

Integrated Lightweight Signal

Contractors Technical Manual

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1. Document Control

It is the reader's responsibility to ensure they have the correct version of this document. If in doubt, please contact Unipart Dorman to verify the current issue status.

Issue Number	Dated	Reason
1	Dec 12	Initial Issue
2	March 13	Calculator update
3	Jan 14	General Update

2. Safety

This Manual is only applicable to equipment supplied by Unipart Dorman and should not be adapted for use to any other products.

Before commencing work, any local safety requirements affecting the continued safe working environment of the signalling installation and/or the working railway, either directly or indirectly should be carried out. It is the user's responsibility to ensure all necessary risk assessments, permissions to work and preparatory safety activities are correctly completed and adhered to throughout the installation and subsequent life of the signal.

All activity on the iLS, both mechanical and electrical, must only be carried out by staff deemed competent in these fields by their employer. It is the user's sole responsibility to ensure that the iLS is installed and/or maintained by certified and competent staff.

3. Designers Risk Assessment

The table shows a Designers Risk Assessment which can be used by a project to base a formal site assessment upon. It follows the recognised route of scoring the Severity (S) and Likelihood (L) to define the Risk (R). First with no controls applied and a re-evaluation of the risk score after the suggested controls are implemented.

$$S \times L = R$$

Potential Hazard	Details of Hazard or Risk	S	L	R	Action to Eliminate or Control Hazard	S	L	R
Structural failure (after installation)	Injuries to operatives and damage to surrounding infrastructure	3	2	6	Design performance is to NWR PAN/E/CE/SS/0017 for serviceability and Eurocode 3 for ultimate limit state.	1	1	1
Structural failure (during installation)	Injuries to operatives and damage to surrounding infrastructure	3	2	6	Design checks on all components - minimum safety factor = 2.5	1	1	1
Structural failure (handling)	Injuries to operatives and damage to surrounding infrastructure	3	3	6	Operatives to be trained and competent in the installation of the structure. Refer to the Winching and O&M Manual and the warnings contained therein	1	2	2
Manual handling injuries	Injuries to operatives caused through incorrect handling techniques or overloading of the column	4	3	12	Designs Follow installation guidelines Refer to the Winching and O&M Manuals for recommended handling and safe load limits Follow safe manual handling techniques	2	2	4
Trapping (Handling)	Installing operatives hands and/or clothing could become trapped between Signal/Trunnion and the foundation and/or other features	4	3	12	Follow installation guidelines _ Keep fingers and loose clothing clear of these areas	2	1	2
Slips, trips and falls during erection	Installing operative could fall causing injury	3	3	9	Supervisors to assess the ground conditions and take adequate precautions to guarantee secure footing for workers. All workers to be wearing Appropriate and Serviceable PPE and observe the instructions detailed in the Winching and O&M Manuals	1	2	2
Working near OLE	Electrocution of workers	4	1	4	Refer to Rule Book specifically the 'Nine Foot Rule' Work to an authorised method statement	2	1	2
Working near 3rd Rail	Electrocution of workers	4	1	4	Refer to Rule Book regarding working in 3rd. Rail areas. Work to an authorised method statement	2	1	2

Trap risk (trunnion hinge)	Injuries to operatives	4	3	12	Keep fingers and loose clothing clear of these areas Refer to O&M Manual.	2	1	2
Winch failure during operation	Injuries to operatives and damage to surrounding infrastructure	3	3	9	Operatives to be trained and competent in the installation of the structure. Refer to the Winch Manual and the O&M Manual and the warnings contained therein regarding safe operation and Safe Working Loads. Staff to undertake training and certification	1	1	1

4. Introduction

The Unipart Dorman Integrated Lightweight Signal (iLS) is a versatile yet simple signalling solution for installation in a wide variety of applications comprising a signal head and its associated support structure. The structure will support a wide range of Unipart Dorman signal aspect combinations available at varying heights as measured from the top of the rail head to the centre of the most restrictive aspect. A structure is deemed to be an aluminium base fitted with a Glass Reinforced Plastic Post, which depending on where the signal is to be used and the overall height/weight combination, may be reinforced with an internal aluminium sleeve.

This Manual has been produced to assist Project Engineers and Designers when specifying the Unipart Dorman iLS and is based upon the information contained in the Generic Form A & B as approved by Network Rail.

There are separate Winch and Operator and Maintenance Manuals which contain details of winching and installation of the signals and these are available from Unipart Dorman

Unipart Dorman undertake a bespoke manufacture of each signal and because of this feature the signals will only be applicable to the unique signal identifier location.

Once installed the Unipart Dorman iLS has no means of access to the signal aspects other than by lowering the signal to the horizontal using the method described in the O&M Handbook.

5. General Information

5.1 Signal/Post Height

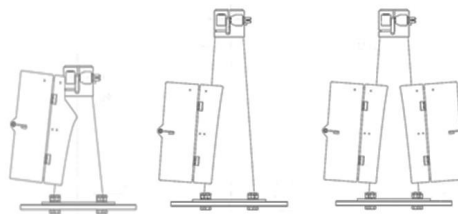
The individual signal height to the centre of the most restrictive aspect is determined by a combination of Cess depth details taken from the topographical survey together with the specified height above the rail dimension as shown on the Signal Sighting Form (SSF). This then gives the post length for that specific signal. This dimension and the unique signal identifier (taken from the Signal Sighting Form) are noted on the signal identification label which is fitted inside the end of the Signal Post prior to delivery to the customer.

5.2 Signal Head Configurations

The aspect configuration is shown on the Signal Sighting Form and can be a combination of many signalling elements combined into one signal head. Each head type is displayed in the configuration section of this handbook with each variant having its own 'TYPE' number (8.).

5.3 Trunnion Mounting

The Trunnion mounts are available in one or two connection box types, standard and short configurations are available.



The Short Trunnion is used where the Signal Sighting Form Specifies a Ground Mounted signal and therefore will not affect its construction or its ability to be installed using a standard Winch kit.

6. Ordering Detail

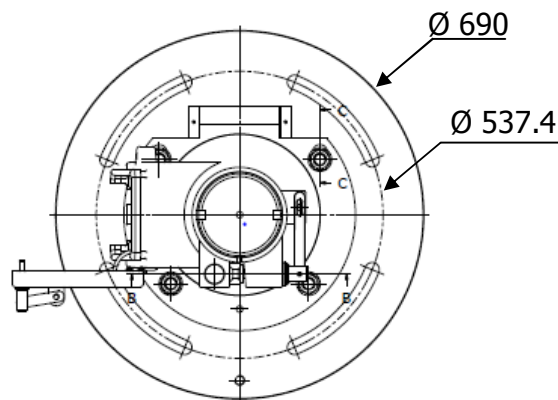
Ordering requires the customer to provide Unipart Dorman with the Cess and Signal Sighting Form details; a quotation is then generated and the appropriate structural documentation pack generated and presented to the customer.

Where there is an element of the information that requires a signal outside the scope of use of the iLS product an additional request for a nonstandard unit will be required and a special-to-type signal order will need to be placed by contacting Unipart Dorman using the contact details at the end of this manual.

Placing the Order

To order a signal contact Unipart Dorman with the required head type, post type together with the individual signal height to the centre of the most restrictive aspect via a combination of Cess Height from the topographical survey and the height above the rail dimension as shown on the Signal Sighting Form.

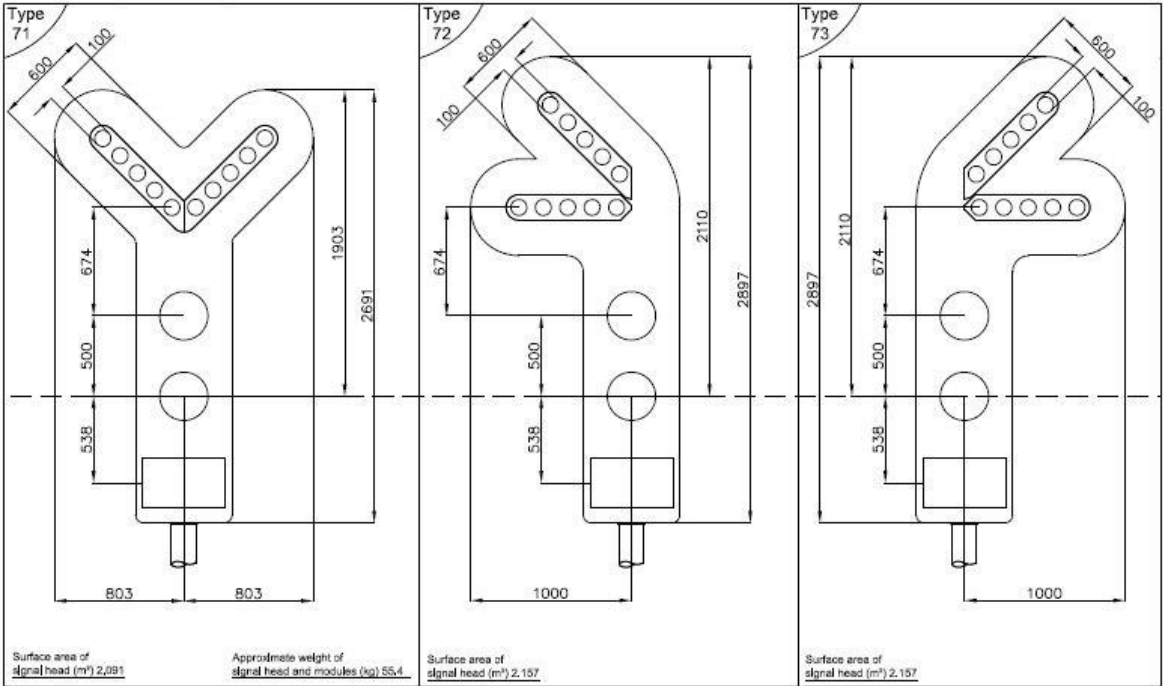
7. Trunnion Base Plate Dimensions

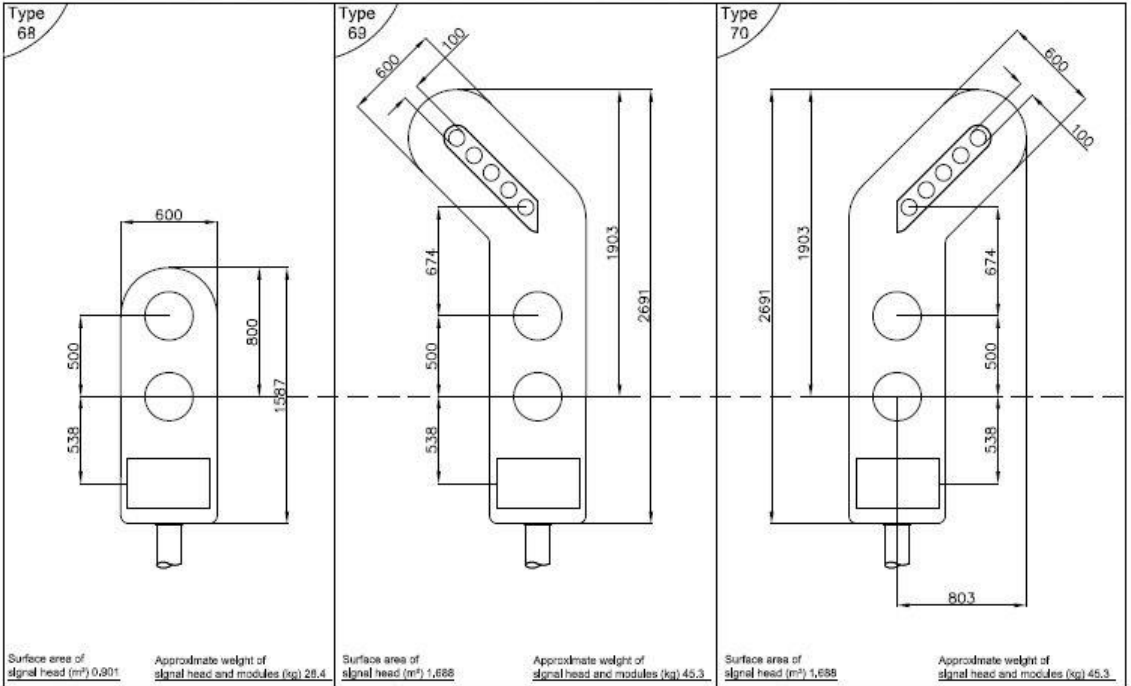


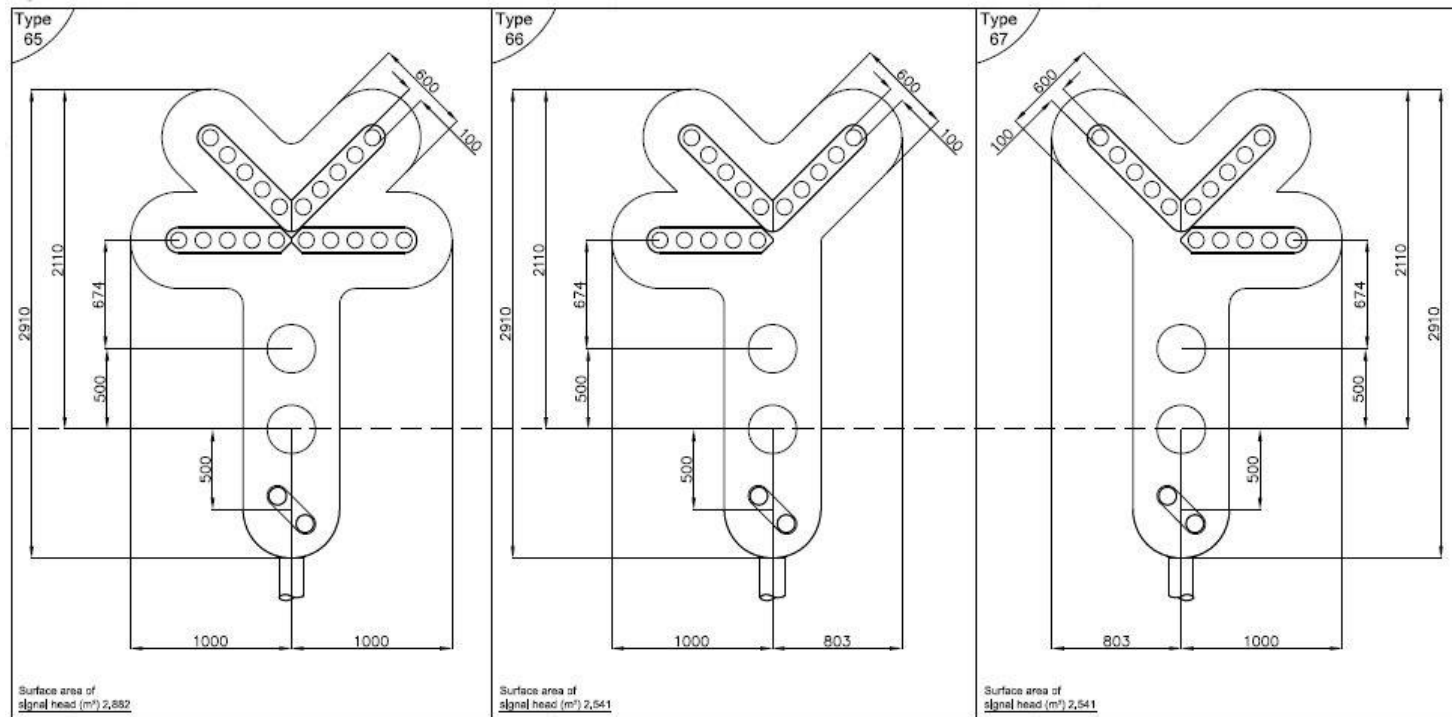
8. Signal Head Configuration Data

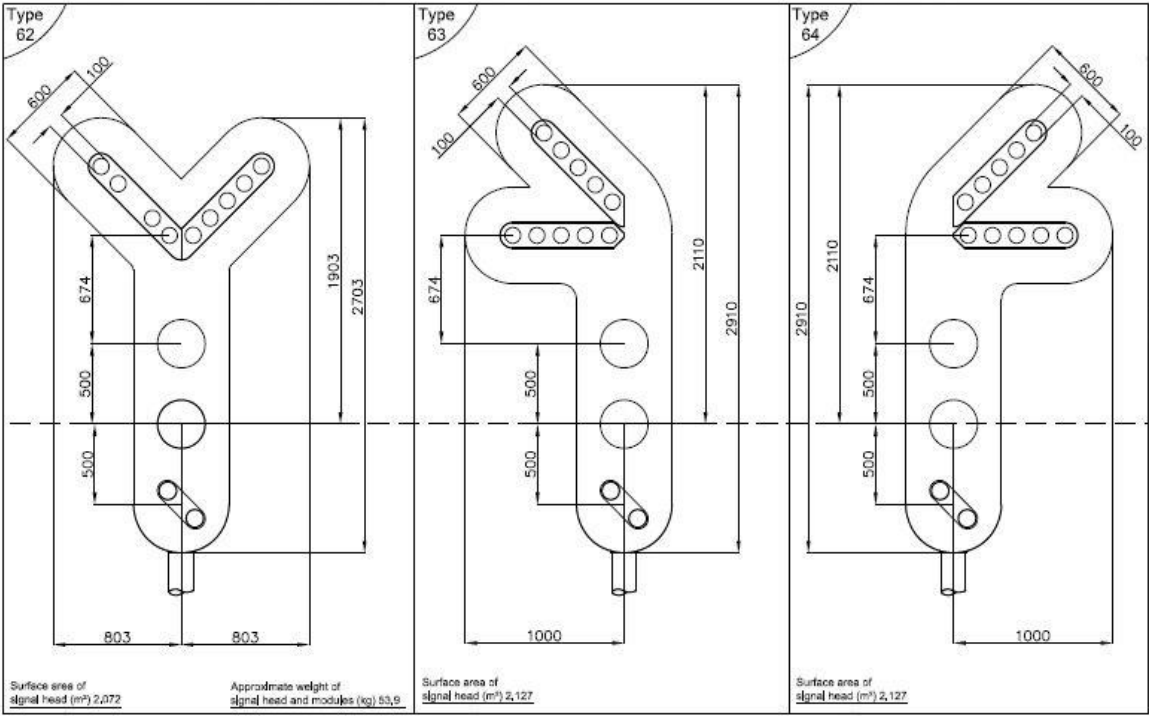
The following pages detail the configuration, signal type number and dimensions of each standard signal available.

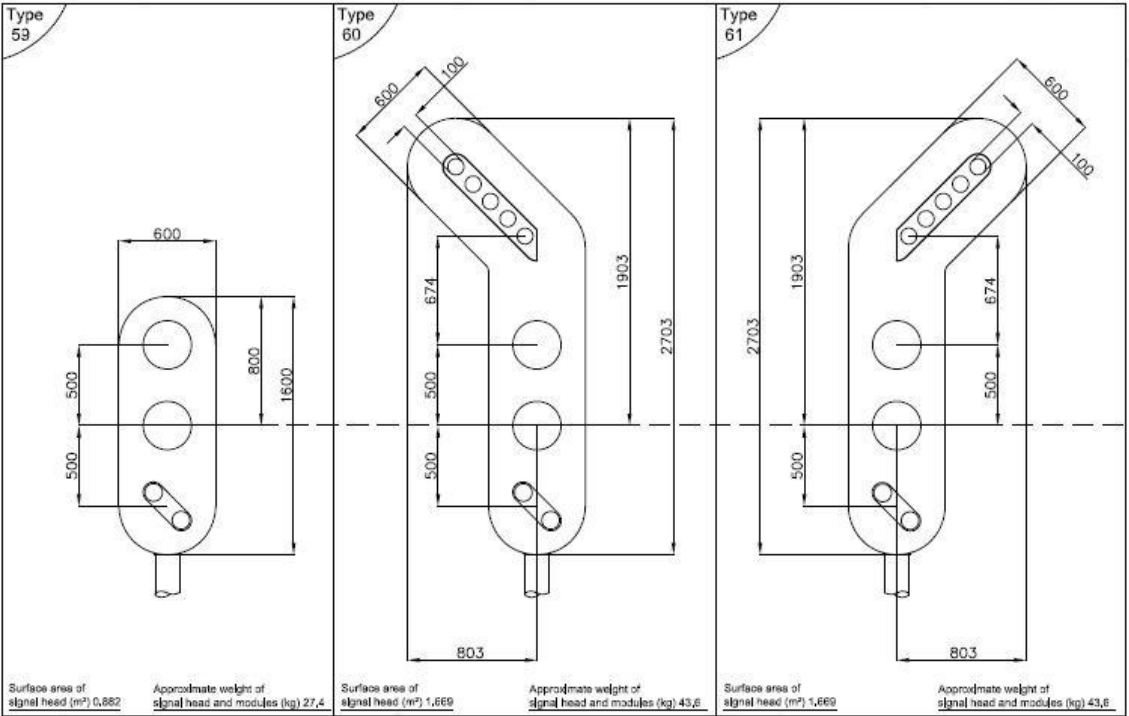
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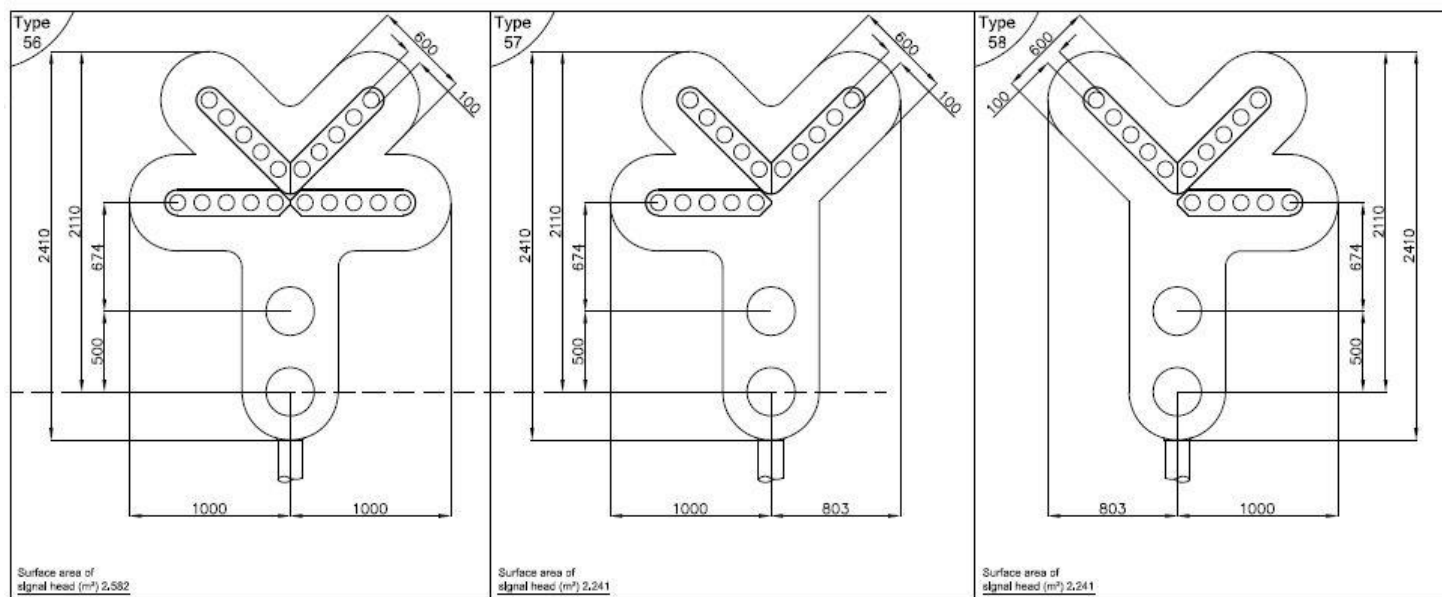


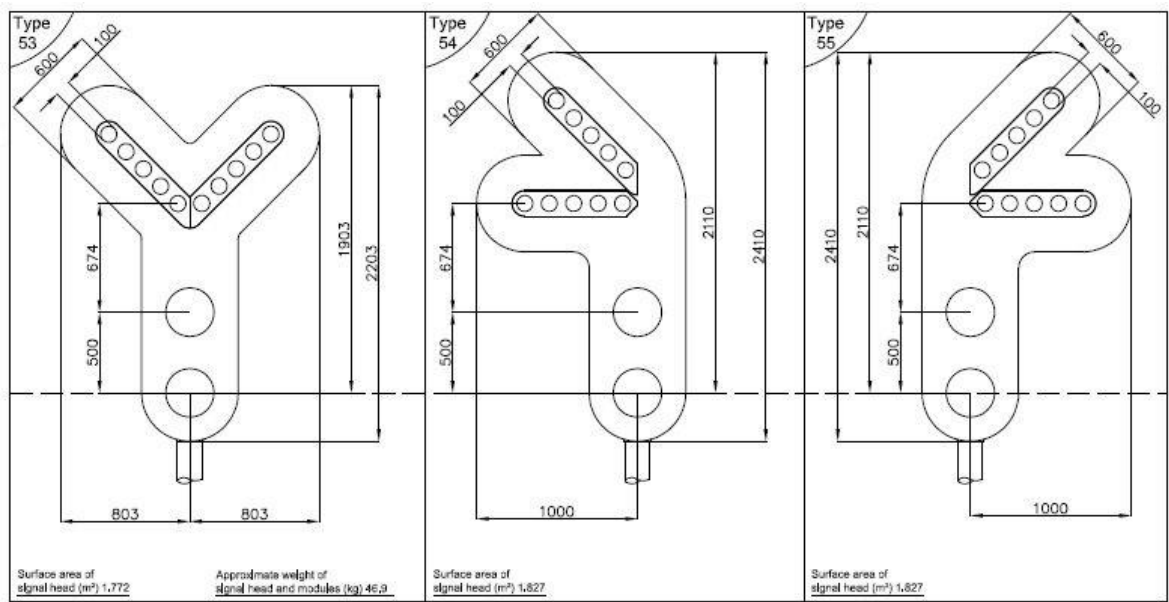


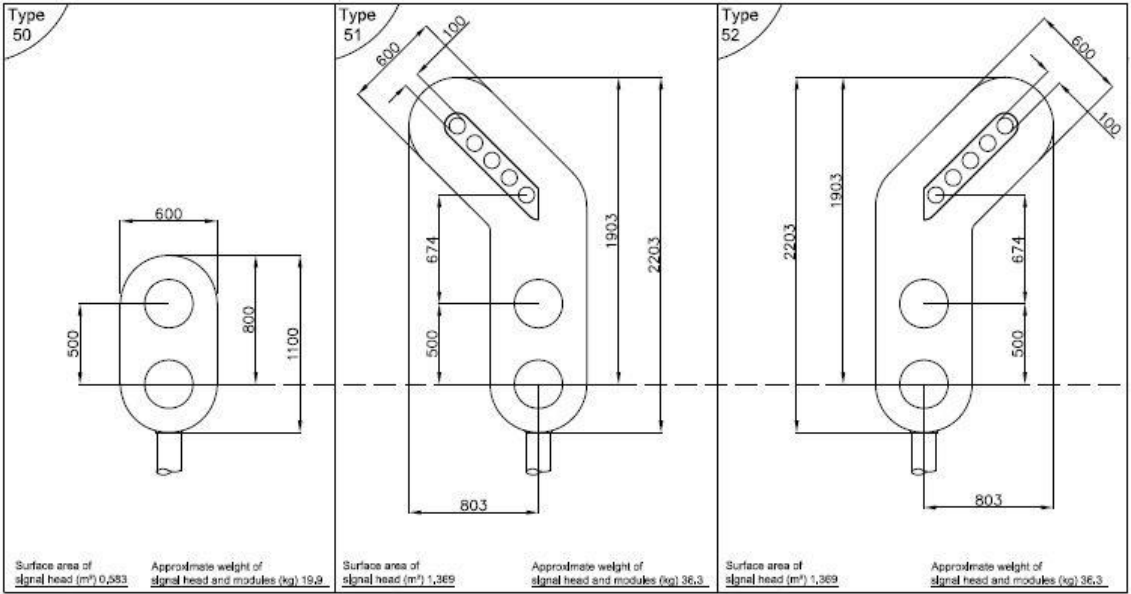


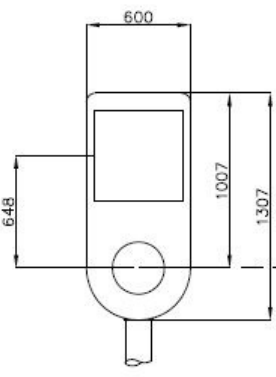
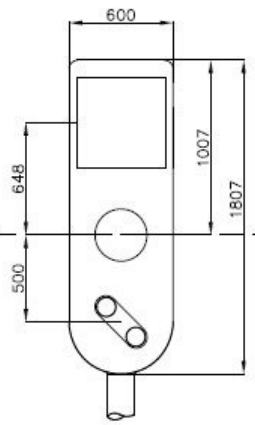
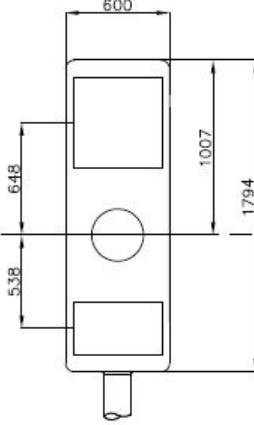
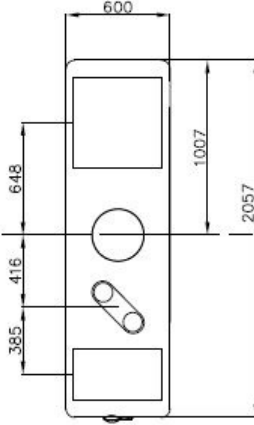


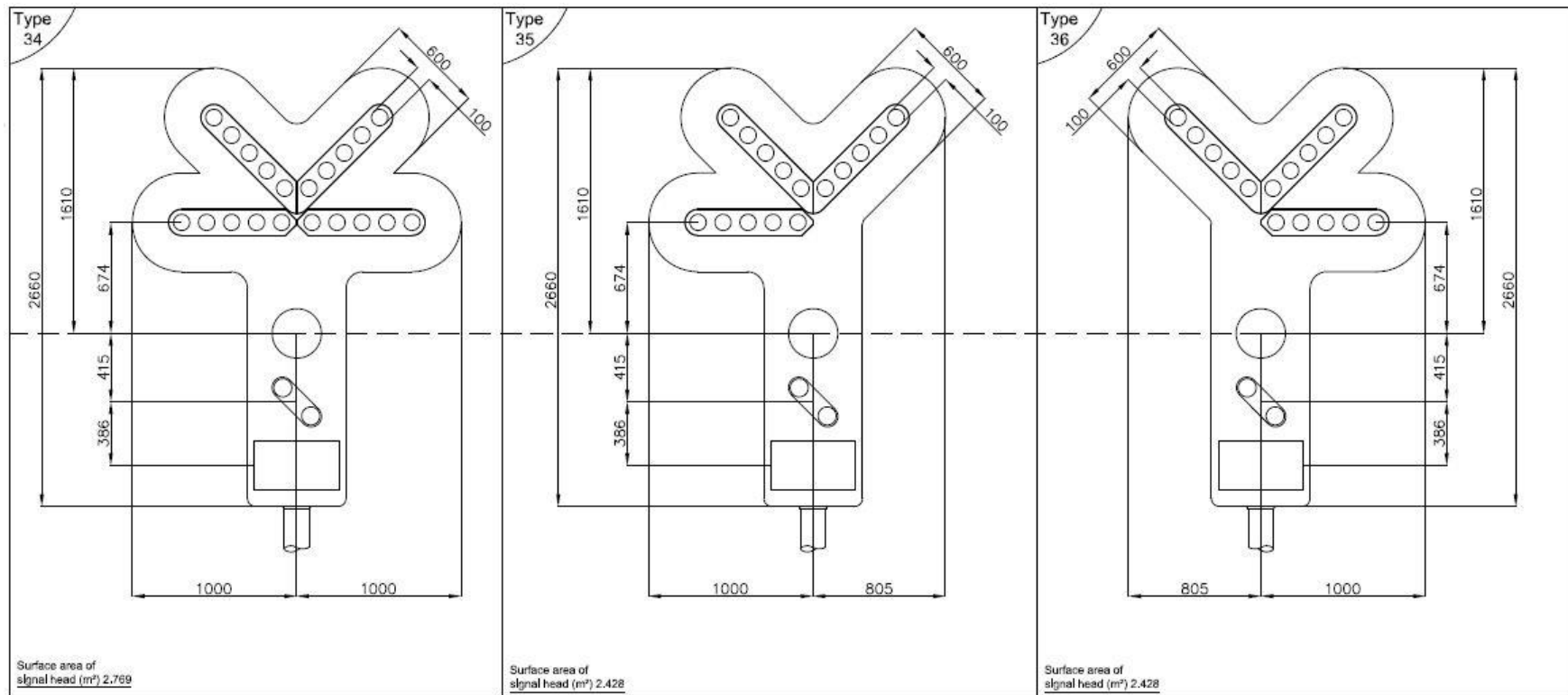


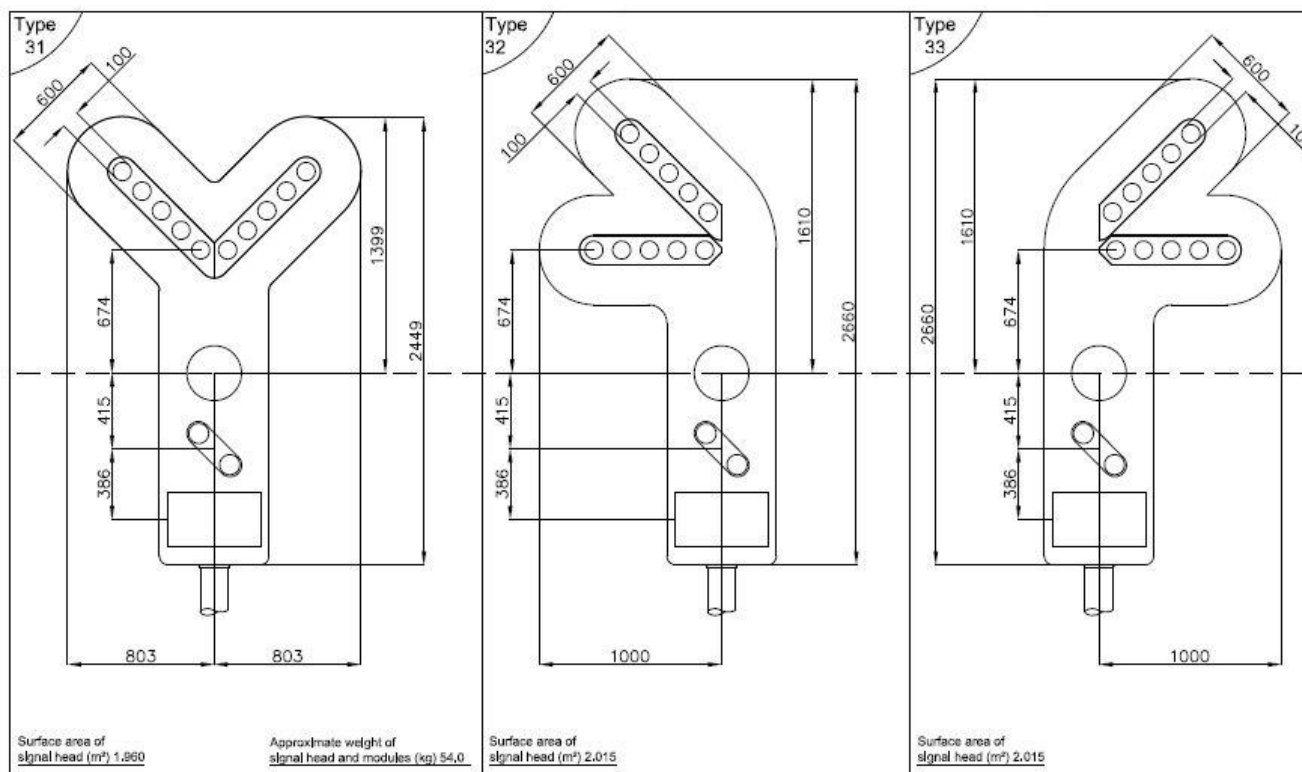


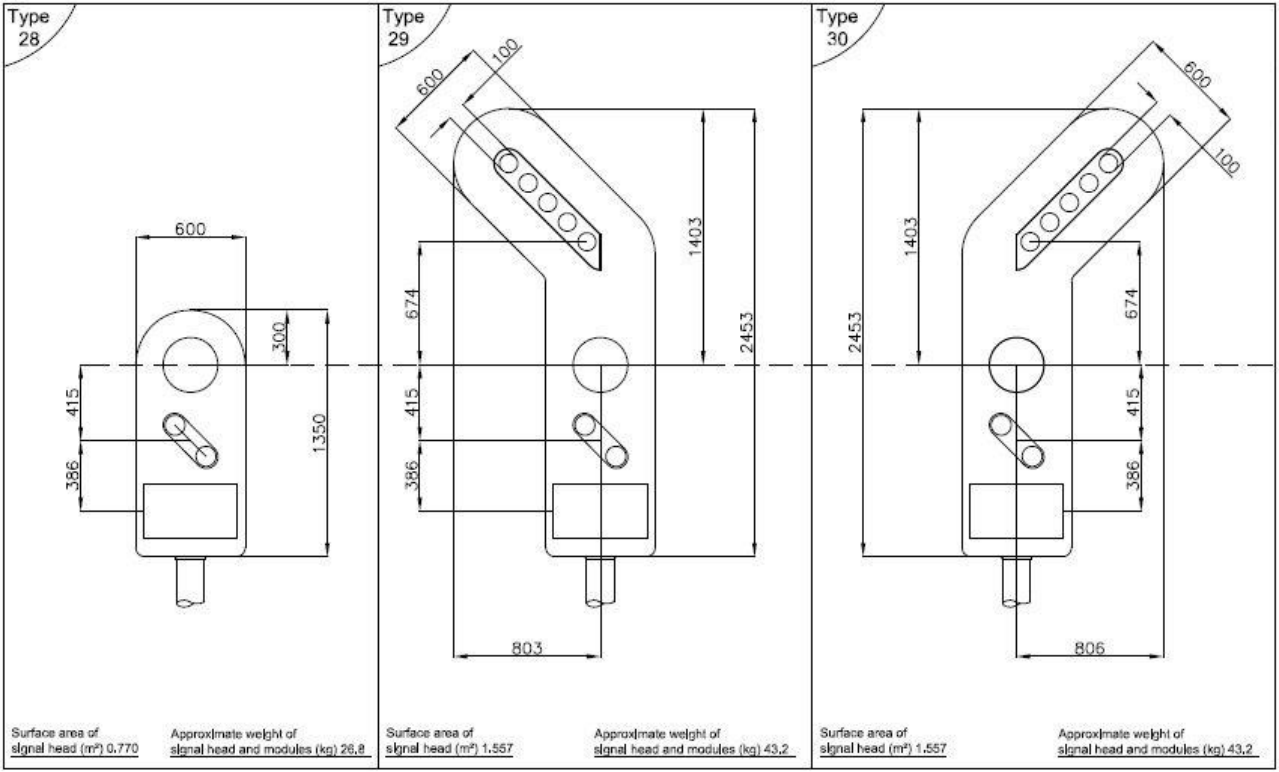


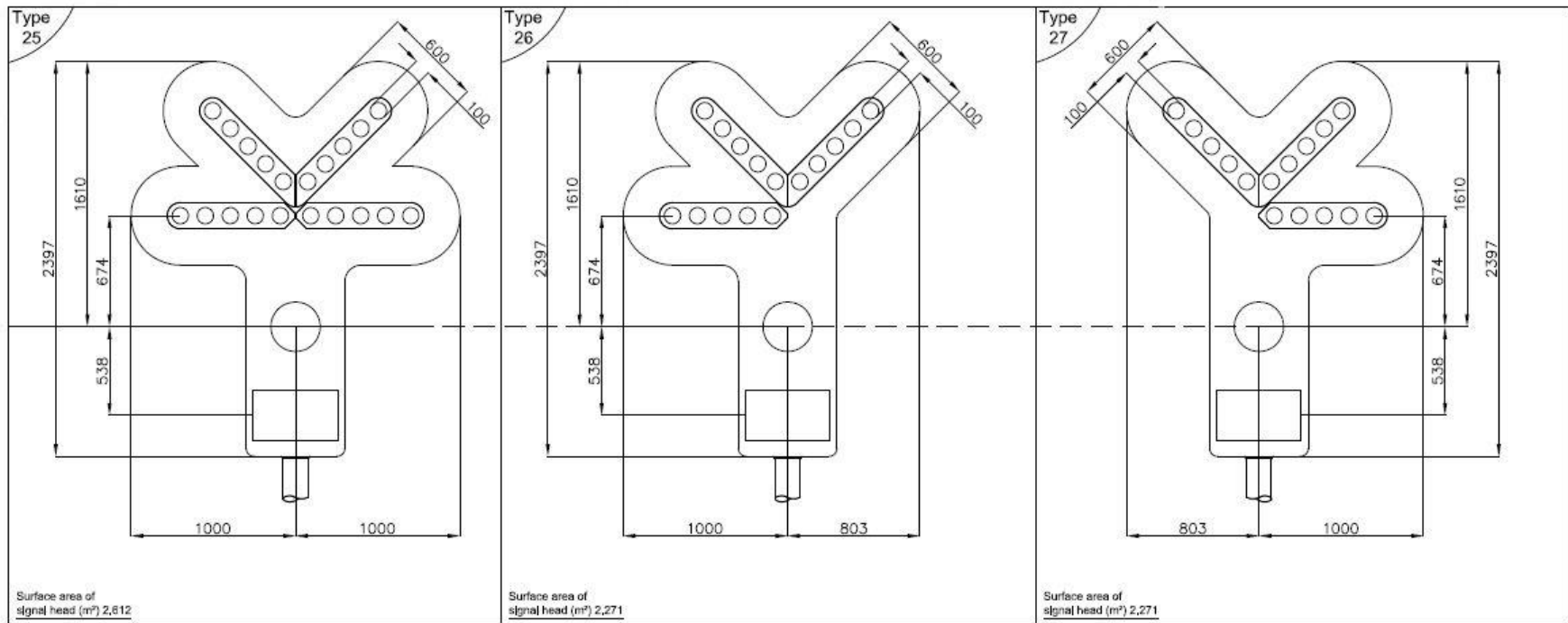


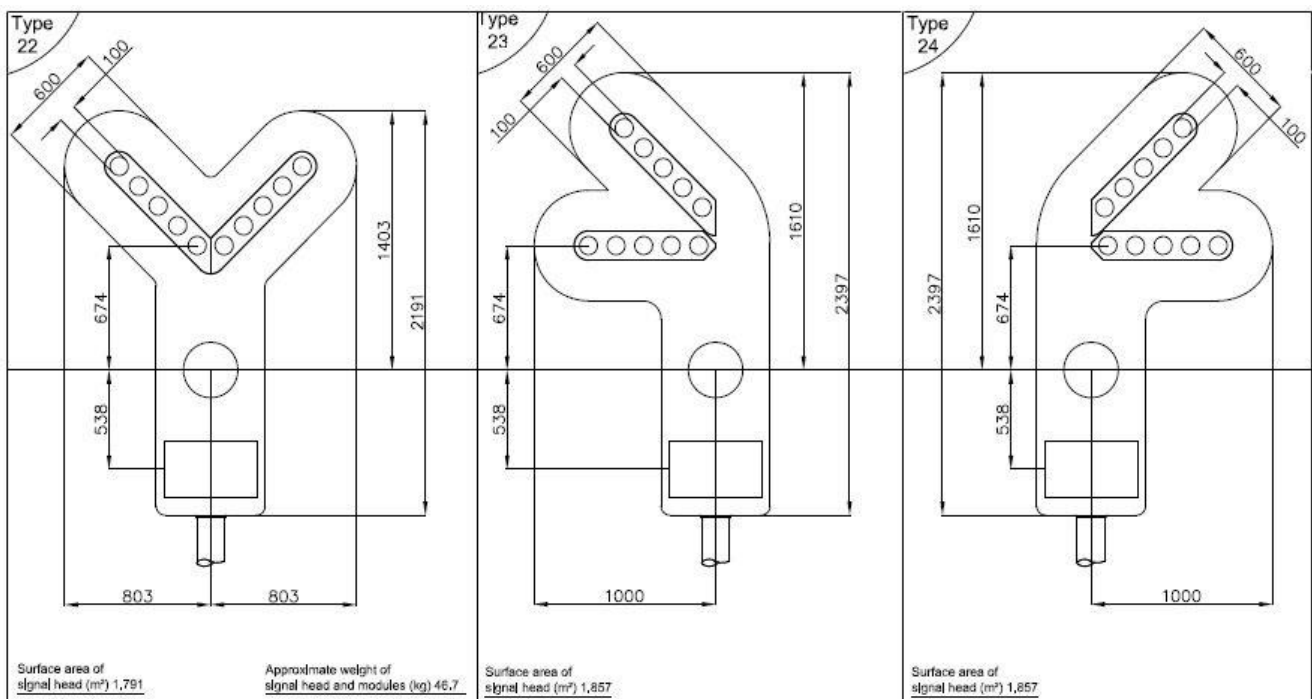
<p>Type 37</p>  <p>Surface area of signal head (m²) 0,790</p> <p>Approximate weight of signal head and modules (kg) 21,8</p>	<p>Type 38</p>  <p>Surface area of signal head (m²) 1,090</p> <p>Approximate weight of signal head and modules (kg) 29,1</p>	<p>Type 39</p>  <p>Surface area of signal head (m²) 1,100</p> <p>Approximate weight of signal head and modules (kg) 32,0</p>	<p>Type 40</p>  <p>Surface area of signal head (m²) 1,278</p> <p>Approximate weight of signal head and modules (kg) 39,0</p>
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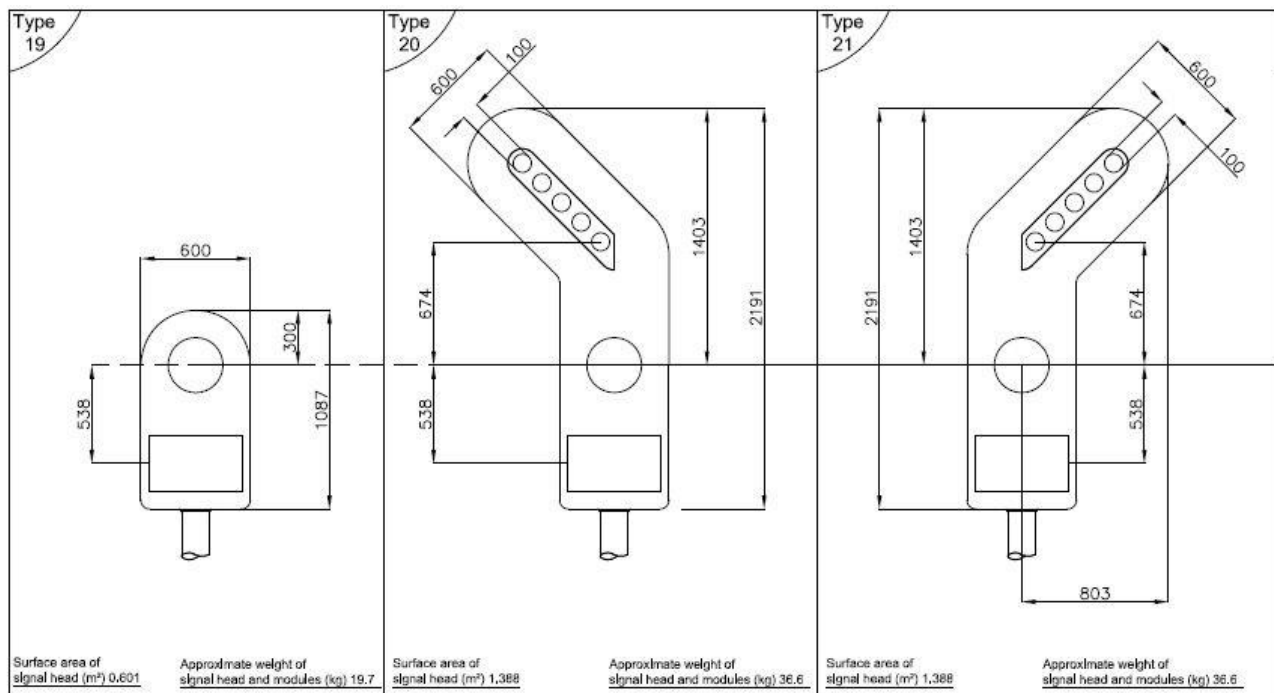


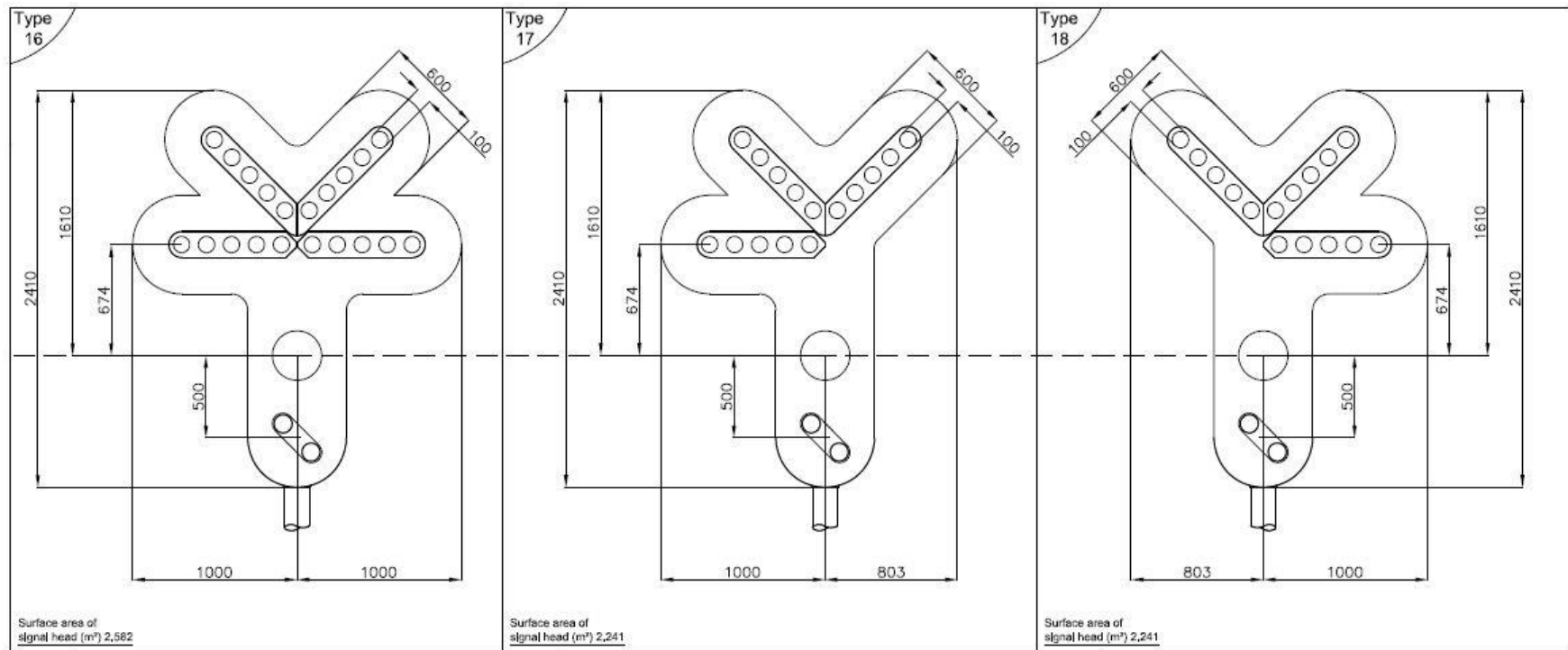


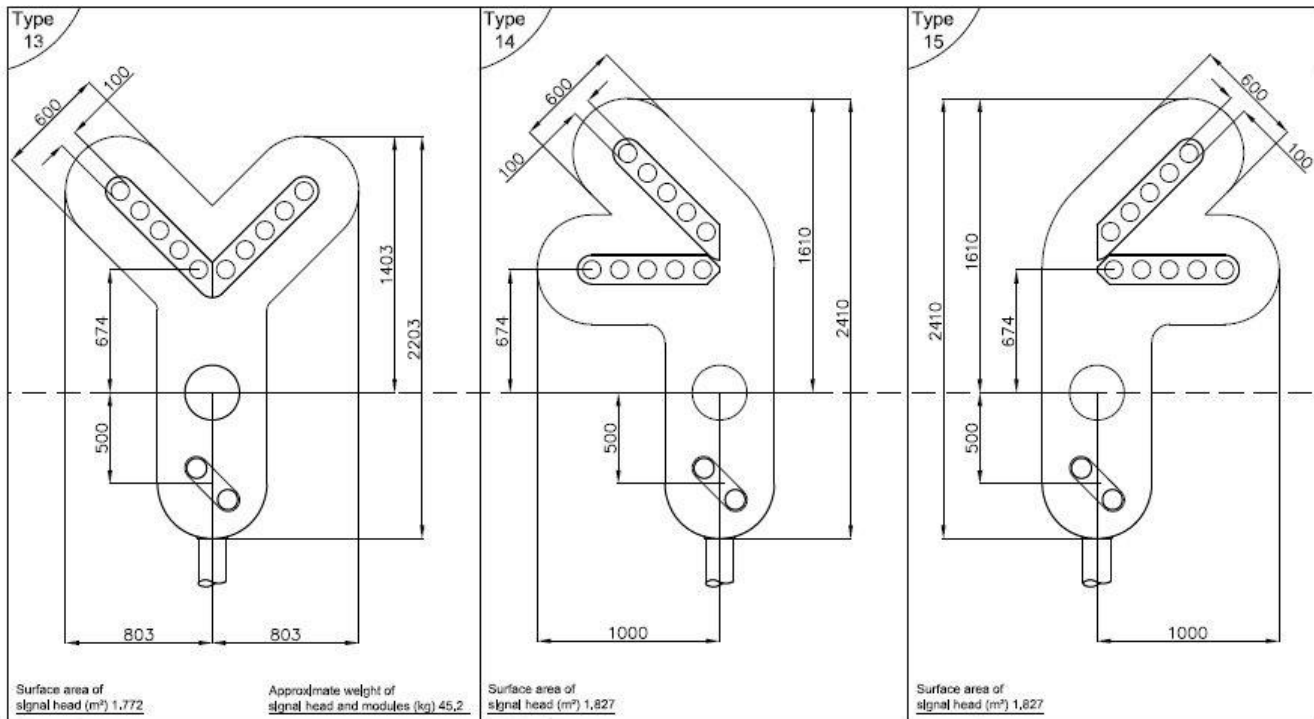


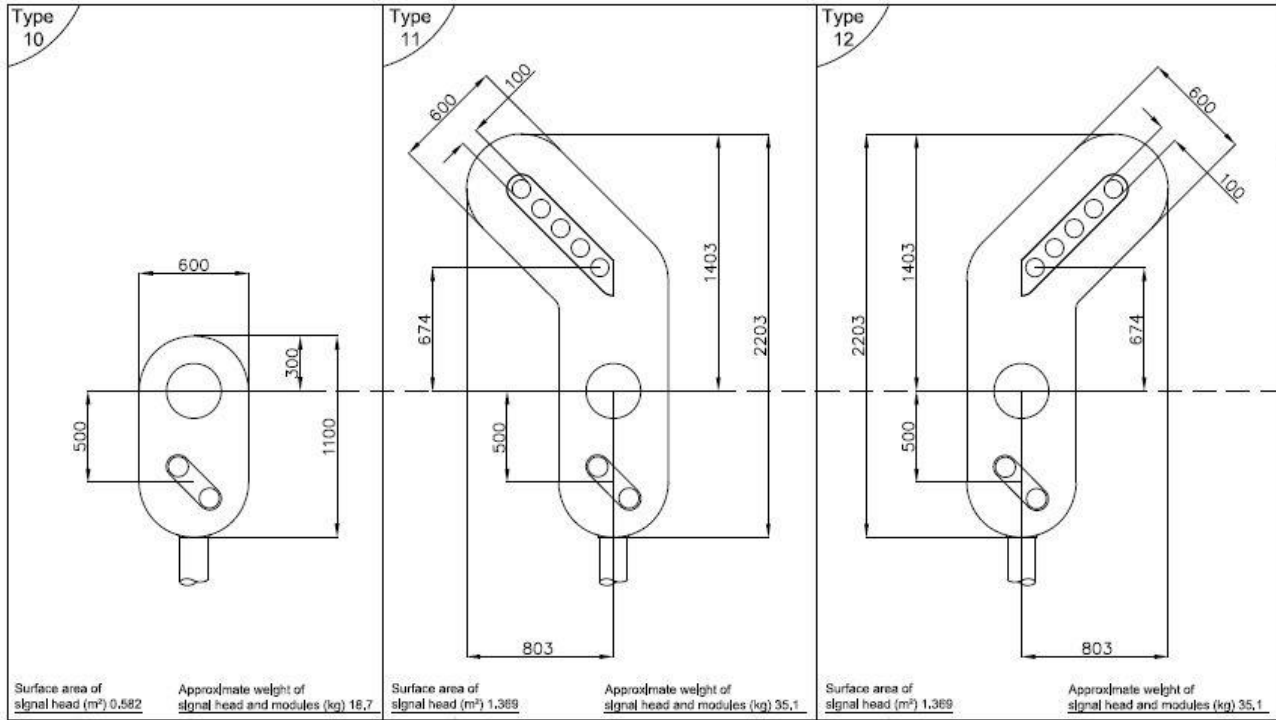


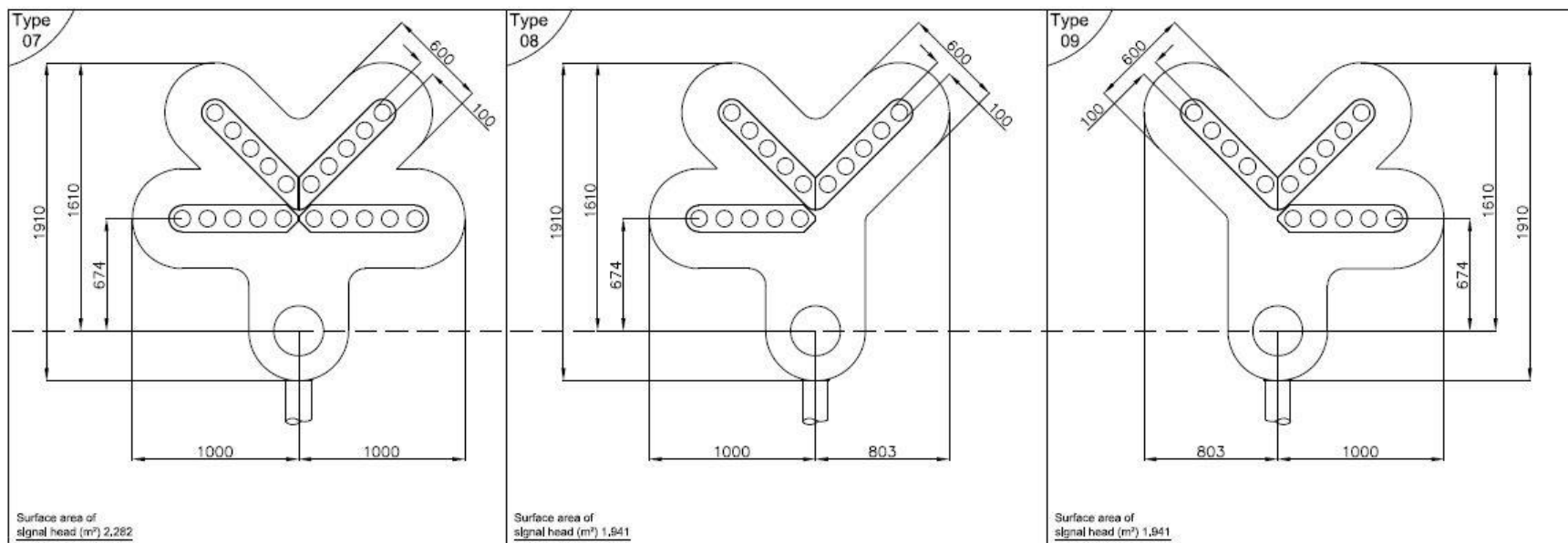


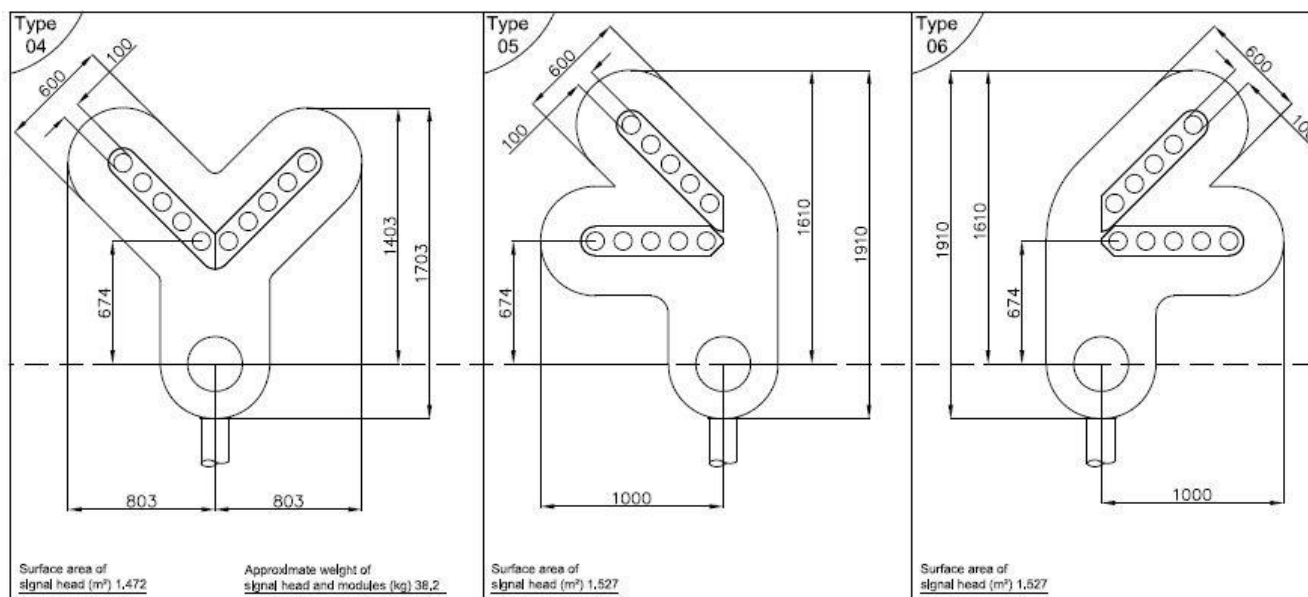


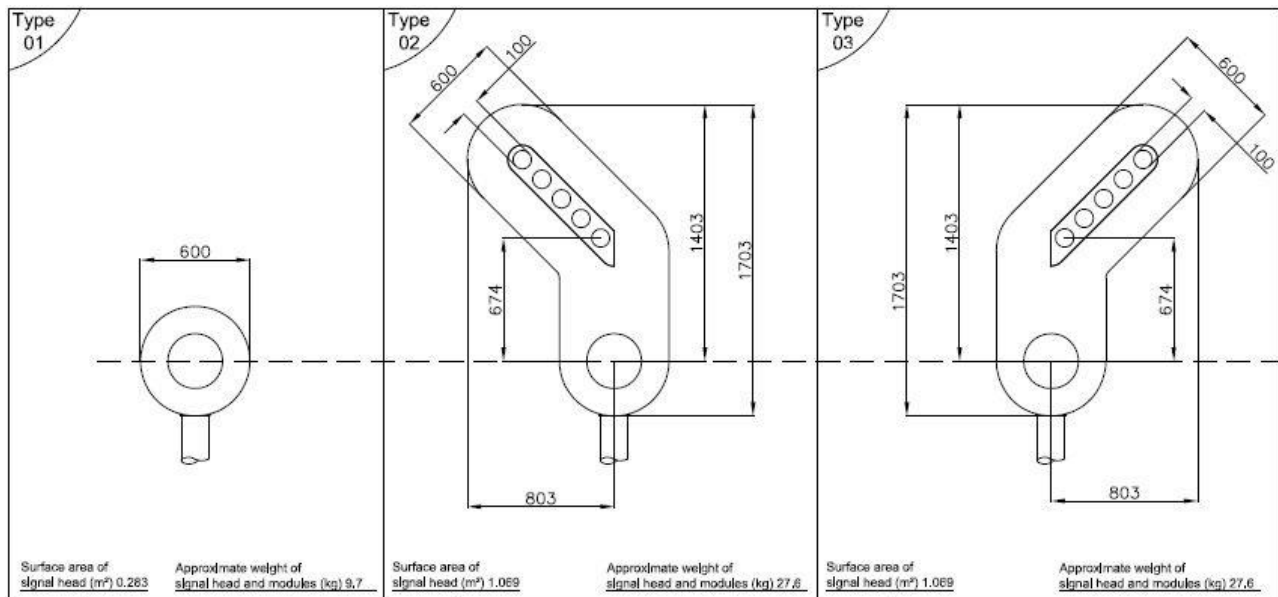


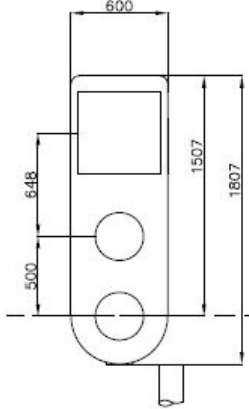
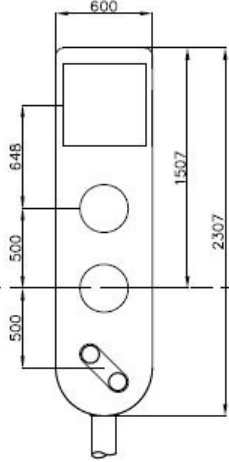
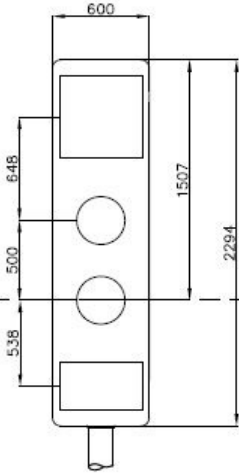
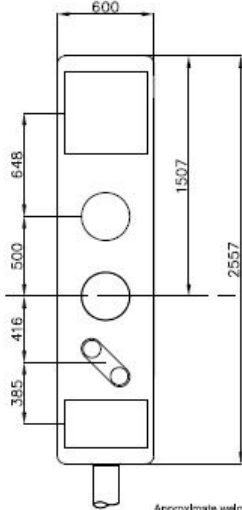


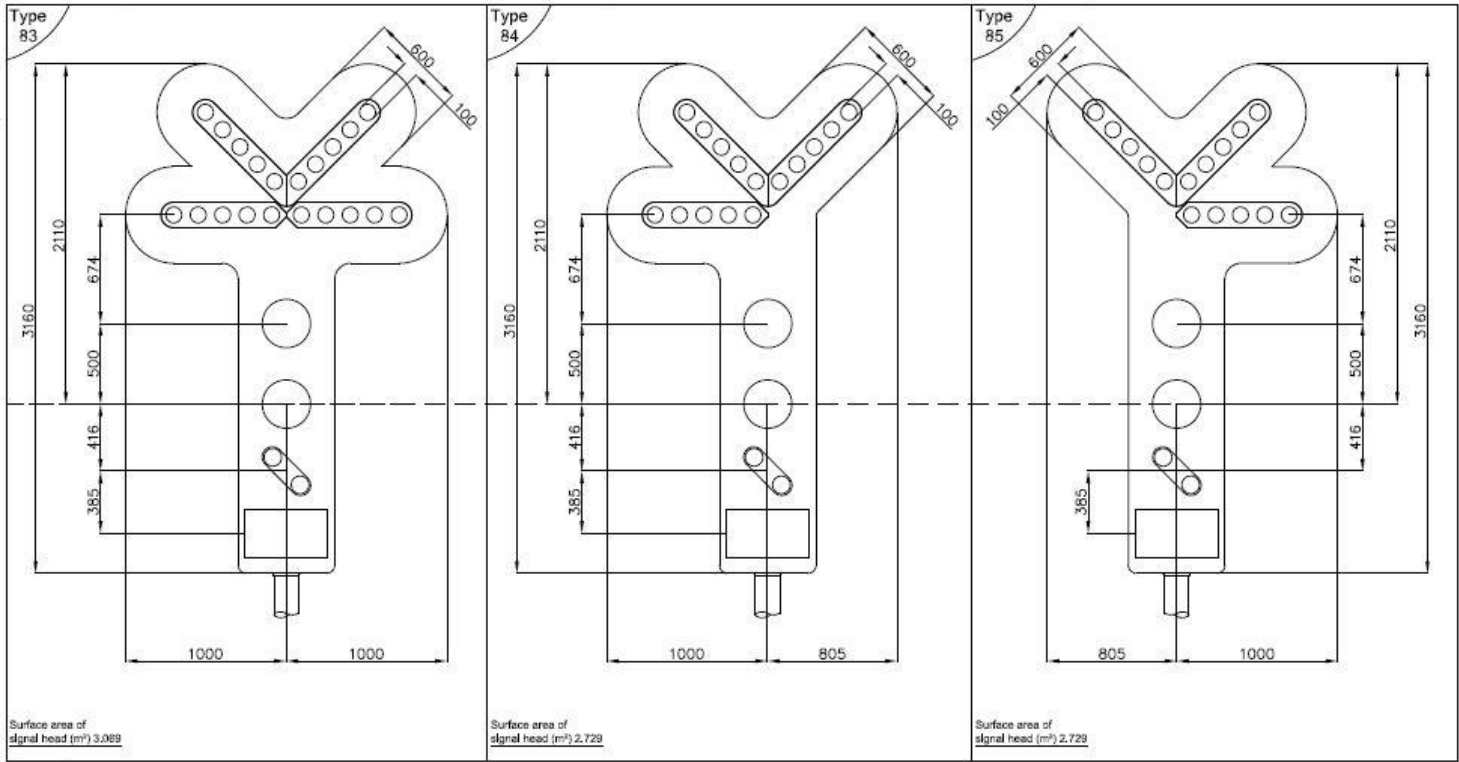


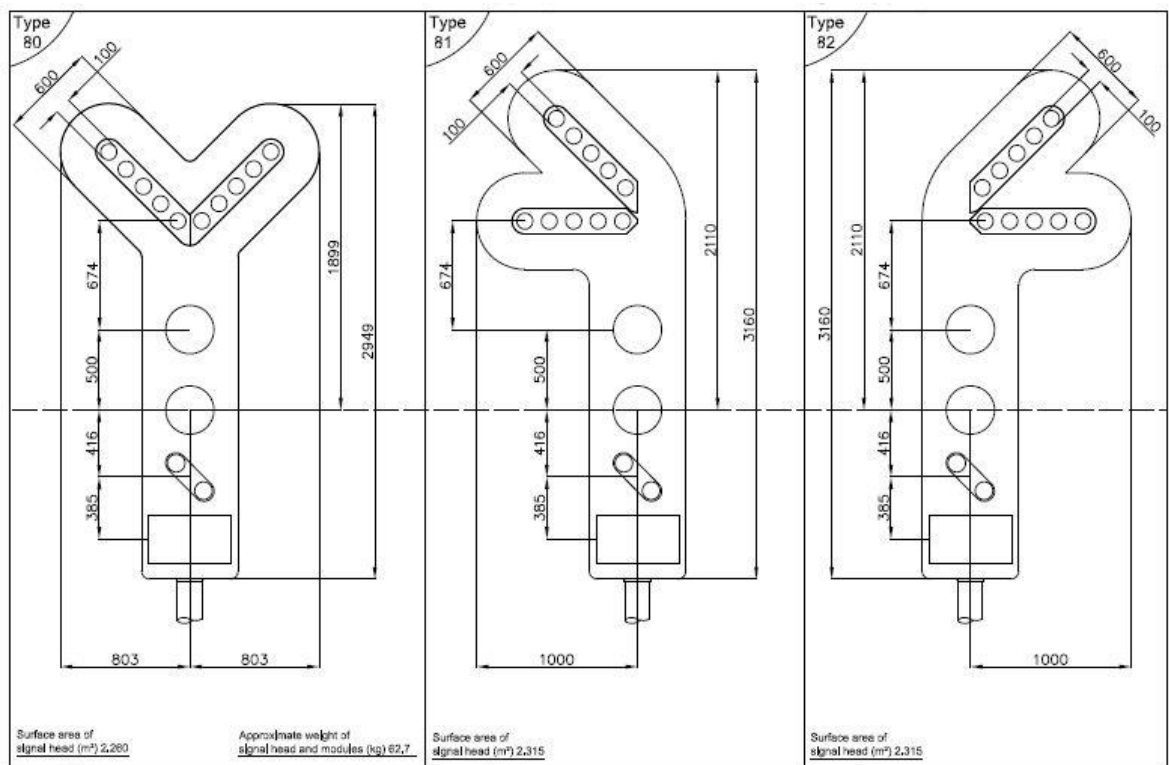


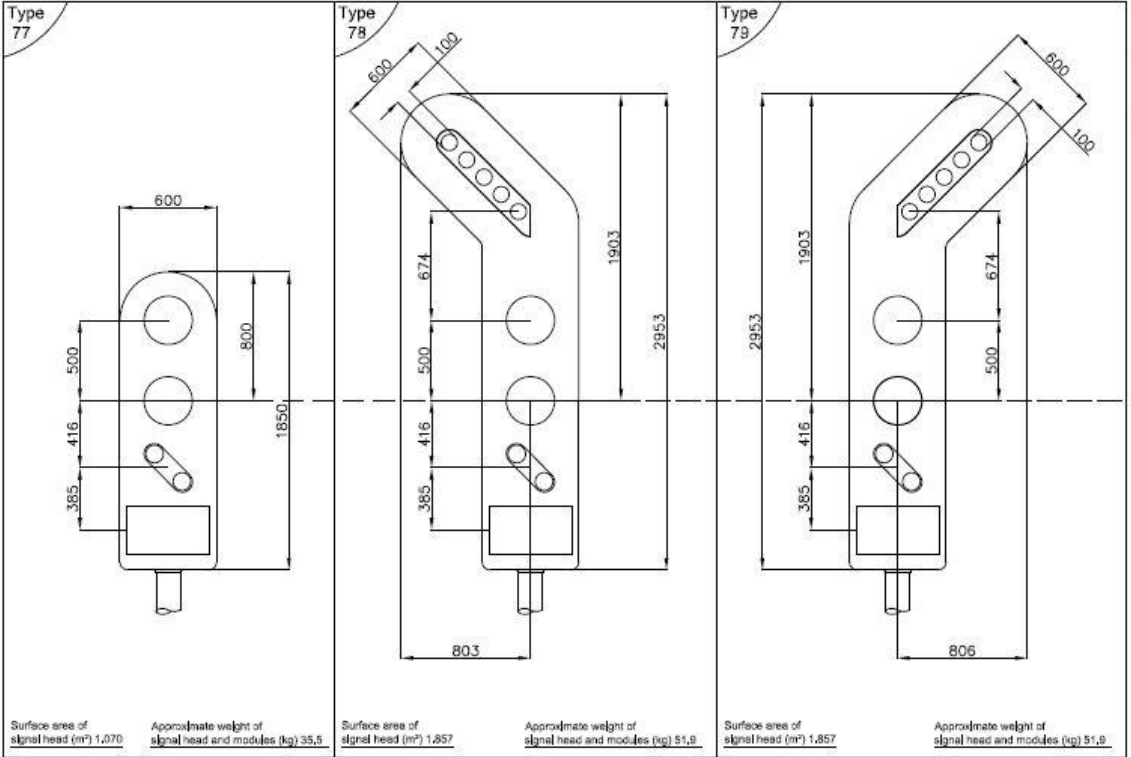


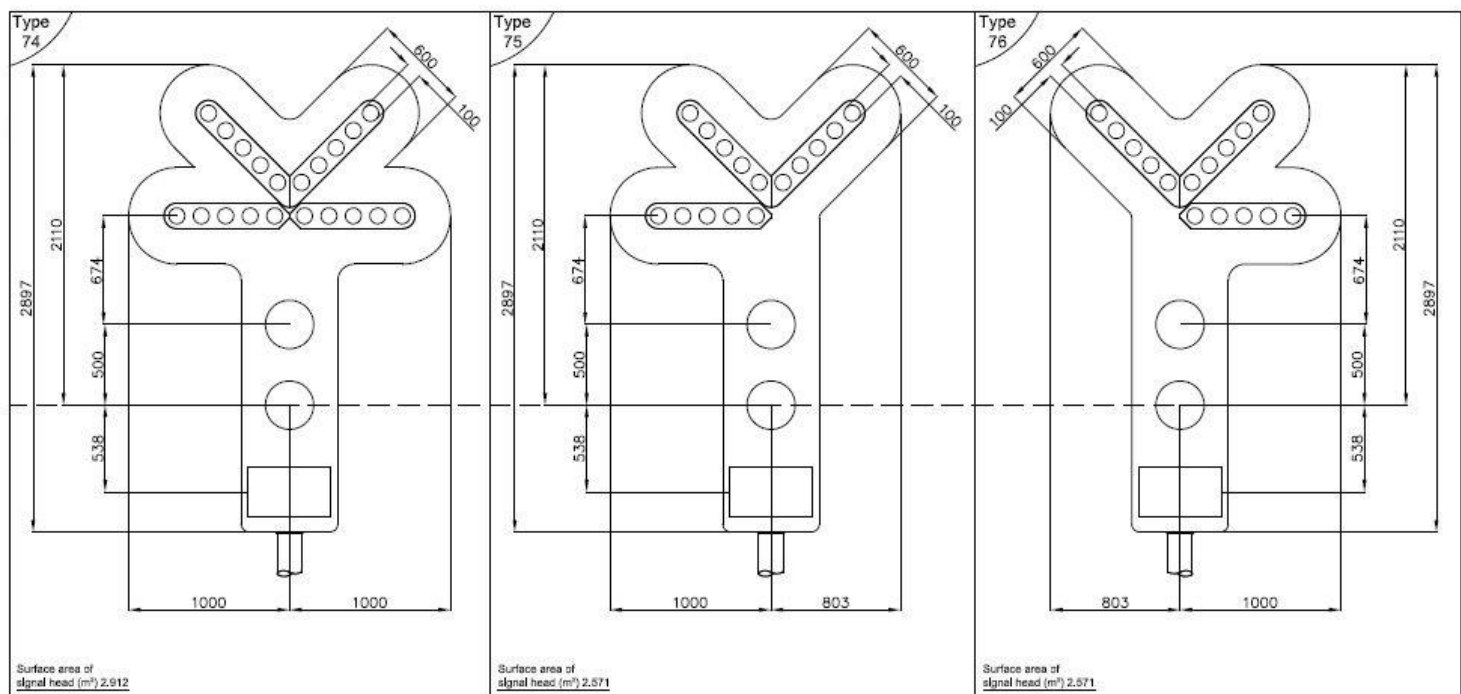


<p>Type 86</p>  <p>Surface area of signal head (m²) 1,390</p> <p>Approximate weight of signal head and modules (kg) 30.5</p>	<p>Type 87</p>  <p>Surface area of signal head (m²) 1,390</p> <p>Approximate weight of signal head and modules (kg) 30.8</p>	<p>Type 88</p>  <p>Surface area of signal head (m²) 1,400</p> <p>Approximate weight of signal head and modules (kg) 40.7</p>	<p>Type 89</p>  <p>Surface area of signal head (m²) 1,578</p> <p>Approximate weight of signal head and modules (kg) 47.7</p>
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9. Contact Us

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