



## ALIGNMENT SYSTEMS

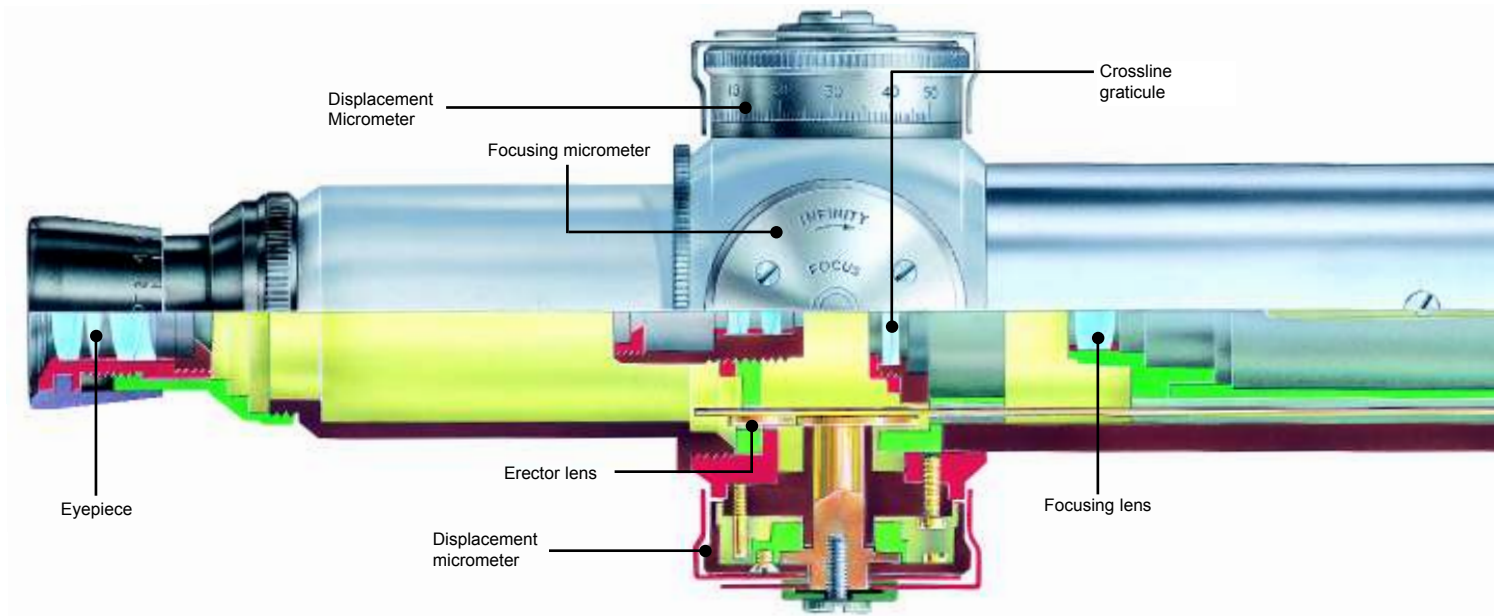


FOR CHECKING AND SETTING,  
STRAIGHTNESS, ALIGNMENT,  
VERTICALITY, PARALLELISM,  
SQUARENESS AND LEVEL

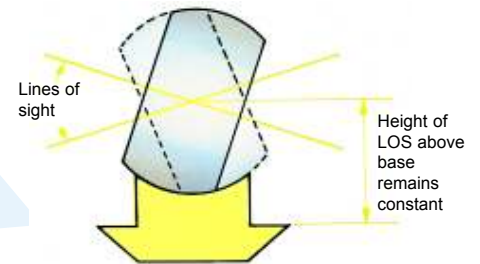


# ■ SOLVING PROBLEMS OF ALIGNMENT

## The Micro Alignment Telescope



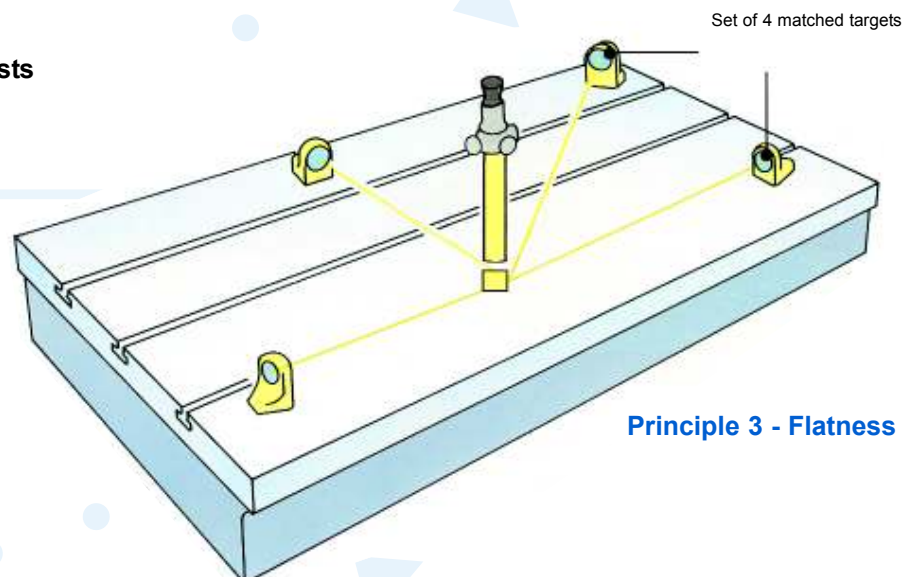
Since the late 1930's Taylor Hobson has sold thousands of Alignment Telescopes to industries throughout the world. The Micro Alignment Telescope is used to set and check alignment, squareness, straightness, flatness, parallelism, verticality and level. With its wide range of accessories the Micro Alignment Telescope forms a unique and comprehensive system for solving alignment problems in a wide variety of applications. The Micro Alignment Telescope system:



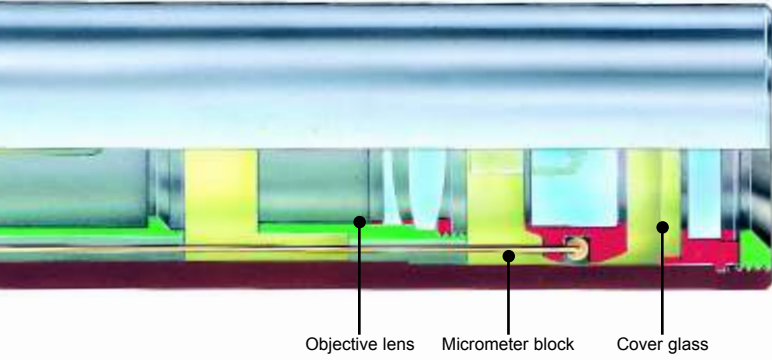
- Is simple and easy to use
- Is versatile and adaptable
- Enables improved product performance
- Enables reliable, accurate installation
- Reduces warranty and maintenance costs
- Is robust and reliable
- Is portable

The Micro Alignment Telescope has:

- Optical and Mechanical axes aligned to within 3 seconds and concentric within  $6\mu\text{m}$  (0.00025in)
- Achievable accuracy within 0.05mm at 30m (0.002in at 100ft)
- Field of view: 50mm at 2m (2in at 6.5ft)  
600mm at 30m (24in at 100ft)



Principle 3 - Flatness



*Alignment of a refuelling system in the nuclear power industry.*

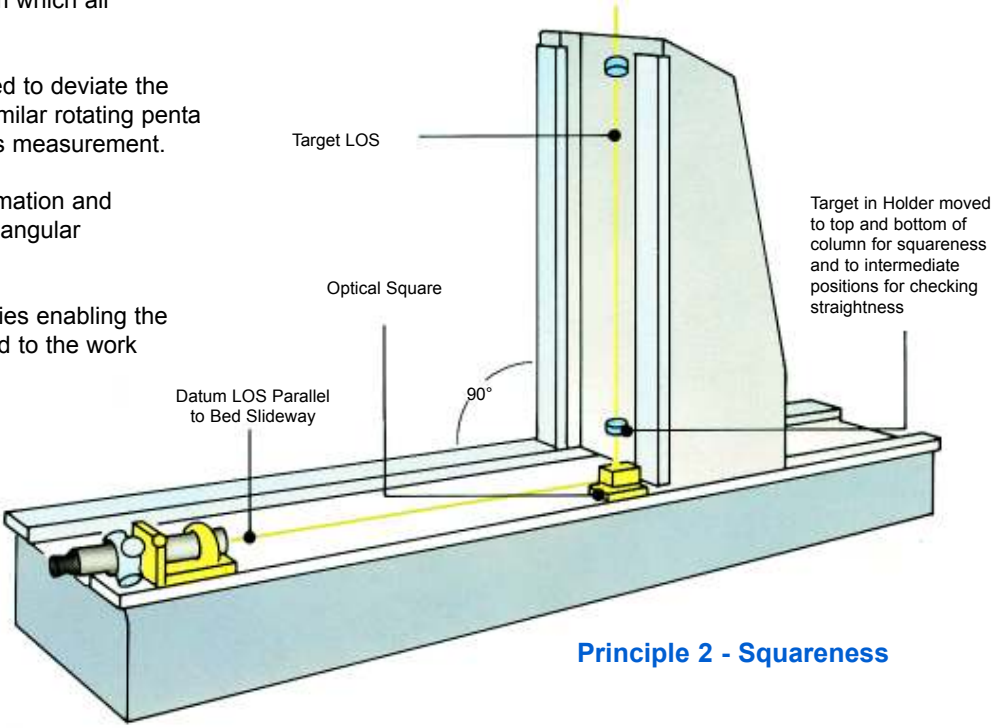
## PRINCIPLES OF ALIGNMENT

The basic measurement principles available with the Micro Alignment Telescope System are Alignment, Squareness, Flatness, Autocollimation and Autoreflexion. The Micro Alignment Telescope generates a straight line of sight from zero to infinity. This forms the basic reference from which all measurements are taken.

To measure squareness a penta prism is used to deviate the straight line through exactly 90 degrees. A similar rotating penta prism is used to generate a plane for flatness measurement.

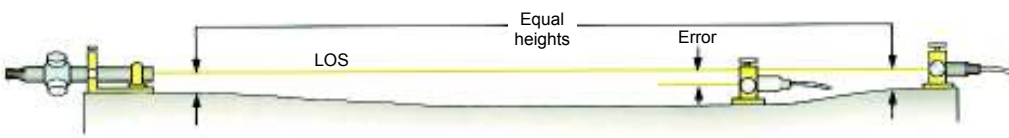
The Telescope is designed to allow Autocollimation and Autoreflexion, providing for squareness and angular measurement using reflective Mirror Targets.

There is a comprehensive range of accessories enabling the Telescope, Targets and Prisms to be mounted to the work concerned.



**Principle 2 - Squareness**

### Principle 1 - Alignment



# ENGINEERING APPLICATIONS

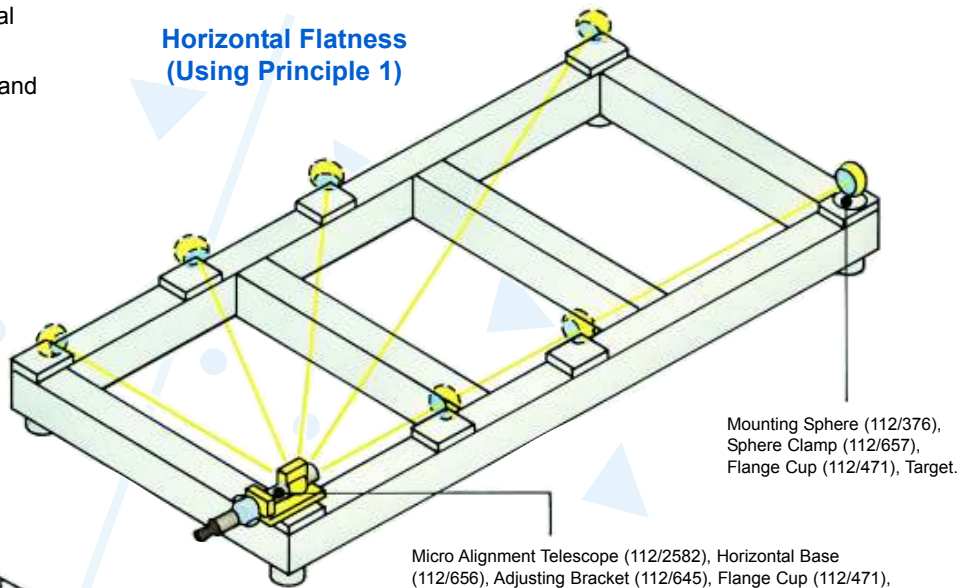
Typical applications for which the Micro Alignment Telescope is being successfully used are:

- Bore alignment checks
- Machine tool straightness and alignment checks
- Turbine installation and maintenance
- Flatness checking and setting of bed plates
- Shipbuilding repair and maintenance
- Weapon systems alignment and harmonisation
- Alignment of rollers of process machinery
- Aircraft jig setting and control
- Tool alignment of large boring machines
- Compressor installation and maintenance
- Main bearing alignment of large engines
- Railway equipment assembly and set-up
- Earthmoving machinery and general equipment alignment
- Portable machining system set-up and monitoring.



Checking Aircraft jigs with Micro Alignment Telescope

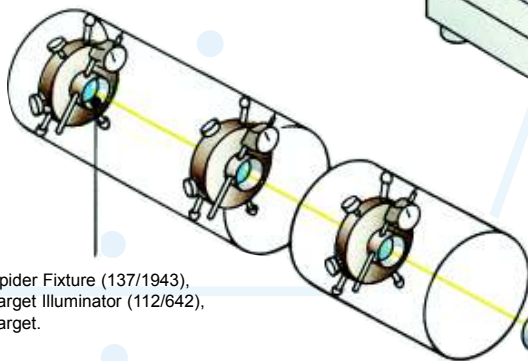
## Horizontal Flatness (Using Principle 1)



Mounting Sphere (112/376),  
Sphere Clamp (112/657),  
Flange Cup (112/471), Target.

Micro Alignment Telescope (112/2582), Horizontal Base (112/656), Adjusting Bracket (112/645), Flange Cup (112/471), Mounting Sphere (112/376), Stride Level\* (112/2315/2318).

\* A Talyvel Electronic Level can be used in place of a Stride Level if greater accuracy is required.



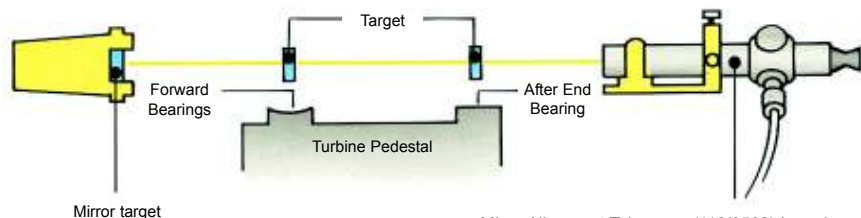
Spider Fixture (137/1943),  
Target Illuminator (112/642),  
Target.

## Tube Alignment (Using principle 1)



Micro Alignment Telescope (112/2582), Adjusting Bracket (112/645), Bore Fixture (112/1168), Mounting Sphere (112/376), Right Angle Eyepiece (112/568).

## Alignment using Autoreflexion



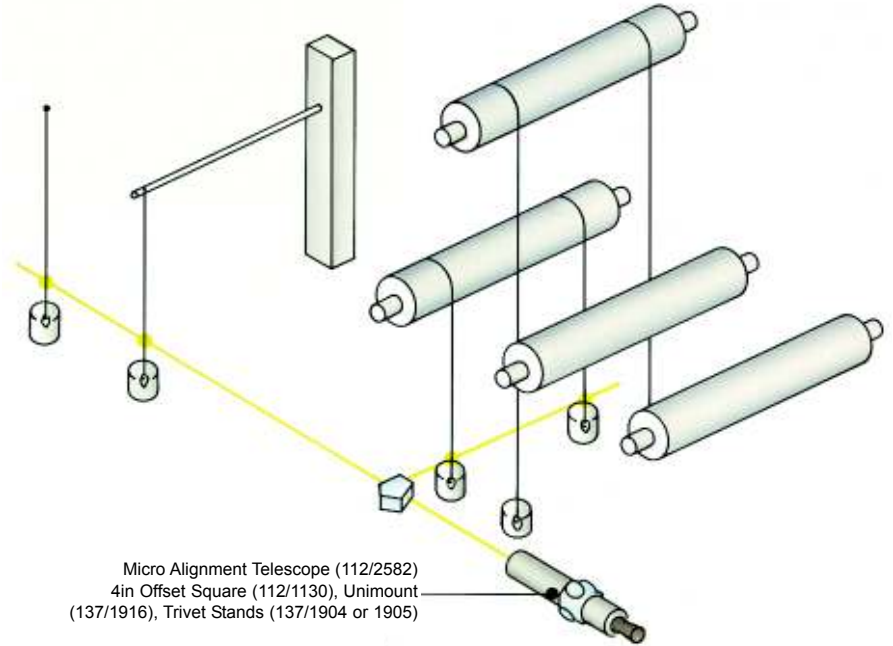
Mirror target

Micro Alignment Telescope (112/2582) Lamphouse (112/1365), Horizontal Base (112/656), Adjusting Bracket (112/645) Mounting Sphere (112/376), Adjustable Height Cup (112/849), Targets.

# SOME TYPICAL APPLICATION AREAS

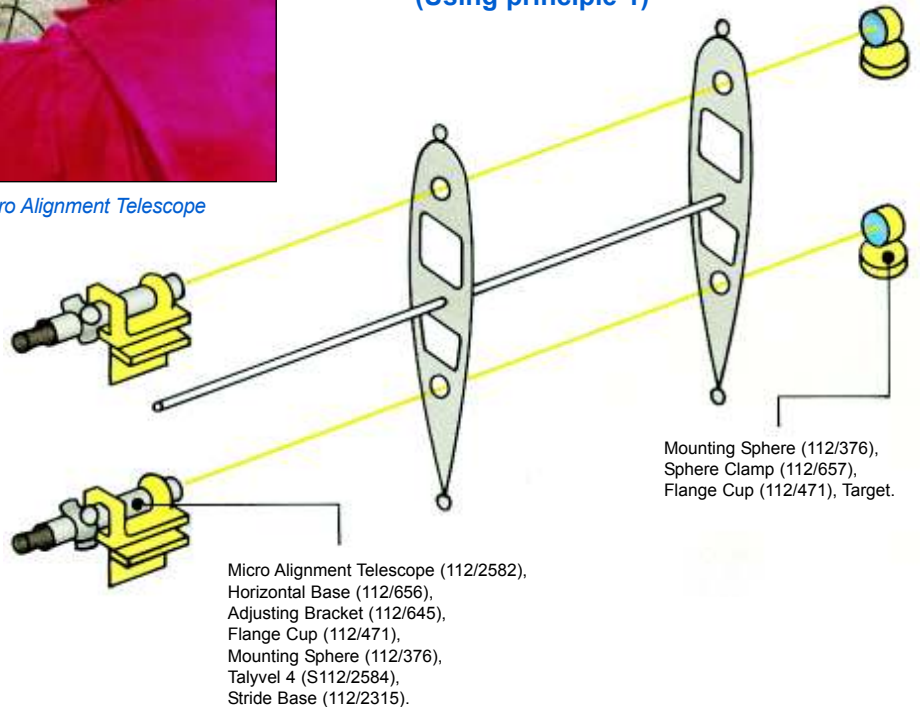
- Aircraft assembly jigs
- Satellite testing
- Steam and gas turbines
- Marine propulsion machinery
- Printing presses
- Air compressors
- Cranes
- Diesel engines
- Nuclear reactors
- Coal conveyors
- Shipbuilding and repair  
(Civil and Military vessels)
- Rolling mills (steel, paper, sugar etc.)
- Rod and wire mills
- Extruder barrels
- Civil engineering projects

## Squareness with plumbelines (Using principle 2)



Aligning diesel engine bearings using CCTV and Micro Alignment Telescope

## Alignment - removing twist (Using principle 1)



## Serving a global market

Taylor Hobson is world renowned as a manufacturer of precision measuring instruments used for inspection in research and production facilities. Our equipment performs at nanometric levels of resolution and accuracy.

To complement our precision manufacturing capability we also offer a host of metrology support services to provide our customers with complete solutions to their measuring needs and total confidence in their results.

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 measurement of your production parts by skilled technicians using industry leading instruments in accord with ISO standards
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 on-site instruction will lead to greater proficiency and higher productivity
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 certification for artifacts or instruments in our laboratory or at customer's site

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email: [taylor-hobson.sales@ametek.com](mailto:taylor-hobson.sales@ametek.com)  
 or call: +44 116 246 3034



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TAYLOR HOBSON  
A8248 ISO9001

### Taylor Hobson France

Rond Point de l'Epine Champs  
 Batiment D, 78990 Elancourt, France  
 Tel: +33 130 68 89 30 Fax: +33 130 68 89 39  
[taylor-hobson.france@ametek.com](mailto:taylor-hobson.france@ametek.com)



### Taylor Hobson Germany

Postfach 4827, Kreuzberger Ring 6  
 65205 Wiesbaden, Germany  
 Tel: +49 611 973040 Fax: +49 611 97304600  
[taylor-hobson.germany@ametek.com](mailto:taylor-hobson.germany@ametek.com)



### Taylor Hobson Italy

Via De Barzi  
 20087 Robecco sul Naviglio, Milan, Italy  
 Tel: +39 02 946 93406 Fax: +39 02 946 93450  
[taylor-hobson.italy@ametek.com](mailto:taylor-hobson.italy@ametek.com)



### Taylor Hobson Japan

Sankyo Meguro Building 4-5-37,  
 Kamiosaki, Shinagawa-Ku, Tokyo 141-0021, Japan  
 Tel: +81 33494 5110 Fax: +81 33494 5119  
[taylor-hobson.japan@ametek.com](mailto:taylor-hobson.japan@ametek.com)



### Taylor Hobson Korea

Hungkuk Life Building, 5th Floor 6-7, Soonae Dong  
 Pundang-Ku, Seongnam, Kyungki-Do, 463-020, Korea  
 Tel: +82 31 713 1371 Fax: +82 31 713 1372  
[taylor-hobson.korea@ametek.com](mailto:taylor-hobson.korea@ametek.com)



### Taylor Hobson China Beijing Office

Room 2305, CITIC Building #19  
 Jianguomenwai Dajie, Beijing, 100004, China  
 Tel: +00 86 10 8526 2111 Fax: +00 86 10 8526 2141  
[taylor-hobson.beijing@ametek.com](mailto:taylor-hobson.beijing@ametek.com)



### Taylor Hobson China Shanghai Office

Part A, 1<sup>st</sup> Floor, Waigaoqiao Free Trade Zone  
 Shanghai, 200131, China  
 Tel: +00 86 21 58685111-110 Fax: +00 86 21 58680969-110  
[taylor-hobson.shanghai@ametek.com](mailto:taylor-hobson.shanghai@ametek.com)



### Taylor Hobson Singapore

AMETEK Singapore, 10 Ang Mo Kio Street 65  
 No. 05-12 Techpoint, Singapore 569059  
 Tel: +65 6484 2388 Ext 120  
[taylor-hobson.singapore@ametek.com](mailto:taylor-hobson.singapore@ametek.com)



### Taylor Hobson USA

1725 Western Drive  
 West Chicago, Illinois 60185, USA  
 Tel: +1 630 621 3099 Fax: +1 630 231 1739  
[taylor-hobson.usa@ametek.com](mailto:taylor-hobson.usa@ametek.com)



### Taylor Hobson UK

(Global Headquarters)  
 PO Box 36, 2 New Star Road  
 Leicester, LE4 9JQ, England  
 Tel: +44 116 276 3771 Fax: +44 116 246 0579  
 email: [taylor-hobson.uk@ametek.com](mailto:taylor-hobson.uk@ametek.com)

