Point-Setting Systems

Trend-Setting Technology

HANNING & KAHL

1 | Electric Point Machines

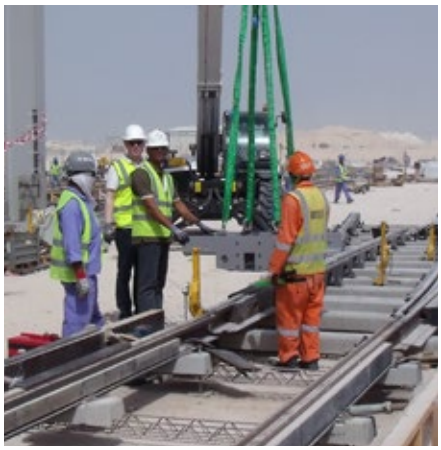
2 | Manual Point Machines

3 | Further Applications

4 | Service and Accessories

Innovative, intelligent, international

Trend-Setting Technology



The technical superiority of the equipment and systems supplied by HANNING & KAHL stems from almost a century of experience: the company started producing components for rail-based public transport in 1928, and the core competence has been consolidated continuously ever since.

HANNING & KAHL point-setting systems set technical standards and are deployed successfully all over the world. Our partners are operators of tram, underground and light rail services, secondary lines, industrial railways and factory sidings as well as point manufacturers, all of whom are committed to uncompromised safety.

HANNING & KAHL offers its customers a comprehensive and systematic range of products. You will find a point-setting system with the right performance profile for all your applications at HANNING & KAHL. HANNING & KAHL is certified for compliance with all major standards: ISO/TS 22163, DIN EN ISO 9001, ISO 45001, DIN EN 15085-2.

HANNING & KAHL point-setting systems are the outcome of a successful symbiosis of economic series production and customized design. The results are practical and reliable integrated solutions from one source, which means quick returns on investment for operators – one reason why our products are at home all over the world. The fundamental advantages of HANNING & KAHL point-setting systems will convince you:

- **A wide product range for all requirements**
- **Insensitive to environmental influences**
- **Fulfilment of all specifications of BOStrab, VDV, DIN and CENELEC**
- **Detailed quality control and documentation**
- **Diagnostic systems can be added for remote monitoring**

With HANNING & KAHL, you have a committed, recognised and reliable partner at your side. We offer you:

- **Practically-oriented workshops for you and your staff**
- **Testing and service equipment for professional maintenance and upkeep**
- **24-hour on-call service**

This brochure gives you an initial overview of HANNING & KAHL point-setting systems and the accompanying products and services. If you would like further information, just let us know or visit our homepage at:
www.hanning-kahl.de

1 | Electric Point Machines

Trend-Setting Technology

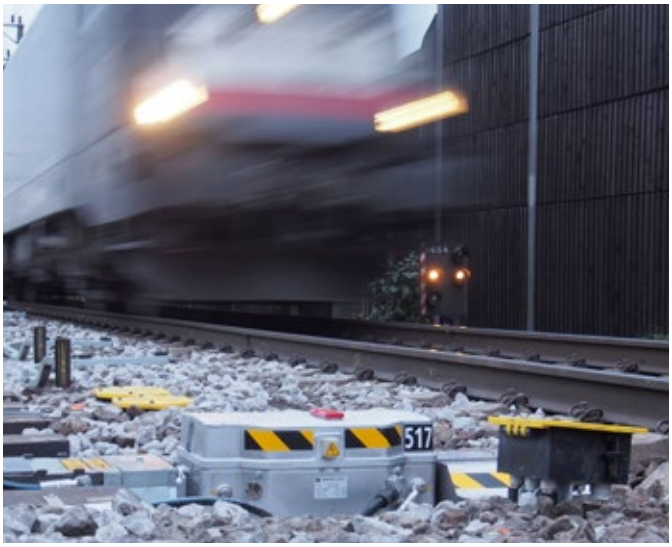
Safety, functionality and economic efficiency – these are the distinguishung characteristics of HANNING & KAHL point machines. With modular structure, these point machines are unsurpassed in their versatility.

For deployment on depots and rail networks, HANNING & KAHL offers point machines which are extremely economically efficient on account of their long service life and minimum maintenance requirement. We also offer electric point machines for flat-bottom rail deployment which are suitable for the harsh everyday conditions in shunting operations and for train-protection applications.

Electric point machines in the depot

The advantages at a glance:

- **Drive form can be freely selected: electro-magnetic or electro-hydraulic, all common operating voltages are possible**
- **Compact design for all gauges in concrete-based prefabricated tracks, in open tracks and bridges**
- **Swift and simple installation**
- **Modular structure: can be supplied for all point types in functional variants**
- **Low-maintenance: no function-relevant wear between overhauls**
- **Patented and verified safety engineering**
- **Optional fitting of remote monitoring for needs-based maintenance**
- **Adaptable in other makes of earthcase**
- **Mechanical manual setting**



Electric point machine installed in a main line

Crossable electric point machine

Electric Point Machines | 1

Trend-Setting Technology

1.1 Point Machines 61.1 series

The modular point machine of the 61.1 series can be deployed for all transport authority requirements. Positive locking of the drive rods and an independent detector lock device fulfil SIL 4 in compliance with CENELEC EN 50129 specifications. It is supplied with four-wire activation for deployment in electrical locally-set points (EOW) or electronic interlocking controllers in mainline technology.

Attributes of the 61.1 series:

- Redundant locking concept
- Protection class IP67 in compliance with EN 60529
- Suitable for all gauges
- For use in line networks, on bridges and in tunnels
- Drives and detector rod connection for all point types
- Compatible with interlocking technology of all system houses
- All track installation options possible
- Optional lever box protection protects against unauthorised manual activation

1.2 Point Machines 61.1-Metro series

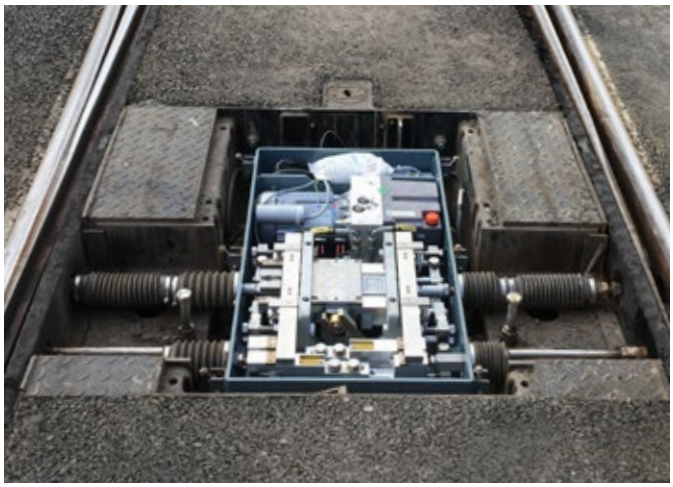
The point machine of the 61.1-Metro series is designed for deployment in train-protection applications on metro, underground and suburban railways. This compact, sturdy and safe point machine fulfils all safety requirements. Certified for fulfilment of SIL 4 in compliance with CENELEC EN 50129, the 61.1-Metro series is geared towards the demanding requirements of high-frequency metro operations.

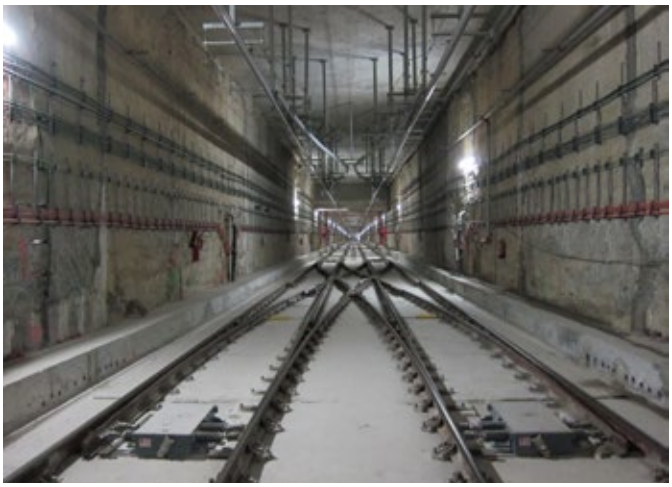
Attributes of the 61.1-Metro series:

- Redundant locking concept
- Protection class IP67 in compliance with EN 60529
- Suitable for all gauges
- Suitable for driverless systems like people movers
- Installation in the centre or on the side of the tracks
- For use in line networks, on bridges and in tunnels
- Drives and detector rod connection for all point types
- Compatible with interlocking technology of all system houses
- All track installation options possible
- Optional lever box protection protects against unauthorised manual activation
- Protection against vandalism with additional cover (optional)
- Manual setting – swift and simple with just one stroke

Technical data 61.1 series	
Drive	electro-magnetic, electro-hydraulic
Point type	grooved rail (flat-bed, deep-bed), flat-bottom
Operating voltage	DC 600 V to DC 1,000 V* AC 230/400 V*
Point opening	up to 70/100 mm
Operating force	5,000 N
Overall height	300 mm incl. earthcase

Technical data 61.1-Metro series	
Drive	electro-hydraulic
Point type	flat-bottom
Operating voltage	AC 230/400 V*
Point opening	120 mm
Operating force	5,000 N
Overall height	205 mm





**Other operating voltages on request*

1 | Electric Point Machines

Trend-Setting Technology

1.3 Point Machines 500 series

Point machines of the 500 series from HANNING & KAHL are a pragmatic and cost-effective solution for depots and stabling areas for light rail vehicles and trams. Points are optimally equipped with this compact point machine. With the 500 series, grooved rail points can be operated either electro-hydraulically or electro-magnetically. The point machine is installed in space-saving manner in the middle of the track; it can also be installed on the side.

Attributes of the electric 500 series:

- Protection class IP67 in compliance with EN 60529
- No rod openings or bellows
- Compact design in sub-assembly structure
- Corrosion protection of all components
- Simple manual activation with one stroke of setting lever
- Adjustable fatigue-proof pressure-spring assembly
- Certified for fulfilment of SIL 2 in compliance with CENELEC EN 50129

1.4 Point Machines 715 series

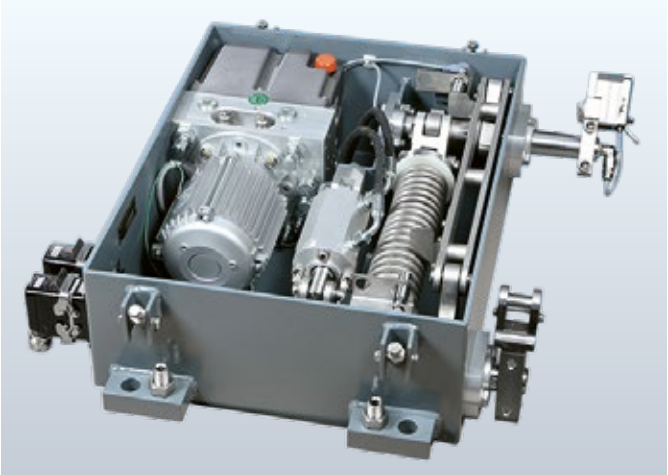
The application range of this innovative setting system stretches from heavy-rail line networks, public transport and freight transportation to industrial and harbour railways. Point machine H715 can be integrated into all kinds of flat-bottom points with various gauges. Point machines in existing point systems can be easily replaced by the H715, which is certified for fulfilment of SIL 4 in compliance with CENELEC EN 50129, as both the mechanical and the electrical interfaces are compatible.

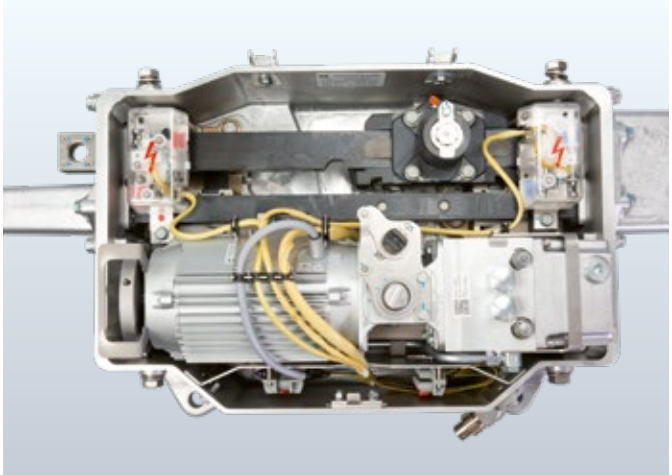
Attributes of the 715 series:

- Swift change between left and right installation – without retrofitting the hydraulic unit
- Unique visual check of lock engagement and monitoring elements
- Open electric interface allows simple adaptation to different control and interlocking requirements
- Hydraulic drive system provides constant setting force over entire service life
- Low-maintenance thanks to lubricant-free ball and sliding bearings
- Top cover opening for manual setting with all available cranks
- Installation in hollow bearer possible (optional)
- Protection class IP54 in compliance with EN 60529

Technical data 500 series	
Drive	electro-magnetic, electro-hydraulic
Point type	grooved rail (flat-bed, deep-bed), flat-bottom
Operating voltage	DC 600 V to DC 1,000 V* AC 230/400 V*
Point opening	up to 65 mm
Operating force	5,000 N
Overall height	300/430 mm incl. earthcase

Technical data 715 series	
Drive	electro-hydraulic
Point type	flat-bottom
Operating voltage	AC 400 V*
Point opening	up to 240 mm
Operating force	up to 9,000 N
Overall height	305 mm





**Other operating voltages on request*

Manual Point Machines | 2

Trend-Setting Technology

At many locations in the line network – e.g. for trailed or faced points which are seldom set – the manual setting mechanism is the most economical solution. The optimal cost-benefit ratio of HANNING & KAHL manual setting mechanisms will convince you.

The HANNING & KAHL manual point machine for installation in flat-bottom points are extremely flexible. Installation is possible at the side or in the centre of the tracks. As with all HANNING & KAHL manual setting mechanisms, throw-over and spring-back function are possible at all times without replacing components. Manual setting per hand lever with just one stroke.

Manual point machine in the depot

2.1 Point Machines 40 series

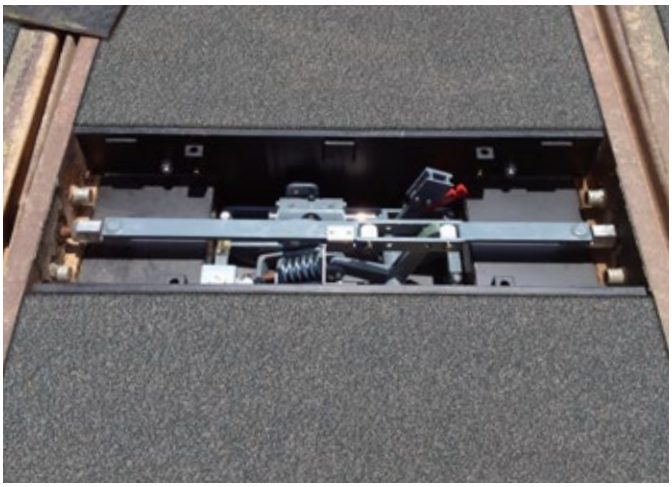
This manual point machine of the 40 series made by HANNING & KAHL is characterized by compact design and robust technology. The 40 series offers an economical solution for points which are trailed or for faced points which are only seldom re-set.

Attributes of the 40 series:

- Robust technology
- Compact design
- Desired setting to spring-back or throwover function with same components possible on site
- Suitable for most point types, openings and gauges
- Manual setting possible with low force requirement with one stroke purely mechanically
- Redundant, progressively adjustable spring assembly for safe position of point tongues
- End-position damping to reduce noise
- Can be adapted in earthcases of other makes

Technical data 40 series	
Drive	manual, in throw-over and trailable function
Point type	grooved rail (flat-bed, deep-bed)
Retention	up to 2,000 N
Point opening	up to 60 mm
Overall height	450 mm incl. earthcase

Manual point machine in the line network



2 | Manual Point Machines

Trend-Setting Technology

2.2 Point Machines 42 series

HANNING & KAHL has driven forward the technological development for trailed points and also for faced points which are seldom re-set. Manual point machines in innovative, reliable design with particularly low installation height.

Attributes of the 42 series:

- Very low installation height of just 180 mm
- Spring-back or throwover function? Simply set with the same components on site
- For most point types, gauges and point openings up to 60 mm
- Manual setting with low force requirement with just one stroke
- Progressively adjustable spring force for securing point tongues in end positions
- Progressively adjustable damping means noise reduction and wear protection
- Can be adapted in earthcases of other makes and in earthcase of the HANNING & KAHL 60 and 61.1 series
- Corrosion-protected components

2.3 Point Machines 500 series

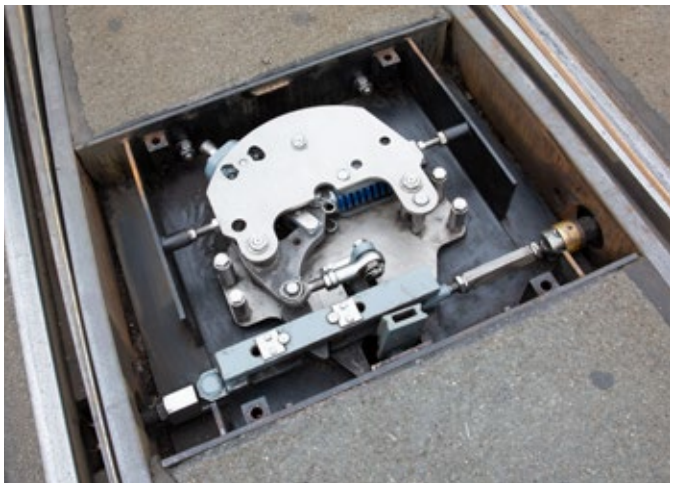
With the point machines of the 500 series, HANNING & KAHL has developed manual point machines for grooved rail points in throwover and spring-back function for tram and light rail vehicles. Points are optimally equipped with this compact point machine. With the 500 series, grooved rail points can be operated manually. The point machine is installed in space-saving manner in the middle of the track; it can also be optionally installed on the side and it can be trailed wear-free.

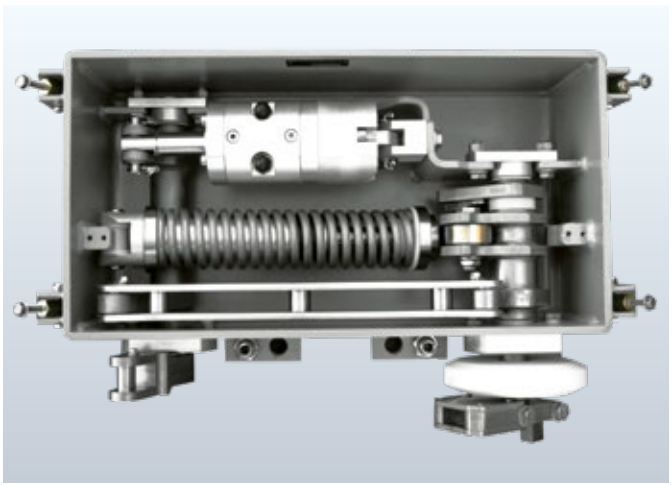
Attributes of the manual 500 series:

- Manual setting with very little effort – just one mechanical stroke required
- Adjustable fatigue-resistant pressure-spring assembly
- Damping to reduce noise and to protect points against wear
- All components are protected against corrosion
- External rod connection, without housing opening
- Protection class IP67 in compliance with EN 60529

Technical data 42 series	
Drive	manual, in throw-over and trailable function
Point type	grooved rail (flat-bed, deep-bed)
Retention	up to 2,500 N
Point opening	up to 60 mm (throw-over up to 45 mm)
Overall height	180 mm incl. earthcase

Technical data 500 series	
Drive	manual, in throw-over and trailable function
Point type	grooved rail (flat-bed, deep-bed)
Retention	up to 4,000 N
Point opening	up to 65 mm
Overall height	280 mm incl. earthcase





2.4 Point Machines 160 series

The manual point machines for installation in flat-bottom and deep-bed points offer flexible deployment possibilities. Installation is possible beside or between the tracks. As with all manual point machines supplied by HANNING & KAHL, throw-over and spring-back function are possible at all times without replacing components. The point can be set manually with just one stroke of a setting lever.

Attributes of the 160 series:

- Suitable for different point types, point openings and gauges,
- Redundant, progressively adjustable spring force for safe position of point tongues,
- End-position damping for noise reduction

2.5 Point Machines 180 series

For points which are trailed and also for points which are faced and seldom re-set, a manual point machine is the most pragmatic and economically-efficent solution. Manual point machines made by HANNING & KAHL have proven themselves in decades of worldwide operation.

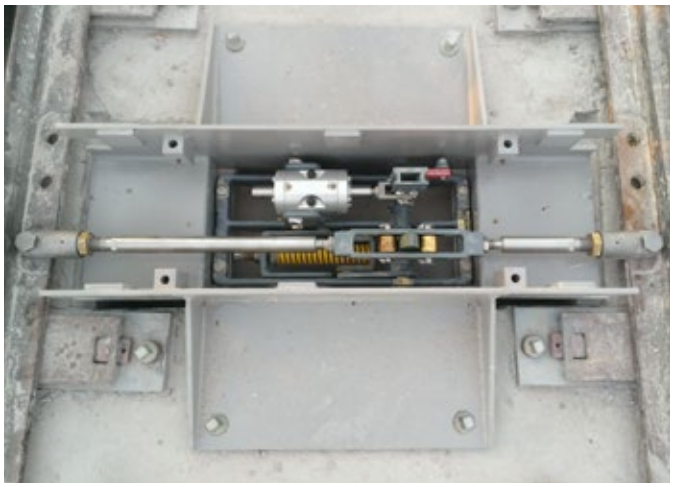
The new HANNING & KAHL 180 series is ideal for robust deployment in flat-bottom points. Manual setting convinces operators with an extremely powerful spring assembly and uncomplicated and simple manual activation – and with point openings up to 160 mm.

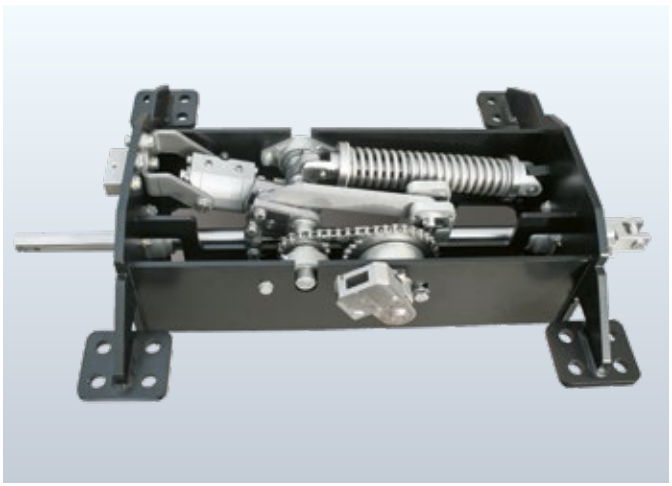
Attributes of the 180 series:

- High spring forces
- Low manual setting forces
- High availability
- Low maintenance requirement
- Effortless installation

Technical data 160 series	
Drive	manual, in throw-over and trailable function
Point type	grooved rail (deep-bed), flat-bottom
Retention	up to 2,000 N
Point opening	up to 100 mm (up to 80mm in spring-back function)
Overall height	450 mm incl. earthcase

Technical data 180 series	
Drive	manual, in throw-over function
Point type	flat-bottom
Retention	up to 4,000 N
Point opening	up to 160 mm
Overall height	300 mm





3 | Further Applications

Trend-Setting Technology

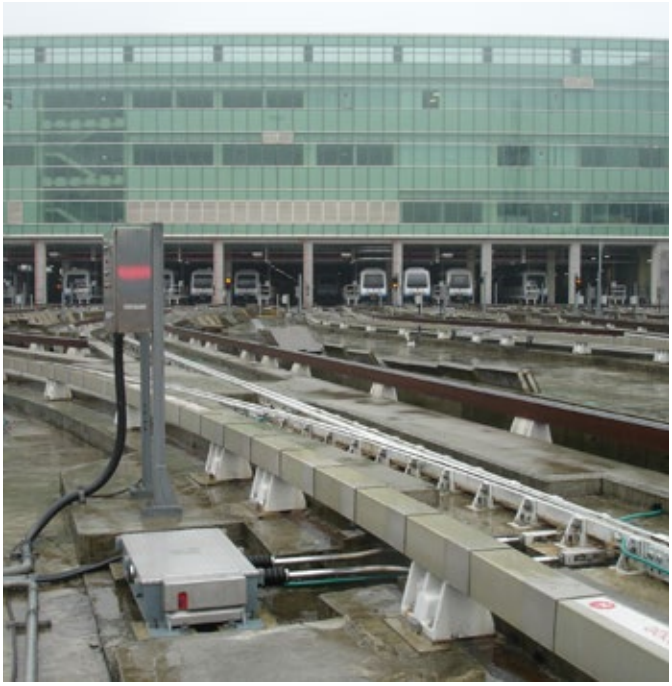
Exporting expertise

Unconventional tasks call for extraordinary expertise and commitment. At HANNING & KAHL, we welcome challenges. In teamwork with customers we put innovative solutions into practice. The experience and innovative strength of HANNING & KAHL are appreciated all over the world, including Asia and the USA, where sophisticated projects are often realised.

3.1 People mover point machines

People movers are driverless transport systems. Trains drive on rubber tyres and are guided by a rail in the centre of the trackway or they use the customary wheel-rail system. Here, too, international operators rely on the superior and proven systems supplied by HANNING & KAHL for point-setting and locking technology.

Our point machine locks points with positive locking. Vehicles are not given the go-ahead until end position and locking have been double-checked. The point-setting system is installed in line with individual wishes. All electrical drive variants can be catered for.

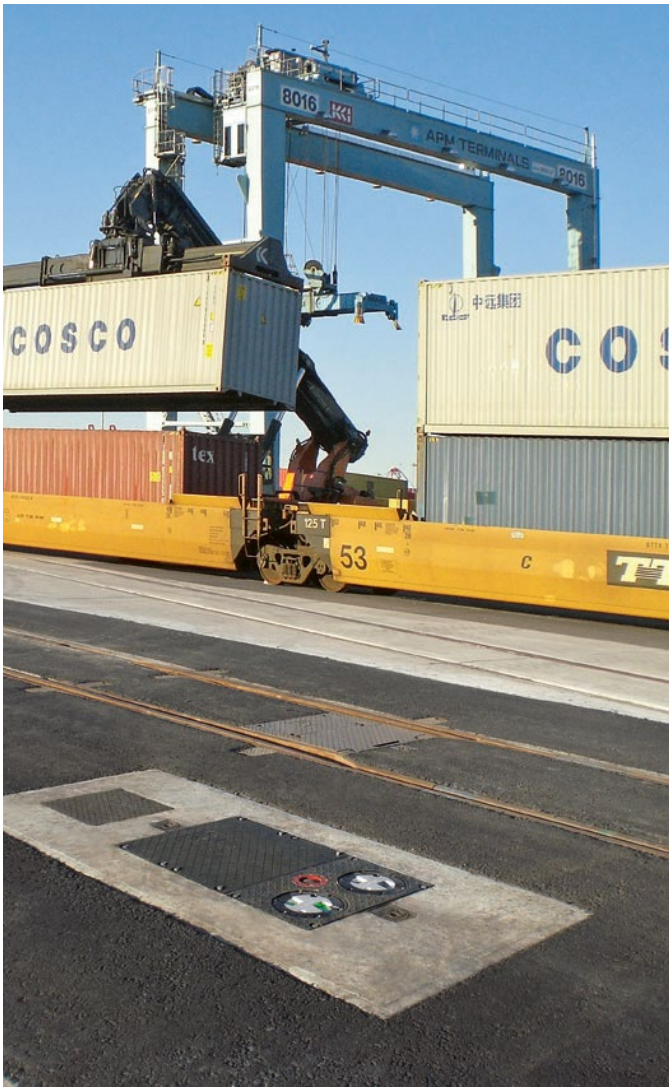


Point machine for the People Mover

3.2 Switch & Control

Technical equipment deployed in container terminals is exposed to extreme conditions. Engineers and operators all over the world are convinced by the legendary stability of HANNING & KAHL point machines.

For special requirements: all components, including the point controller and signals, are embedded in the ground and can be crossed by heavy road traffic. Embedded installation ensures free transportation routes and prevents vandalism and unauthorized activation. The heart of the unit is the proven HANNING & KAHL point machine of the 61 series with electro-hydraulic drive and integrated point controller. To start the point-setting procedure, the point controller is activated via a foot actuator. The resulting point position is signalled by two LED indicator lamps.



Switch & Control for the container terminal

3.3 Point Machines for frogs and wing rails, sequence and multi-tongue points

Increasing networking of tram and light rail vehicles bring new requirements for line management. Today, tram and light rail vehicles drive on tracks which combine 1,000 mm and 1,435 mm gauges. The solutions are special points with HANNING & KAHL point-setting systems, e.g. frog and wing-rail points. Here, the movable point parts are set by HANNING & KAHL technology, secured in their end positions and checked.

Further special applications include sequence or multi-tongue points. For these variants, too, proven HANNING & KAHL point-setting technology can be used without limitation.

Double diamond points

3.4 ILASS® Integrated Locking And Switch System

ILASS® combines point lock and point machine in one system - the outstanding advantages of the CDP point lock EVZ and the HANNING & KAHL point machines H715 in a compact, robust system. The result: superior performance, greatest convenience and highest reliability. ILASS® is SIL 4 in compliance with CENELEC EN 50129 approved as an all-in-one system and predestined for all flat-bottom rail networks with its compact design:

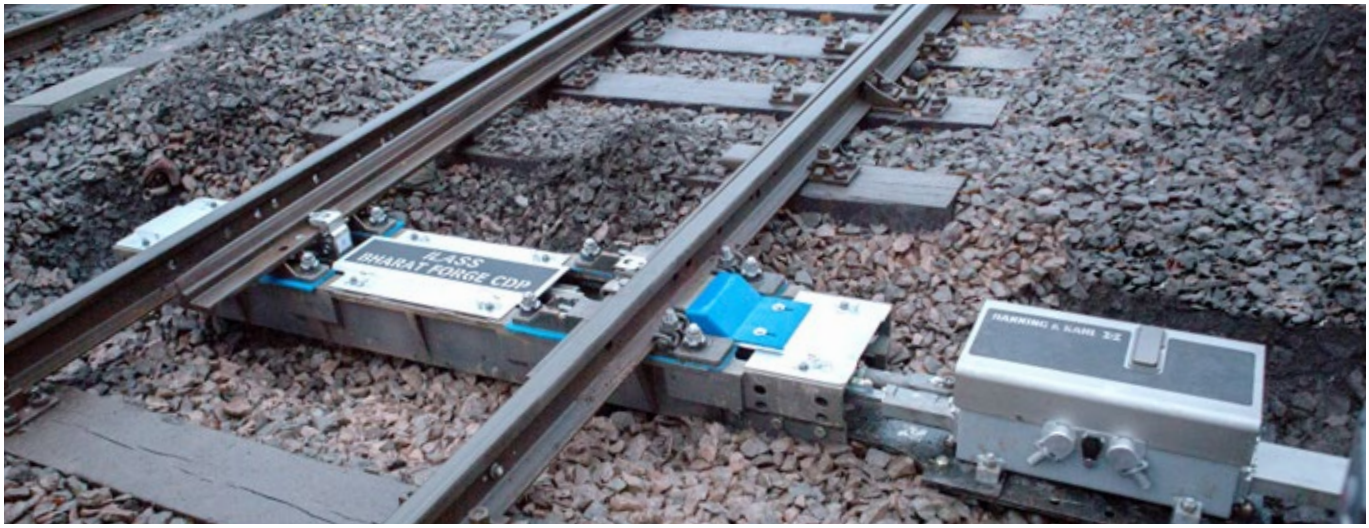
- Mainline, high-speed and heavy-duty traffic
- Secondary and industrial lines
- Metro/underground railways
- Tram and light rail lines

ILASS® can replace existing point machines with minimum retrofitting effort. The standard interfaces (detector and drive rods) can be used. Installation side can be freely chosen and easily changed.

3.5 Point Machines of the Solar Series

In order to be able to electrically set points even when they are on remote track lines, the HWE solar point machine gets its drive energy directly from solar radiation. A solar panel mounted beside the installed point machine charges a battery in a controller. To set the point, the train driver merely operates the pushbutton on the controller. The point is then electrically set, the point end position can be visually displayed.

This rationalises rail operations and makes life easier for vehicle staff on branch lines of factory sidings and industrial railways. The point-setting system offers you flexible and efficient sequences and convenient and safe operations ... with very low investment and minimum follow-on costs.



ILASS® installation

4 | Service and Accessories

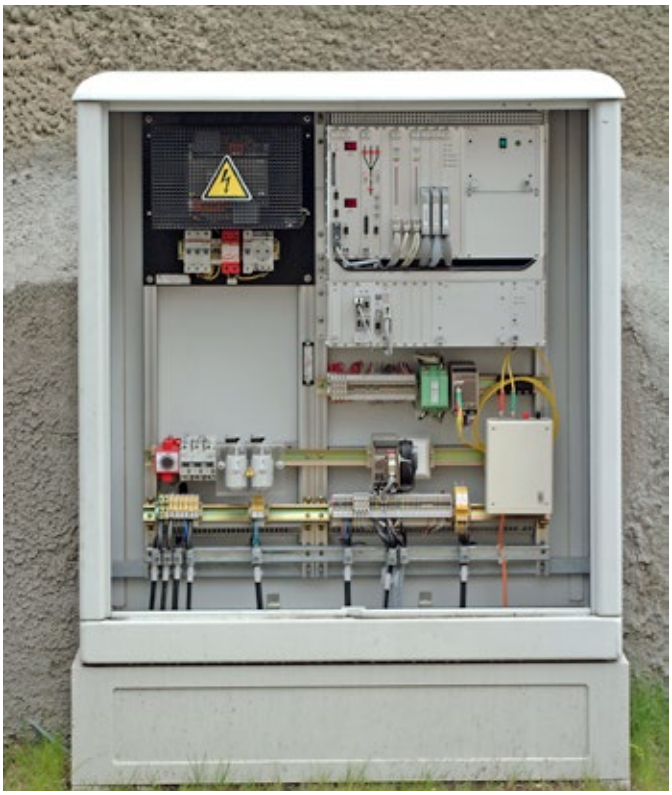
Trend-Setting Technology

4.1 Point controllers

HANNING & KAHL offers economically-efficient solutions in modular design even for the control of single points. After analysis of requirements, HANNING & KAHL configures customer-specific point controllers which function safely.

At the heart of each HANNING & KAHL point controller is the innovative Vital Processor System HN-P. This powerful and stable system works with unsurpassed reliability and can be supplied with each commonly available detection and communication system. The point controllers fulfil the requirements of the German BOStrab and all international standards.

The superior technology of HANNING & KAHL point controllers can also be deployed in multiple/sequence point controllers, which means that each unit can be extended by modules.



Single point controller

4.2 Track accessories

The requirements for track installation materials are very versatile:

- **rail boxes**
- **screw-on track drainage boxes**
- **insulated tie bars**

Grooved rails pose particularly demanding challenges as they are crossed by road traffic in rough conditions. In addition to simple assembly and straightforward commissioning, high availability and minimum maintenance are essential. Screw connections must endure while subjected to a high degree of contamination and be easily disconnected when required. As regards corrosion resistance, rail boxes must remain intact for years, regardless of environmental impact from stray currents or winter salting. HANNING & KAHL provides a large range of track accessory components which meet all requirements.

Rail boxes on grooved rail

Rail boxes on grooved rail

4.3 Documentation

In line with their high level of safety, all point-setting systems are documented in detailed and precise manner. For every product, our customers receive structured and vividly designed operating manuals with graphic representations and photos in the file format of their choice. The technical data and the functional descriptions of all individual components are documented with precision. All setting, maintenance and service work is illustrated in self-explanatory manner with photos.

Product documentation contains among other things:
- 3D point installation drawings
- Electric and hydraulic diagrams
- Final post-assembly inspection protocol
- Commissioning protocol
- Safety data sheet and declaration of conformity
- Spare-part catalogue

4.4 ConnAct®-diagnosis

ConnAct® diagnosis

Continuous real-time monitoring (online monitoring) of infrastructure takes malfunction management in maintenance operations to new quality heights and thus creates the decisive basis for increased system availability and further cost reduction. ConnAct® continuously monitors point machines and point controllers, signalling installations as well as level crossing installations, communication systems and rail lubrication equipment. Malfunctions are automatically identified and forwarded in regulation-based manner to the processor in the control centre, the workshop, the on-call service or the mobile unit.

Continuous system monitoring is the pre-condition for timely detection of anomalies and thus for needs-based maintenance.

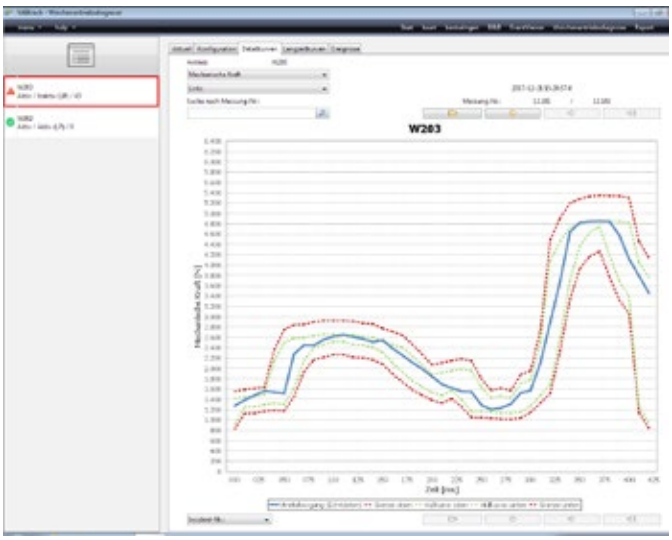
Apart from the bespoke diagnostic possibilities of HANNING & KAHL products, further products and systems from external suppliers can be integrated and monitored.

4.5 Quality assurance

At HANNING & KAHL, conscientious quality management ensures constant product quality. Every single HANNING & KAHL point machine is subjected to a post-assembly examination. All the characteristics of the point machine are registered, documented and analysed. Important production data and performance parameters remain accessible for later applications.

After different preliminary tests on the individual components, the entire point machine is subjected to a tightness test, simulating the pressure of a 3-meter water column on the housing.

Quality inspection during assembly



ConnAct®-diagnosis – mechanical force curve

4 | Service and Accessories

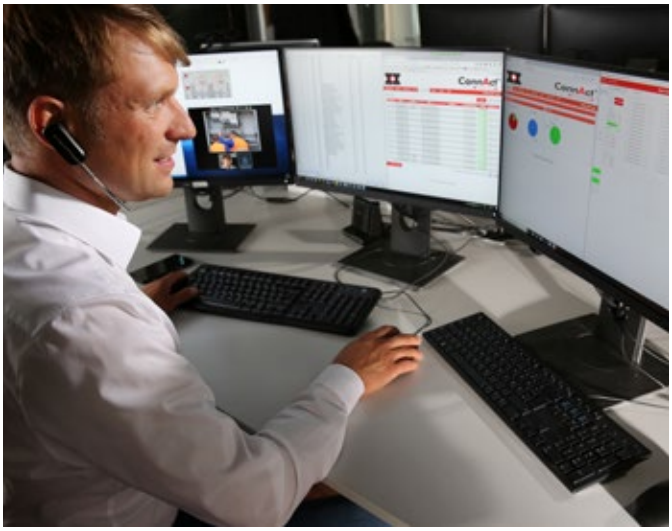
Trend-Setting Technology

4.6 ConnAct®-service

In this basic function, the data transmitted by HANNING & KAHL's event recorder is analysed with diagnostic software. Following analysis, contact is made to the operator to provide technical support or enable him to remedy the problem himself. We arrange an individual service package taking your wishes and needs into consideration. This can be a hotline on workdays, a 24/7 hotline with on-call service or a guarantee that a member of H&K staff will be on site within 36 hours. HANNING & KAHL can act immediately and remedy the malfunction with technically substantiated assistance.

Service-Hotline:
+49 5202 707-707-2 oder +49 171 3360360

E-Mail:
service@hanning-kahl.com



Telephone support via video conference

4.7 Workshops

Training consists of a theoretical part and a practical workshop which is greatly appreciated by our customers. Workshops are in German or English. We offer bi-lingual workshops on point controllers. On request, we can tailor workshops to the particular equipment which you operate. We would be pleased to customise a free, non-binding offer to your requirements.

Workshops in English and German

4.8 Testing and service equipment

HANNING & KAHL has developed practical testing equipment and service devices, specially designed for the requirements of the light-rail sector, e.g.:

- **HZM tongue-force measuring devices**
- **Setting lever with built-in measuring device**
- **Lock Inspector**
- **Tool kits**

This equipment offers optimum support when troubleshooting, recording test results and planning service work.

Whether assembling or commissioning, inspecting or performing maintenance work, repairing or overhauling: HANNING & KAHL testing and service equipment and our on-site work help to avoid unnecessary costs by identifying malfunction sources at an early stage. Technically speaking, you are always one step ahead.

Force-measuring device HZM in operation

Developing the Future Together

Adelaide
Aigle
Alicante
Amsterdam
Antalya
Antwerp
Appenzell
Arad
Aruba
Athens
Augsburg
Bad Dürkheim
Barcelona
Basel
Belgrade
Bergamo
Berlin
Bern
Bielefeld
Bilbao
Birmingham
Bochum
Bonn
Brake
Brandenburg
Braunschweig
Bremen
Brisbane
Brno
Bromberg
Brussels
Bucharest
Budapest
Bytom
Cagliari
Calgary
Calmbach
Camden-Trenton
Charleroi
Charlotte
Chemnitz
Chengdu
Chiclana
Chorzow
Chur
Cologne
Corus
Cottbus
Cracow
Craiova
Croydon
Dagebüll
Dallas
Danhai
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Point-Setting Systems

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HANNING & KAHL

Hanning & Kahl GmbH & Co. KG
Rudolf-Diesel-Straße 6 | 33813 Oerlinghausen
Phone +49 5202 707-600 | Fax +49 5202 707-629
info@hanning-kahl.com | www.hanning-kahl.com

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