

**MANTA  
RAY®**  
EARTH ANCHOR SYSTEMS



## UTILITY ANCHOR SYSTEMS

# THE UNFAIR ADVANTAGE



### Benefits

- No digging, no damage, no mess, no soil disturbance
- Anchors proof loaded to exact capacity required during installation
- Fast, easy installation
- Lightweight, portable equipment
- Substantial time and cost savings

Breakthrough Earth Anchoring Technology



MacLean Power Systems

**FORESIGHT®  
PRODUCTS**

## Why Use Manta Ray® >>>

The Manta Ray Utility Anchor System is used by electric utilities and telcoms worldwide. Manta Ray's are driven into the ground, not augured or torqued. No hole is necessary, and there is no disturbance or displacement of soil.

The anchors are driven with conventional hydraulic/pneumatic equipment that is readily available worldwide. Once driven to the proper depth, the

## Models >>>

anchor rod attached to the anchor is pulled to rotate the anchor into undisturbed soil like a toggle bolt. This is called "Anchor Locking" the anchor (using the Manta Ray Anchor Load Locker). The anchor is pulled on to reach the holding capacity required which is measured by a gauge on the Anchor Load Locker. Each anchor is immediately proof loaded to the exact capacity required. No other system offers this feature. NO MORE GUESSWORK!



### MR-4

12M guy capacity in class 1-3 soils.  
Used with 5/8" Utility Anchor Rod.



### MR-3

18M guy capacity in class 1-5 soils.  
12M guy capacity in class 1-6 soils.  
Used with 5/8" Utility Anchor Rod.



### MR-2

32M guy capacity in class 1-3 soils. 18M  
and 12M guy capacity in class 4-5 soils.  
Used with 3/4" or 1" Utility Anchor Rod.



### MR-1

32M guy capacity in class 3-5 soils.  
18M and 12M guy capacity in class 6 soils.  
Used with 1" Utility Anchor Rod.



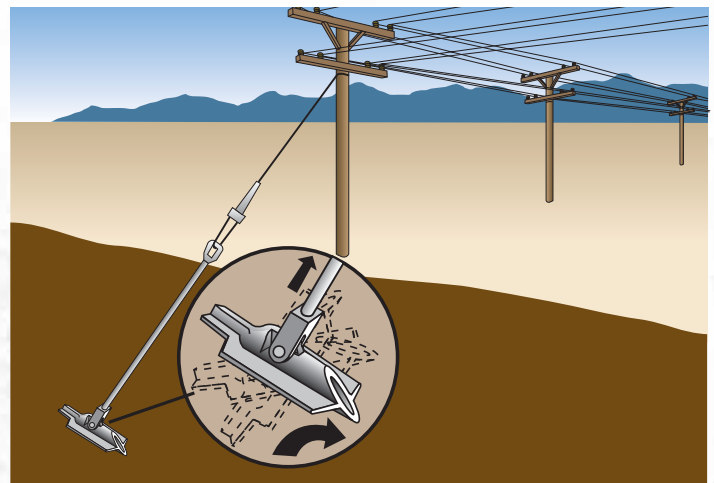
### MR-SR

32M guy capacity in class 5-6 soils.  
18M and 12M guy capacity in class 7-8 soils.  
Used with 1" Utility Anchor Rod.



### MK-B

32M guy capacity in class 7-8 soils.  
Not driven less than 14ft deep prior to load  
lock. Used with 1" Utility Anchor Rod.



## How It Works



① Thread a standard anchor rod into the threaded shackle of the Manta Ray anchor.



② Insert drive steel into the anchor. Position at the proper location and angle.



③ Drive the anchor to the proper depth, adding sections of drive steel as needed.



④ The installer pulls the drive steel out of the ground.



⑤ The end of the anchor rod is ground level; or in looser soils, it may be countersunk up to 12" below the surface to obtain greater holding capacity.



⑥ The adapter setting bar is threaded onto the end of the anchor rod. The lightweight Anchor Load Locker base and hydraulic ram system are then put in place over the adapter setting bar.



⑦ The portable power source operates the Anchor Load Locker which grips and pulls up on the adapter setting bar, rotating the anchor underground into the load lock position. The desired holding capacity is registered by the gauge on the Anchor Load Locker.



⑧ After removing the Load Locker, the thimbleye is threaded onto the end of the anchor rod, ready for guying.

### SAFETY PROCEDURES

When installing Manta Ray Earth Anchors, follow all common safety precautions used by every utility, cable company and contractor - hard hats, boots, safety glasses and gloves. Gloves are especially necessary since, during driving, the couplers on the Manta Ray drive steel can become hot. As with any underground work the installation of Manta Ray's require location procedures. Do not install an anchor until you know what is below surface. It is absolutely imperative in all cases that anchors are fully load locked before being put into service. It is important that anchors are installed as near to the angle of the load as possible.

# The Utility Anchoring Solution >>>



## Speed & Production

For the ultimate in anchoring speed and production, a Skid Steer with a mounted breaker can install Manta Ray's at a phenomenal rate.



## Tight Places? No Problem

Since no large equipment is needed, Manta Ray's can be installed in tight, hard-to-reach places such as residential backyards. With no digging required, no mess is made, there's no damage to property or unhappy homeowners.



## Hard Soil Application

Manta Ray can be driven in most hard soil conditions. However, in cases where soil is extremely hard and resistance to normal driving is excessive, simply drill a 4" pilot hole, then drive Manta Ray down the pilot hole.

## Drive in Difficult Terrain

Almost nothing stops Manta Ray Anchors. From steep slopes to swamps, rapid deployment with light, portable installation equipment gets the job done.



## Drive Through Asphalt

Manta Ray's are super tough and when necessary, can be driven through asphalt. Manta Ray's patented chiseled edge allows the anchor to drive straight at any angle without wandering from its path.

## Duckbill Temporary Guy Line Anchors



68-DBU 1,100 lbs Temporary Guy  
3½ ft 1/8" galv. Cable with Thimbleye

88-DBU 3,000 lbs Temporary Guy  
3½ ft 1/4" galv. Cable with Thimbleye

# Equipment >>>



## Here's all you need to install Manta Ray Anchors

Everything necessary for fast, easy installation of Manta Ray can be transported in a small pickup truck: power source, jackhammer, anchor load locker, drive steel, anchor rods and Manta Ray Earth Anchors.

Now you can install Manta Ray Earth Anchors for any utility application without expensive digger derricks or costly, and time-consuming hand digging.

## No More Guesswork!

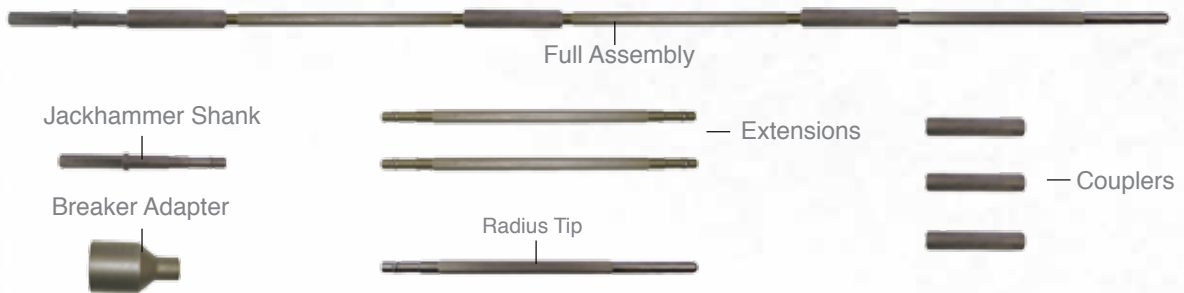
Installation and anchor holding capacity proof testing are simultaneous. The hydraulic powered Manta Ray Anchor Load Locker pulls up on the anchor rod to set it in the ground at the desired holding capacity. Portable and lightweight, the Anchor Load Locker consists of a base plate, hydraulic ram, jaws and adapter setting bar. The Anchor Load Locker is operated by the same hydraulic power source as the jackhammer.

The desired holding capacity is measured by the gauge on the anchor load locker as the anchor is rotated into position.



## The Manta Ray Drive Steel

Manufactured from high grade metals, sections of the drive steel are coupled together as needed while the anchor is being driven so that the driving operation can be accomplished safely from ground level. The drive steel set can drive all Manta Ray anchor models.



# Holding Capacities >>>

## KIP (1,000lbs)/KN\* Capacity Chart Based on Standard 7 ft (2.1 m) Utility Anchor Rod Depth in Soil

Soil Type	Common Soil Type Description	Type Blow count "N" per ASTM-D 1586	MR-4		MR-3		MR-2		MR-1		MR-SR		MK-8	
			KIPS	KN	KIPS	KN	KIPS	KN	KIPS	KN	KIPS	KN	KIPS	KN
<b>ULTIMATE STRENGTH</b>			16	71	20	89	40	178	40	178	40	178	40	178
1/2	Dense fine compact sand: Very hard silts and clays	45-60	9-16 (2,3,4)	40-71	17-20 (2,3,4)	76-89	21-28 (2,4)	93-125	36-40 (1,2,3)	160-178	N/A (5)	N/A	N/A (5)	N/A
2/3	Dense clays, sands and gravel: Hard silts and clays	35-50	6-9 (4)	27-40	12-18 (4)	53-80	15-22 (2,4)	67-98	24-36 (2,4)	107-160	32-40 (2,3,4)	142-178	N/A (5)	N/A
3/4	Medium dense sandy gravel: Very stiff to hard silts and clays	24-40	4.5-6 (4)	20-25	9-14 (4)	40-62	12-18 (4)	53-80	18-20 (4)	80-89	24-34 (2,4)	107-151	N/A (5)	N/A
5/6	Medium dense coarse sand and sandy gravel: Stiff to very still silts and clays	14-25	3.5-4.5 (4)	16-20	7-9 (4)	31-40	9-12 (4)	40-53	15-20 (4)	67-89	18-24 (4)	80-107	N/A (5)	N/A
6/7	Loose to medium dense fine to coarse sand: Firm to stiff clays and silts	7-14	2.5-4.0 (4)	11.-18	5-8 (4)	22-36	7-10 (4)	31-44	10-15 (4)	44-67	14-18 (4)	62-80	20-24 (4)	89-107
7/8	Loose fine sand: Alluvium Soft-firm clays: Varied clays, fill, fine saturated silty sand	4-8	1.5-2.5 (4,6)	7-11	3-5 (4,6)	13-22	5-8 (4,6)	22-36	8-12 (4,6)	36-53	9-14 (4,6)	40-62	13-20 (4,6)	58-89
RATING Anchors are compatible with industry standard anchor rods.			Up to 12M in hard soils. Up to 6M in average soils. Dual purpose anchor. Used with 5/8" anchor rods.		Up to 12M for average/normal soils. Used with 5/8" anchor rods.		Up to 32M in hard soil. Up to 18M in average soils. Dual purpose anchor. Used with 3/4" and 1" anchor rods.		Up to 32M for average/normal soils. Used with 3/4" and 1" anchor rods.		Up to 32M for loose or wet soils. Used with 3/4" and 1" anchor rods.		Up to 32M for very loose or wet soils. Used with 3/4" and 1" anchor rods.	
PROOF LOAD Maximum anchor proof load necessary (2-1 safety factor) on anchor rod strength.			4,000 lbs - 5/8" rod		8,000 lbs - 5/8" rod		16,000 lbs - 1" rod 12,000 lbs - 3/4" rod		16,000 lbs - 1" rod 12,000 lbs - 3/4" rod		16,000 lbs - 1" rod 12,000 lbs - 3/4" rod		16,000 lbs - 1" rod 12,000 lbs - 3/4" rod	

(1) Drilled hole required to install. (2) Installation may be difficult. Pilot hole may be required. (3) Holding capacity limited by structural rating of anchors. (4) Holding capacity limited by soil failure. (5) Not recommended in these soils. (6) Wide variation in soil properties reduces prediction accuracy. Pre-construction field test recommended.

Holding capacity in KIPS and KN after anchor locking with no significant movement and no safety factor. Use this chart for estimation only. True capacity must be tested with anchor load locker.

**Guarantee & Limited Warranties:** Unconditional guarantee for free replacement if any Manta Ray anchor breaks during installation using the manufacturer's recommended equipment and procedures. Foresight warrants all of its installation equipment; drive steel and anchor load lockers. No other anchoring system offers this complete guarantee and warranty protection.

Available From:

PATENTED WORLDWIDE  
Nos. D572,546 - 6,237,289 - 7,534,073 - Other international patents.

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Contact us to learn more about Manta Ray Anchors

Toll Free: 800-325-5360 | Local: 303-286-8955 | Fax: 303-287-3866  
sales@earthanchor.com | www.earthanchor.com



6430 East 49th Drive,  
Commerce City, CO 80022 USA