, the Tighter anchor builds this mass underground by creating a frustum cone.

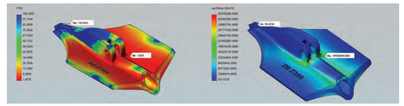
The appropriate type and specification of Tighter Anchor is selected according to the required load and the structural capacity of the soil as determined by a geotechnical survey.

Tighter engineers use 3D modeling to design the anchor and finite element analysis to establish where stresses and bending takes place. Materials are specified and a prototype is made using a mass spectrometer to check the metal formulation and test the finished anchor to destruction in a tensile tester.

Every Tighter Anchor test is weighed up against Australian Standards for conformation. Tighter engineers and quality control experts set up all procedures for manufacturing.

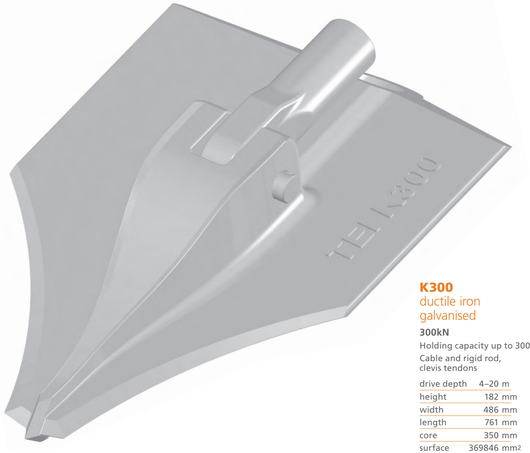
Finished models are subjected to government authorised laboratory testing processes before release.

Every Tighter Anchor has a built in safety factor above the recommended rating of the load carrying capacity.



Finite element analysis – stress

Finite element analysis – bending



K300
ductile iron
galvanised

300kN
Holding capacity up to 30000kg
Cable and rigid rod,
clevis tendons

drive depth	4–20 m
height	182 mm
width	486 mm
length	761 mm
core	350 mm
surface	369846 mm²

K200
ductile iron
galvanised

200kN
Holding capacity up to 20000kg
Cable and rigid rod,
clevis tendons

drive depth	4–20 m
height	150 mm
width	364 mm
length	589 mm
core	280 mm
surface	214396 mm²

K110
ductile iron
galvanised

110kN
Holding capacity up to 11000kg
Cable and rigid rod,
clevis tendons

drive depth	3–15 m
height	97 mm
width	202 mm
length	250 mm
core	110 mm
surface	50500 mm²

Manual installation load locker

K60
ductile iron
galvanised

60kN
Holding capacity up to 6000kg
Cable and rigid rod,
clevis tendons

drive depth	2–14 m
height	55 mm
width	160 mm
length	256 mm
core	110 mm
surface	40960 mm²

K40
ductile iron
galvanised

40kN
Holding capacity up to 4000kg
Cable and rigid rod,
clevis tendons

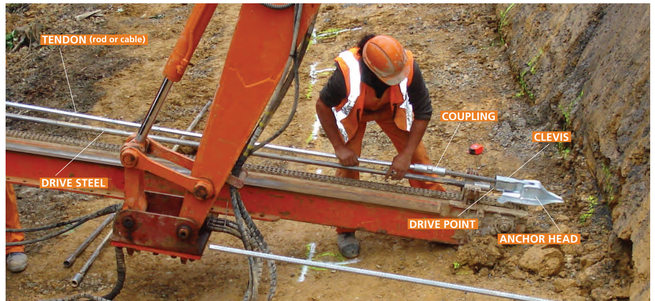
drive depth	2–12 m
height	77 mm
width	76 mm
length	246 mm
core	50 mm
surface	18696 mm²

K30
ductile iron
galvanised

30kN
Holding capacity up to 3000kg
Cable and rigid rod,
clevis tendons

drive depth	1.5–10 m
height	66 mm
width	90 mm
length	185 mm
core	90 mm
surface	16650 mm²

Heavy duty power-driven installation



K20
ductile iron
galvanised

20kN
Holding capacity up to 2000kg
Cable and rigid rod,
clevis tendons

drive depth	1.5–8 m
height	69 mm
width	50 mm
length	155 mm
core	60 mm
surface	7750 mm²

SH20
aluminium

20kN
Holding capacity up to 2000kg
Cable tendons

drive depth	1.5–8 m
height	60 mm
width	50 mm
length	155 mm
core	60 mm
surface	7750 mm²

SH10
aluminium

10kN
Holding capacity up to 1000kg
Cable tendons

drive depth	1–4 m
height	33 mm
width	38 mm
length	110 mm
core	40 mm
surface	4180 mm²

Why choose a Tighter Anchor?

Designed in Australia

All Tighter Anchors are designed by qualified mechanical engineers working in conjunction with a range of professionals across the full spectrum of engineering including civil, structural and geo-technical engineers.

No other anchor has been specifically designed for tough Australasian conditions.

Unique rudder

The rear rudder assists in rotating the anchor in the shortest possible distance preserving the overburden contributing to the pull-out resistance of the anchor.

Anchor finish

Ductile Iron anchors are hot dip galvanized 100 microns thick. Aluminium is hardened and heat treated.

Anchors are quick to install

Mobile driving equipment and hydraulic load locking plant makes installation fast and efficient.

Economical

Minimum equipment and labour is required to drive and 'load lock' anchors.

Instant field use

Once the anchor is load locked a working load may be applied. There is no waiting for concrete to cure.

Clean and environmentally friendly

There is no soil removed, water or concrete grout used.

Engineering integrity

Each anchor is tested for load carrying capacity during the load locking process. The 'proof loads' are recorded and form the geo-technical basis on which loads are applied.

Tendons and top termination options

Both cable and rigid bar tendons may be used and a wide range of top terminations are readily available. Custom attachments are designed where circumstances call for a unique installation.

Design and testing

Every Tighter Anchor is designed on a CAD system and is subjected to finite element analysis. From this a technical capacity is established. Prototypes are then cast and subjected to independent laboratory testing. Only then are anchors released for general production.

Performance testing

Every Tighter Anchor is field tested for load carrying capacity in varying soil conditions. Other tests include resistance to pointed impact of the drive steel, speed of rotation when load locking, focus of the Frustum cone.

Anchor range

Tighter Engineering International has a range of anchors from 5kN to 300kN. Anchors within the range are available in hardened aluminum, ductile iron, gun metal and bronze. There is a Tighter Anchor for almost every job.

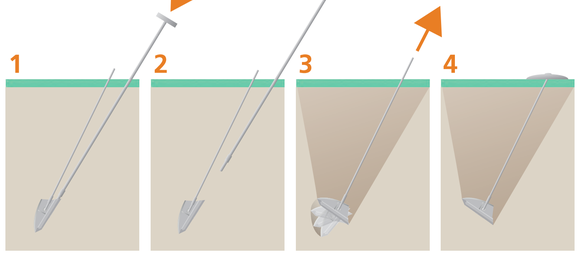
How a Tighter Anchor works

1 The anchor is driven in to the ground using a range of driving equipment. A full range of driving tools and equipment is available from your local Tighter Anchor distributor.

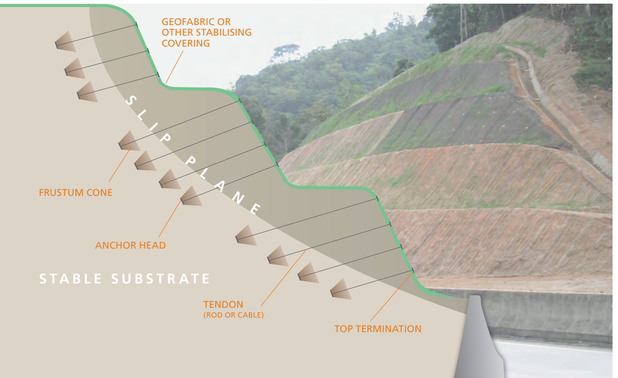
2 Once the anchor is driven to a pre-determined depth, the drive rod is withdrawn. For small anchors and shallow drives this is a simple manual operation. For larger and deeper drives the withdrawal of drive rods will require mechanical assistance.

3 One of the most important operations is locking the anchor in position to carry the maximum load. The anchor must be rotated 90 degrees to the line in which it was driven. For larger and deeper drives the withdrawal of drive rods will require mechanical assistance.

4 The tendon is trimmed and a suitable top termination plate or disc is fitted.



Stabilising a highway embankment



Your local Tighter Anchor distributor

Tighter™ earth anchor technology

www.tighterintl.com

Tighter Anchors at work

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AUSTRALIA

AUSTRALIA

INDONESIA

MALAYSIA