ILLUSTRATED CATALOGUE
OF
RADIO TELEGRAPH APPARATA

ANNAKA

ELECTRICAL INSTRUMENT CO., LTD.
Illustrated Catalogue

OF

Radio Telegraph Apparata

The Annaka Denki Seisakujo, Ltd.


TOKYO, JAPAN.
DATA for ENQUIRIES & ORDERS.

Our Clients are specially requested to furnish us with the following informations along with their Enquiries and Orders, viz:

1. Land or Ship Station.
2. Capacity in K.V.A.
3. Communication Distance by day, and by night in miles or nautical miles.
4. Local conditions of the regions to be covered in the communication range; on open sea, flat land or mountenous land.
5. Sending Wave-lengths (100—5,000 metres.)
   Receiving Wave-lengths (100—10,000 metres.)
6. Source of Electric Power for Motor-Generator; A.C. or D.C., Frequency and Phase, if A.C., and Voltage.
7. Accumulators are required or not.
8. Antenna is required or not.
9. If no special informations are given the accessories and spares we will always quote for our Standard sets.
10. The Plant to be installed by Buyers or by ourselves.
TERMS AND CONDITIONS

Goods are forward at Customers' risk and expense.

Complaints can only be entertained if made within 4 weeks after receipt of the goods ordered.

Dimensions, Illustrations and Specifications given in this Catalogue are not binding and we reserve to ourselves the right to supply goods which may differ slightly from the particulars given, alterations and improvement being constantly made in our design.

All accounts payable in Tokyo.
FORWORD.

The Radio Telegraph Apparata and accessories thereof, described under the following pages are manufactured with best materials and first class workmanship under the special licence of the Teishinsho (the Communication Department of the Imperial Japanese Government) and generally known as the "Teishinsho" type, and answer the following requirements:

Capacity from \( \frac{1}{10} \) K.V.A. up to 50 K.V.A.

To communicate for a distance of up to 4,000 nautical miles in the night time.

To radiate or receive practically any wave-lengths.

For bigger capacities full specifications are furnished upon application.

We take pride in informing our Clients of the fact that more than 80% of Wireless Stations in actual service on board vessels sailing under the Japanese flag are supplied by ourselves.

We were established in the year 1901, and have specialized in the manufacture of Radio Apparata since then.

THE ANNAKA DENKI SEISAKUJO, LTD.

March, 1920.
Horizontal Single Cylinder Oil Engine for Land Station Use.

These Oil Engines are of Horizontal Semi-Diesel type and manufactured for capacities varying from 2, H.P. up to 15, H.P.

<table>
<thead>
<tr>
<th>H.P.</th>
<th>Revolution per minute</th>
<th>Size of Pulley</th>
<th>Width of Felt</th>
<th>Diameter of Fly-Wheel</th>
<th>Length(approx.) of Engine</th>
<th>Breadth(approx.) of Engine</th>
<th>Height(approx.) of Engine</th>
<th>Net Weight (approx) in Kwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>400</td>
<td>10'' × 6½''</td>
<td>2½''</td>
<td>24''</td>
<td>3'—1''</td>
<td>2'—6½''</td>
<td>2'—9½''</td>
<td>105</td>
</tr>
<tr>
<td>3</td>
<td>400</td>
<td>10'' × 7''</td>
<td>3''</td>
<td>26''</td>
<td>3'—5''</td>
<td>2'—8½''</td>
<td>3'—2''</td>
<td>117</td>
</tr>
<tr>
<td>4</td>
<td>400</td>
<td>12'' × 7½''</td>
<td>3''</td>
<td>30''</td>
<td>3'—8½''</td>
<td>3'—0''</td>
<td>3'—6½''</td>
<td>152</td>
</tr>
<tr>
<td>6</td>
<td>380</td>
<td>14'' × 8½''</td>
<td>3½''</td>
<td>34''</td>
<td>4'—4''</td>
<td>3'—4''</td>
<td>3'—6½''</td>
<td>210</td>
</tr>
<tr>
<td>8</td>
<td>370</td>
<td>14'' × 8½''</td>
<td>3½''</td>
<td>36''</td>
<td>4'—8½''</td>
<td>3'—7½''</td>
<td>4'—0''</td>
<td>326</td>
</tr>
<tr>
<td>10</td>
<td>360</td>
<td>16'' × 8½''</td>
<td>3½''</td>
<td>38''</td>
<td>4'—10''</td>
<td>3'—9½''</td>
<td>4'—2''</td>
<td>388</td>
</tr>
<tr>
<td>12</td>
<td>350</td>
<td>16'' × 10''</td>
<td>4''</td>
<td>42''</td>
<td>5'—2½''</td>
<td>4'—4½''</td>
<td>4'—6''</td>
<td>413</td>
</tr>
<tr>
<td>15</td>
<td>340</td>
<td>18'' × 11½''</td>
<td>5''</td>
<td>44''</td>
<td>6'—9½''</td>
<td>4'—6½''</td>
<td>4'—7''</td>
<td>450</td>
</tr>
</tbody>
</table>

(3)
These Oil Engines are of Vertical Semi-Diesel type and are manufactured for capacities varying from 20, H.P. up to 30, H.P.

<table>
<thead>
<tr>
<th>H.P.</th>
<th>Revolution per minute</th>
<th>Size of Pulley</th>
<th>Width of Belt</th>
<th>Diameter of Fly-Wheel</th>
<th>Length (approx.) of Engine</th>
<th>Breadth (approx.) of Engine</th>
<th>Height (approx.) of Engine</th>
<th>Net Weight (approx.) in Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>400</td>
<td>20&quot;</td>
<td>6&quot;</td>
<td>38&quot;</td>
<td>54(\frac{7}{8})&quot;</td>
<td>40&quot;</td>
<td>64(\frac{9}{16})&quot;</td>
<td>2.3</td>
</tr>
<tr>
<td>25</td>
<td>380</td>
<td>24&quot;</td>
<td>7&quot;</td>
<td>40&quot;</td>
<td>55(\frac{7}{8})&quot;</td>
<td>40&quot;</td>
<td>45(\frac{3}{4})&quot;</td>
<td>3.2</td>
</tr>
<tr>
<td>30</td>
<td>350</td>
<td>26&quot;</td>
<td>8&quot;</td>
<td>42&quot;</td>
<td>62(\frac{1}{8})&quot;</td>
<td>42&quot;</td>
<td>77(\frac{1}{4})&quot;</td>
<td>3.7</td>
</tr>
</tbody>
</table>
These Oil Engines are of Vertical Semi-Diesel type and manufactured for capacities varying from 35 H.P. up to 60 H.P.

<table>
<thead>
<tr>
<th>H.P.</th>
<th>Revolution per minute</th>
<th>Size of Pulley</th>
<th>Width of Belt</th>
<th>Diameter of Fly-Wheel</th>
<th>Length (approx.) of Engine</th>
<th>Breadth (approx.) of Engine</th>
<th>Height (approx.) of Engine</th>
<th>Weight (approx) in Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>320</td>
<td>28''</td>
<td>9''</td>
<td>54''</td>
<td>73''</td>
<td>54''</td>
<td>73''</td>
<td>4.4</td>
</tr>
<tr>
<td>40</td>
<td>300</td>
<td>29''</td>
<td>9''</td>
<td>57''</td>
<td>76''</td>
<td>55''</td>
<td>75''</td>
<td>4.9</td>
</tr>
<tr>
<td>50</td>
<td>290</td>
<td>30''</td>
<td>10''</td>
<td>60''</td>
<td>79''</td>
<td>60''</td>
<td>77''</td>
<td>5.6</td>
</tr>
<tr>
<td>60</td>
<td>275</td>
<td>31''</td>
<td>10''</td>
<td>66''</td>
<td>84''</td>
<td>60''</td>
<td>83''</td>
<td>8.0</td>
</tr>
</tbody>
</table>
The above illustration shews, the generator room equipped with 50, H.P. Oil Engine, 40, K.W.D.C. Dynamo, 25, K.V.A. Motor-Generator, Switch Board, and Auxiliary Motor-Generator of 7, K.V.A.
3. K.V.A. Apparatus at Electrical Exhibition.

Exhibits of Radio Telegraph Apparatus of our manufacture shewn at the Electrical Exhibition held in Tokyo in 1918.

本圖ハ大正七年三月東京上野・忍池畔＝開催セラレタル電気博
覧會弊社出品館ノ一部ナリ

Exhibits of Radio Telegraph Apparata of our manufacture shewn at the Electrical Exhibition held in Tokyo in 1918.
The above illustrates the sending set of 3 K.V.A. Radio Telegraph Apparatus for Ship Station, which is suitable for 5 different Wave-lengths of 300; 450; 600; 1,000 and 1,800 metres, and capable of covering the communication ranges on open sea of 400 nautical miles in the day time and 1,200 nautical miles in the night time.
The above Illustration shows the Receiving Set and a portion of the Sending Apparatus of 1, K.V.A. for a Ship Station. Ranges of Communication, being:

200 nautical miles in the day time on open sea.

800 " " in the night time on open sea.
Accumulator Box.

Accumulator Box containing 15 or 25 Cells of Emergency sets.

for 15 cells .......................... Catalogue No. 19950
for 25 cells .......................... " No. 19951
In this are embodied all the necessary conveniences and the characteristics of the "Teishinsho" system Radio telegraph apparatus, while it is built up as compact and easy in working as possible. We may mention the following as some of the characteristic points of the type:

(1) Great in Communicative Distance compared to its Volume.
(2) Easy in changing Wavelengths.
(3) Easy in Adjustment.
(4) Compact in Design.
(5) Easy in Installation.

Sending apparatus of this type can be manufactured for Capacities from ½ K.V.A. up to 5 K.V.A. Unless otherwise specified we will supply this type for convenience' sake.

Catalogue No. 19019
Main Switch Board for Radio Station on board a Ship.

Consisting of A.C. Voltmeter and Ammeter, D.C. Ammeter, Knife-Switches; all fixed on a Marble Panel and designed for use with H.F. Motor-Generators.

Catalogue No. 19235.
Switch Board for Charging Accumulators for Radio Station on board a Ship.

Consisting of Minimum Circuit Breaker, D.C. Voltmeter, Knife-Switches, all fixed on a Marble Panel.

Especially designed for charging Accumulators of the Emergency sets.
Catalogue No. 19236.
This is specially designed for regulating voltage for charging accumulators of emergency sets with a total resistance of 4-6 ohms.

For 30 volts........ Catalogue No. 19910
  " 50 "                "  19911
High Frequency Motor Generator.

In this the Alternating current of 250 or 600 cycles is generated by Alternator directly coupled to D.C. Motor.

<table>
<thead>
<tr>
<th>Catalogue No.</th>
<th>K.V.A.</th>
<th>H.P.</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>19220</td>
<td>0.25</td>
<td>0.5</td>
<td>250</td>
</tr>
<tr>
<td>19221</td>
<td>0.5</td>
<td>1.0</td>
<td>200</td>
</tr>
<tr>
<td>19222</td>
<td>1.0</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>19223</td>
<td>2.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>19224</td>
<td>3.0</td>
<td>5.0</td>
<td>600</td>
</tr>
<tr>
<td>19225</td>
<td>5.0</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>19226</td>
<td>7.0</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>19227</td>
<td>10.0</td>
<td>17.0</td>
<td></td>
</tr>
<tr>
<td>19228</td>
<td>15.0</td>
<td>23.0</td>
<td></td>
</tr>
<tr>
<td>19229</td>
<td>23.0</td>
<td>40.0</td>
<td></td>
</tr>
</tbody>
</table>
Being an Oil Cooled Transformer, Low voltage A.C. Current flowing through the primary coil, produces High voltage A.C. Current in the Secondary Coil; manufactured in the following capacities:

For bigger capacities, particulars given on application.

<table>
<thead>
<tr>
<th>Catalogue No.</th>
<th>Capacity (K.V.A.)</th>
<th>Primary Voltage</th>
<th>Secondary Voltage</th>
<th>Frequency (Cycles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19230</td>
<td>0.25</td>
<td>100</td>
<td>2,500</td>
<td>2.00</td>
</tr>
<tr>
<td>19231</td>
<td>0.5</td>
<td>100</td>
<td></td>
<td>4.00</td>
</tr>
<tr>
<td>19232</td>
<td>1.0</td>
<td>250</td>
<td>5,000</td>
<td>6.00</td>
</tr>
<tr>
<td>19233</td>
<td>2.0</td>
<td></td>
<td>6,500</td>
<td></td>
</tr>
<tr>
<td>19234</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19235</td>
<td>5.0</td>
<td></td>
<td>8,000</td>
<td></td>
</tr>
<tr>
<td>19236</td>
<td>7.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19237</td>
<td>10.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19238</td>
<td>15.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19239</td>
<td>25.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Impedance Coil.

Consists of laminated iron core with a coil of Insulated Copper Wire wound around and provided with several tappings.

The Coil is used for adjusting Resonance effect, being connected in the Primary circuit of the transformer.

Catalogue No. 19050.
In this heavy current can be made and broken by the big silver contacts seen underneath the Electromagnet energized by weak current which can be handled by a small handkey, also the Electromagnet keeps the circuit made until the current is practically nil, thereby preventing violent sparking.

Used for apparatus with a capacity upwards of 7, K.V.A.

Catalogue No. 19113.
Sending and Receiving Switch.

Sending Key of Simplex type by means of which a current up to 20 Amps can be safely handled.

Used for direct sending in Radio Apparatus up to 5 K.V.A. capacity.

Catalogue No. 19110.
密結合型振動電流変圧器

Oscillation Transformer for Quenched Spark Transmitter.

Of Auto Transformer type, consisting of Spiral Coil of Copper ribbon and a Marble Panel standing on a Wooden base. On the Marble Panel are provided Jacks and Plugs for changing Wave-lengths and a Slider for delicate adjustment of Primary and Antenna circuit coupling and an Hotwire Ammeter for reading Antenna current.

Catalogue No. 19029.
Used for adjusting the Sending Waves of Antenna Circuit; and consists of 6 Independent Coils connected in series, made of hard drawn copper ribbon spirally wound and mounted on the frame with a Marble Panel, three Jacks being attached thereto connecting suitable taps for obtaining the required Wave lengths less than about 1800 meters.

S. P. Knife Switch on the panel is for the purpose of cutting unnecessary coils off.

Catalogue No. 19055.
Oscillation Transformer for Quenched Spark Transmitter.

Of Auto Transformer type, consisting of a Spiral Coil of Copper ribbon and a Marble Panel standing on a Wooden base, on the Marble Panel are provided Jacks and Plugs for changing Wave-lengths and a slider for delicate adjustment of Primary and Antenna Circuit Coupling and an Hotwire Ammeter for reading Antenna current, necessary Inductance Coil for Antenna circuit being attached on the top.

Suitable for Capacities from 3, K.V.A. up to 7, K.V.A. and for two different Wave-lengths of 300 and 600 metres.

Catalogue No. 19027.
Oscillation Transformer for Quenched Spark Transmitter.

Suitable for Capacities from 1, K.V.A. up to 3, K.V.A., and for two different Wave-lengths of 300 and 600 metres.

Catalogue No. 19025.
Loose Coupling Type Oscillation Transformer for Ordinary Spark Transmitter.

The Primary and Secondary Coils are tapped to make connection with Notches of Sliding Contacts for obtaining the Number of Turns to syntonize with the desired Wave-length, also by turning the Shaft the Coupling of both Primary and Secondary Coils are adjusted for delicate syntony.

Suitable for Capacities from ½ K.V.A. up to 30, K.V.A.

Catalogue No. 19025.
Main Condenser for Spark Discharge Circuit.

Consisting of alternate laminations of Tin Plates and Glass Plates which are filled up with Wax compound of special preparation. Each box contains 4 blocks of about 0.0065 Mfd. each.

One of the blocks is used for Wave-lengths less than 300 metres while over 400 metres 3 blocks are used. The change is effected by means of a switch attached on the top.

Tested with 25,000 V.

Catalogue No. 19028.
Main Condenser for Spark Discharge Circuit.

Consisting of 3 individual Condensers of about 0.0065 Mfd. each, being placed in a Wooden case, one of which is used for a Wave-lengths of 300 metres, while two are used in parallel for Wave-lengths of 400 metres and over.

Condenser capacity can be changed by means of Plug attached on the case.

Catalogue No. 19041.
The Condensers illustrated above are independent of variation in temperature and are extremely constant. These are generally connected in series with Antenna for the purpose of shortening Wave-lengths.

Catalogue No. 19040.

Consists of Laminations of Glass and Tin Plates enclosed in a wooden box with Fusebox attached on the outside.

Used in parallel with Generators and Compressor Motors to protect against the serging effect of Oscillation Current.

The Capacity is 0.004 Mfd. approximately.

Catalogue No. 19042.
Ordinary Spark Gap.

Rather Old type but can be used for actual service with a tolerably good result on long distance as well as on short distance together with an Induction Coil.

Can be furnished for any capacities from 1, K.V.A. to 30, K.V.A.

Catalogue No. 19090.
Air Compressor.

This is for supplying cooling air to the Gaps.

Substantially built for many years’ service.

Provided with $\frac{1}{8}$ H.P. Motor D.C. 60 V. or 100 V.

Catalogue No. 19106.
Rheostat for Compressor Motor.

Catalogue No. 19240.

Air Filtering and Alcohol Vapour Mixing Tubes.

Catalogue No. 19100.
Generally same as the Receiving set of Catalogue No. 19122 but with two Oscillation transformation for Loose and Close Couplings. Can be used together with the Vacuum Bulb Detector of Catalogue page 45.

Catalogue No. 19123.
Receiving set with Vacuum Bulb Detector.

The Illustration shows the Receiving set of Catalogue page 43 with Vacuum Bulb Detector of Catalogue page 45.

Catalogue No. 19201.
This is a modified type C Receiving set in which Crystal Detectors are inserted to for "Pelicon" circuit.

This is smaller in size and simpler in manipulation than ordinary type C Instrument.

Catalogue No. 19134.
[C型 無線電信受信機]
Receiving set Type C.

The above illustration shows our C type Receiving set, shown on page 41 combined with small Pattern Vacuum Bulb Detectors shown on page 45.

Catalogue No. 19200.
Vacuum Bulb Detector Type D.

In this the Vacuum Bulb Phenomenon is utilized which has enabled us to obtain most sensitive and constant Detectors. This Detector has the following characteristics:

1. Much greater in sensitiveness than Crystal Detectors and increases the range of communication about 2 to 5 times as much.

2. Changeability in sensibility due to rolling and vibration of ships can be avoided.

3. Not liable to be disturbed by static or Sending waves.

4. No adjustment of contact is necessary as in the case of Crystal Detectors.

5. Very acute in tuning.

6. Can be used directly with the Receiving sets Catalogue Nos. 19122, 19123, &c.

Catalogue No. 19130.

(45)
This set of apparatus is suitable for receiving undamped oscillation of 600-10,000 metres wave length and designed to change over the connections to either of Hydrodyne or Ultraudion by means of a switching handle shown on the right hand side.

Catalogue No. 19135.
Tikker or Ticker.

For undamped oscillation any detectors which have the rectifying action are found useless, since rectified undamped oscillation gives to the Telephone Receiver the same effect as that of Direct Current and only the start and finish of the dash are heard. Ticker must be used for interrupting undamped oscillation at a rate falling within the limits of audition and eventually giving proper sounds to Receiver.

Catalogue No. 19136.
Radio Telegraph Receiving set Type E.

This is specially designed for using Vacuum Bulb Detector, and if the Switch is pushed on the side of "Bulb," Vacuum Bulb will be put into service, while if the Switch is pushed on to the side of "Crystal," Crystal Detector will be put into service. The Crystal Detector is provided separate from the instrument and connected with a suitable length of a cord to enable the operator to listen to the calling from outside stations even while he is reposing himself.

Catalogue No. 19137.
Vaccum Bulbs for Detectors.

Illustration shews some of types of Vacuum Bulbs generally manufactured
at our works. Unless specified otherwise we always supply Bulbs Catalogue No.
19131, Filament Voltage 4 V. and Anode Voltage 40–60 V.

We are, however, ready to supply Vacuum Bulbs of any pattern, which
are sensitive and constant in working:

<table>
<thead>
<tr>
<th>Catalogue Nos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>19131</td>
<td>A Pattern, generally supplied with Detector set.</td>
</tr>
<tr>
<td>19131-a</td>
<td>B Pattern, now pattern of 19131.</td>
</tr>
<tr>
<td>19132</td>
<td>C Pattern.</td>
</tr>
<tr>
<td>19132-a</td>
<td>D &quot; modified De Forest pattern.</td>
</tr>
<tr>
<td>19132-b</td>
<td>E &quot; &quot; &quot; &quot; &quot;</td>
</tr>
<tr>
<td>19133</td>
<td>F &quot; for undamped oscillation generally used for Radio telephony, Filament Voltage 16 volts, Anode Voltage 500 volts or over.</td>
</tr>
</tbody>
</table>
The apparatus has been specially designed to the order of the Educational Department of the Japanese Government and capable of being quickly switched over to either 600 or 4,000 metres wave-lengths.

Catalogue No. 19138.
Of double ear type. Two Receivers are connected in series.

Total Resistance from 1,000–6,000 ohms.

Catalogue No. 19140.
受信機調整器

Buzzer.

本器は受信機調整用にシテ断絶器、電鍵、振動電流発生器ヨリ成り、転換器ヨリ誘導導線ト蓄電器トノ組合セラ変化シ各種ノ電波長ヲ発生スルモノトス

電波長 300, 600, 1,800……..型錄番號 19150—C
同 300, 400, 500, 600, 1,800…….. 19150—D

For testing the sensitiveness and the tuning of the receiving set by generating very weak oscillation.

Suitable for generating 3 different wave-lengths of 300, 600 and 1,800 metres, and designed to work with D.C. 3 volts.

Catalogue No. 19150.
Tone Tester.

Variable Condenser.

Crystal Detector.

This Crystal Detector is used for any combination of Zincite and Bornite, Zincite and Copper Pyrite, Carborandum and Magnetite.

Catalogue No. 12141.
波 長 計
Wave-Meter.

Suitable for the measurement of Wave lengths varying from 100 to 10,000 metres. Consisted of the following parts:

- One Variable Condenser.
- One D.P. Doublethrow Switch.
- One Buzzer.
- One Safety Gap.
- One Condenser.
- Four terminals.
- One Electric Lamp Bulb.
- Two Jacks.
- One Detector.

Also provided with the following accessories:

- One Hotwire Ammeter.
- One Telephone Receiver.
- Inductance Coils.

Catalogue No. 19145.
Primary side: D.C. 50-100 volts.

Secondary side: D.C. 300-600 volts.

User for generating high pressure direct current for the purpose of Wireless Telephony, &c.

Catalogue No. 19230.

This is the so-called “T.Y.K.” system Radio Telephone Apparatus manufactured under the patent of Dr. Torikata, Mr. Yokoyama and Mr. Kitamura, with best materials and workmanship. The Apparatus consists of Transmitter and Receiving sets, the former being placed on the top of the other.

Catalogue No. 19231.
The above illustrates the Radio Telephone Station at Toba, Miye prefecture. Height of Antenna Mast 200 ft.
Toba Radio Telephone Station is equipped with "Sayegi" System Radio Telephone Apparatus manufactured by us and has been in actual use since last year between Toba and Kamishima (9 miles in distance) with successful results.

Left hand side is the Sending set and right hand side is calling device and Receiving set.
Sayegi System Wireless Telephone set Type B.

[Image of wireless telephone set]

本機ハA型(型錄第六一頁)ヲ簡單ニシタリモノニシテ通話距離二十海里
ヲ有シ左方ハ受話部ニシテ右方ハ送話部ナリ

型錄第一九二八一號

This is a simplified pattern of type A apparatus as is shown on page 61 of this catalogue and suitable for a working range of 20 nautical miles on open sea. In the above illustration the Receiving set is shown to the left and the sending set to the right.

Catalogue No. 19281.
The above is a Quenched Spark Gap arrangement for a capacity of 3K.V.A. consisting of apparata catalogue Nos. 19072, 19105 and 19100.
Sayegi System Wireless Telephone Set.

Designed by Mr. Sayegi, Radio Engineer of Direction General of Post and Telegraphy, Teishinsho.

Working range is 50 nautical miles on open sea.

In the above illustration Receiving set is shown on the left hand side while the Sending set is on the right side.

Catalogue No. 19280.
合調作用実験器（送信部）

Syntony Tester for Educational Purpose. (Sending Part)

This is Syntony tester, Sending set only, for Educational purpose.

Catalogue No. 19292.
This is the Receiving part of the apparatus shown on page 62.

Catalogue No. 19293.
Radio Telegraph Sending Set for Educational Purpose.

This is suitable for use of short distance communication or educational purposes and capable of radiating Wave-lengths of 100 to 300 metres.

Catalogue No. 1294.
Radio Telegraph Receiving Set for Educational Purpose.

This is specially manufactured for the Educational purposes in Technical schools and suitable for receiving Wave-lengths between 100 to 2,000 metres.

Catalogue No. 19290.
T.Y.K. System Wireless Telephony Apparatus for Educational Purposes. (Transmitter Only)

This is T.Y.K. System Wireless Telephone Set, transmitter only, for educational purposes. D.C. 400 or 500 V. is used as source of electricity.

Catalogue No. 19295.
T. Y. K. System Radio Telephone Apparatus for Educational Purpose. (Receiving Set Only)

Catalogue No. 19291.
Induction Coil.

Used for producing extra high tension current.

Mounted on a wooden base containing condensers.

Suitable for the purpose of Wireless telegraphy and X-ray generation.

Catalogue No. 19170.
水銀断続器

Marcury Interrupter.

本器は誘導線輪を直流電源を使用スル場合ニ電流ヲ断続セシムルモノニシテ使用電流四十アンペア以下ナリ

型錄第一九一七一號

This is generally use together with Induction Coil, Catalogue page 68, for the purpose of interrupting Direct Current, when an Alternating Current Generator is not used.

Catalogue No. 19171.
P. O. Pattern Wheatstone Bridge in wooden case with hinged lid, and Key for Battery and Galvanometer.

With 16 plugs and resistances of 1 to 4,000 ohms in 3 arms of 10, 100 and 1,000 ohms respectively; and used for the purpose of measuring 0.01 to 1,110,000 ohms.

Catalogue No. 19263.
**Kohlrausch Bridge.**

In this type of Bridge, the resistance is indicated on a scale in ohms for direct reading. The Rheostat contains 5 comparative coils of 0.1; 1; 10; 100; 1,000 ohms, and suitable for resistance measurements on solid conductors between about 0.05 and 20,000 ohms with sufficient accuracy.

Catalogue No. 19265.

**Ruhmkorff Induction Coil.**

This Induction Coil is worked with 5 volts Direct Current supplied to the Primary Coil, and generally used for the measurement of Earth Resistance, Liquid Resistance.

Coil placed on a Wooden base and provided with a 2-poleswitch.

Catalogue No. 19175.
Accumulators for Radio Station on Board a Ship.

Contained in Ebonite cases.

Strongly built to stand rolling and vibration of a ship.

Capacity is 78 amp-hours for 3 hours discharge.

Catalogue No. 19251.

Water Syringe.

Made of Ebonite. Has a high resistivity against the action of Sulphuric Acid of Accumulators. Used for taking in and out acid.

Catalogue No. 19256.
Antenna Socket.

Specially designed for leading-in Antenna Wire.

Made of porcelain with metal base.

Catalogue No. 19190.
Corrugated Insulators and Ball Insulators for Antenna.

Corrugated Insulators are specially designed for the purpose of insulating Antenna Wire.

Made of porcelain of best quality.

Catalogue No. 19191.

Ball Insulators are specially designed for the purpose of insulating stay wires.

Catalogue No. 19192.
This is specially designed for the testing of vacuum in Incandescent Lamp Bulbs.

Catalogue No. 19172.

Induction Coil.
電気透熱器

Diathermie.

本機ハ工学博士鳥沼右一及醫學士塚田十次郎氏ノ特許品ニシテ
各種神経系統病其他ノ治療用ナル

型錄第一九二九五號

Diathermie designed and patented by Dr. Torigata and Dr. Kashida.

Catalogue No. 19295.