Mechanical Shield Docking Method

Mechanically docking Method

Characteristics

1. Free choice of docking point

Docking point can be selected freely without any restrictions of surface traffic, underground utilities or submarine conditions.

2. Safe and reliable

Docking and dismantling of shield machines has been done in narrow space where the ground was exposed. The Mechanical Shield Docking (MSD) Method enables steel rings to directly bear earth and water pressures, and ensures safe and reliable work without exposing the ground.

3. No adverse effects on the surrounding environment

The MSD Method causes neither ground settlement nor uplift and involves no surface work, so it has no effects on surface traffic or the neighboring environment.

4. Shortening of construction period

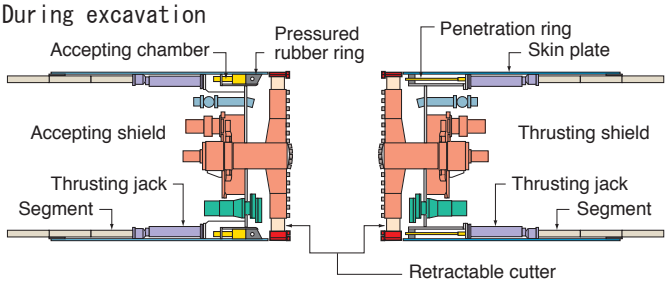
The MSD Method requires no auxiliary measures and enables easy mechanical shield docking, so it achieves a reduction of construction time, compared to conventional methods.

5. Cost reduction

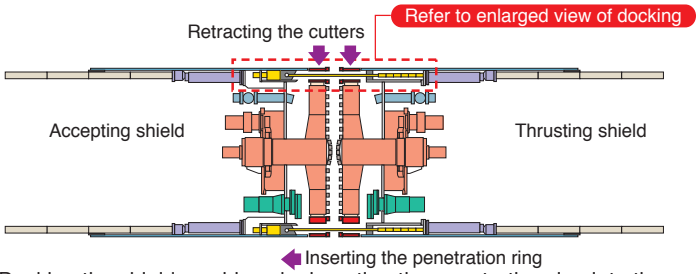
Costs can be reduced because no auxiliary measures for stabilizing the ground and shaft are required.

Mechanism of tunnel driving

During excavation

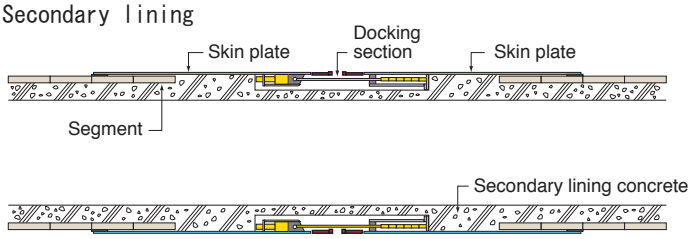


During the docking of shield machines



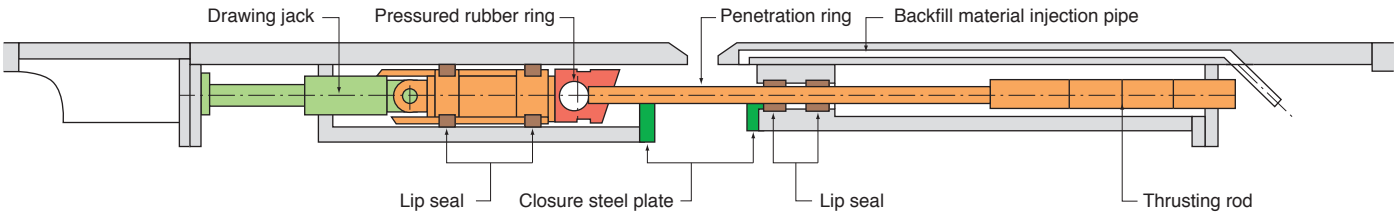
Docking the shield machines by inserting the penetration ring into the accepting chamber

Secondary lining



Dismantling and removing the shield machines leaving docking members, and placing the secondary lining concrete

Enlarged view of docking



Applications to actual tunneling

▶ Construction of gas pipeline at the new Nagoya thermal power plant

Diameter: 4.10 m
Length: 1515 m (707 m + 808 m)
Shield type: Slurry shield
Soil at the docking point: Clay and sand

▲ Thrusting shield machine

▲ Accepting shield machine