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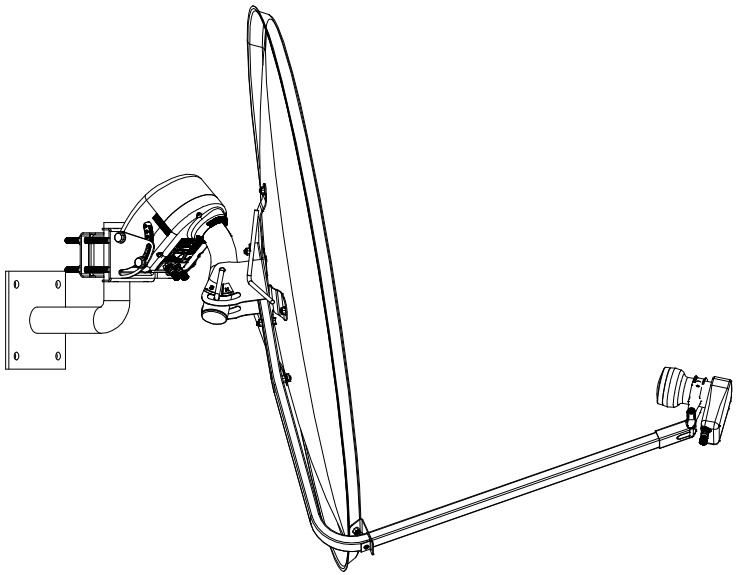
SATELLITE MOTOR

SM3D12

with the DiSEqC 1.2 positioner and "Go To X" function for automatic operation

INSTRUCTIONS FOR INSTALLATION AND USE



FOR HELP WITH THE INSTALLATION, CALL
Your local supplier

SM3D12 SATELLITE MOTOR FEATURES

- ✓ *A professional new-generation motor with the DiSEqC 1.2 and "Go To X" compatible positioner for automatic operation*
- ✓ *Controlled via a single coaxial cable*
- ✓ *"Go To X" function for setting the motor without programming it*
- ✓ *Option of motor control and programming via two buttons on the motor, for easier installation*
- ✓ *Powerful "polarmount" structure for ideal tracking of TV satellites in a geostationary orbit*
- ✓ *Suitable for all aluminum dishes of up to 1.4m in diameter*
- ✓ *Fast movement*
- ✓ *Silent operation*
- ✓ *Motor rotation up to 95°*
- ✓ *Can be used in tropical climate*
- ✓ *Developed and produced in Slovenia*

Technical specifications:

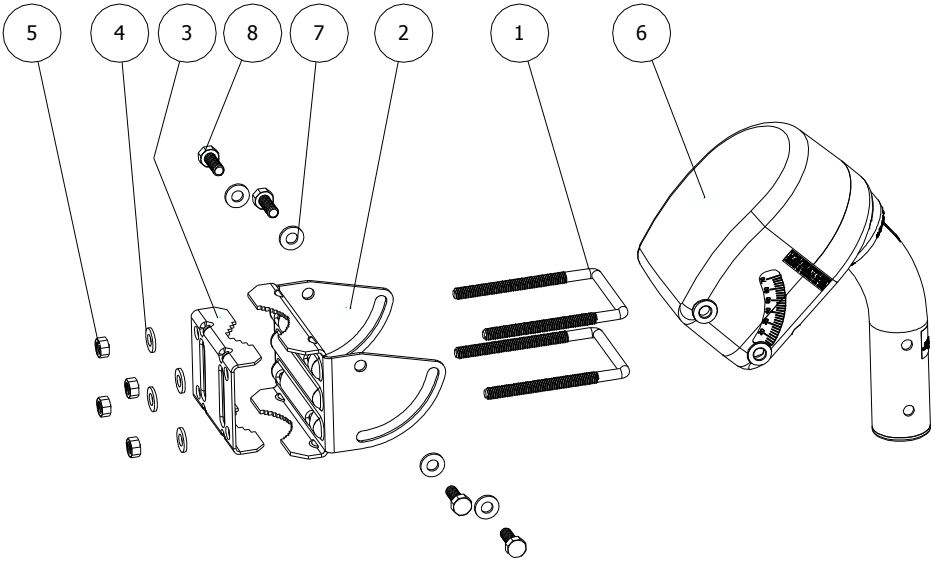
Operating protocol	*DiSEqC™ 1.2 compatible level and "Go To X" function*
Horizontal rotation	*typically 95°, (99° max.)*
Inclination (motor elevation)	*75°*
Maximum antenna diameter	*120 cm, aluminum*
Programmable positions available	*30 satellites*
Maximum antenna mass	*12 kg, at rotating the dish around the centre-of-gravity point*
Antenna support length	*120 mm*
Bent motor pole diameter	*40 mm*
Rotation speed (unloaded)	*2.5°/s (H-18V) 2°/s (V-14V) ±25%*
Rotation speed (with a 85-cm dish)	*2.3°/s (H-18V) 1.7°/s (V-14V) ±25%*
Operating power supply	*14 / 18 VDC*
Power consumption in stand-by mode	*15 mA ±25%*
Power consumption in operating mode (with a 85-cm dish)	*95-150 mA ±25%*
Starting movement consumption (80 ms)	*350 mA*
Operating temperature	*-35° C to +70° C*
Min. and max. relative humidity	*35% to 100%*
Connectors	*F type 7mm*
Connections	*Sat coaxial cable 7 Ω impedance*
Connection cable up to 30 m	*Inner conductor Cu Ø 1.02 mm R=22 Ω/km*
Connection cable up to 100 m	*Inner conductor Cu Ø 1.13 mm R=18 Ω/km*
EAST-WEST limits	*Hardware fixed, no programmable limit*
Fine tuning step	*0.36°*
Mass with box	*2.68 kg*
Maximum permissible wind speed for a 85 cm / 140 cm dish	*140 km/h / 80 km/h (km per hour)*
Maximum permissible torque at rotation	*15 Nm*
Maximum static torque on idle	*150 Nm*
Control buttons on motor	*2 (west-call and east-store)*
Dimension of packed-into box	*268 (L) x 132 (W) x 155 (H) mm*
Lifetime min.	*50,000 cycles over 180° (90°E + 90°W)*

DiSEqC™ is a trademark of the Eutelsat Company.

A) KIT CONTENTS AND TOOLS REQUIRED FOR INSTALLATION

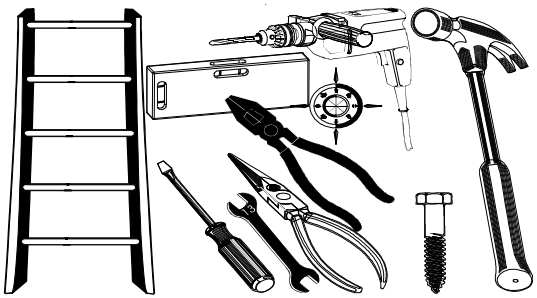
The SM3D12 motor kit comprises the following components (shown in the figure below)

1. *U-bolt (2 pcs)*
2. *Mounting bracket (1 pc)*
3. *Fixing bracket (1 pc)*
4. *Washer M8 (4 pcs)*
5. *Nut M8 (4 pcs)*
6. *Motor SM3D12 (1 pc)*
7. *Nut (4 pcs)*
8. *Bolt M8x20 (4 pcs)*



The following tools are required for the dish mounting on an already erected mast:

1. *Meter*
2. *Fork wrench, size 13 mm*
3. *Knife, and combination cutting pliers for coaxial cable preparation*
4. *Quality insulating tape*
5. *Satellite receiver and TV set*
6. *Spirit level*
7. *Compass and a satellite finder are recommended, too.*



B) DESCRIPTION

You have bought a small, but powerful motor designed for rotating a satellite dish; the motor has full automatic control using the DiSEqC 1.2 and "Go To X" commands of the satellite receiver.

Owing to its innovative design, the SM3D12 motor has several advantages.

- Precise installation guarantees ideal "polarmount" alignment, which allows full tracking of all TV satellites within the motor rotation angle, i.e. within 95º minimum. For precise alignment (positioning) over such a wide range we recommend that you call a qualified technician; but if you read and follow these instructions carefully, and if you are a person with basic mechanical skills, you can do it yourself. When the angle between the outermost satellites is smaller (e.g. from Astra at 19º E to Telecom at 8º W), you should have no trouble even with an analog receiver and analog TV set. These instructions apply to the positioning within a maximum rotation angle; you can also follow them for the alignment within a smaller rotation angle, where precision requirements are even less exacting.

- The motor can be mounted on an existing mast for classical TV aerials, or on a wall bracket. In the latter case, the motor should be mounted as close to the wall as possible, or else the dish will be too far from the wall, and the force exerted on the wall anchors will be too big. For a 95-degree rotation, the mast must be vertically plumb (±0,5°).

- Under normal circumstances, the motor works with any (offset) dish of up to 85 cm in diameter. If the dish is not too heavy (up to 12 kg), and is not exposed to hurricane winds or heavy snow, a bigger dish can be mounted as well. When mounting a bigger dish, make sure that it is not too heavy, that its parabolic surface is as close to the mast as possible, and that the dish rotates around the center-of-gravity point. If these conditions are met, the motor operation will be error-free even with an aluminum dish of 140 cm in diameter.

C) SAFETY RULES

Do not open and "repair" the motor on your own; always call an authorized service center. An unskillfully assembled motor can fall from the mast, together with the dish.

Be very careful when mounting the dish. If the motor is not mounted securely or the mounting structure is too weak, the dish might slide off the motor pole or the wall anchors might be pulled out. In addition to secure bolt tightening, make sure to choose such an installation location as not to endanger passers-by should the dish accidentally fall down.

D) GLOSSARY

Polarmount – the mounting mode of a rotating dish, whereby the rotation axis is parallel to the earth's axis. It provides a virtually ideal tracking of all TV satellites, except for inclined ones.

Elevation – the angular altitude of the satellite above the horizon.

Azimuth – an angle to the east and west of the southern point.

Inclination – old satellites circle in an inclined orbit that is tilted relative to the geostationary orbit at certain angle; thus, their elevation varies constantly and so does the reception quality. Do not position your dish to such satellites.

*E in W - abbreviations for **E**ast and **W**est.*

Motor pole – a bent rotating shaft used for dish mounting.

LNB (Low Noise Block) – a device receiving signals collected by a parabolic dish; it must be located precisely in the focus point of the dish to convert received signals into a form suitable for the transfer via a coaxial cable to the satellite receiver.

Longitude - on a detailed map of your country, region or city find the vertical line that is the closest to your place. The longitude must be determined with a precision of at least one degree.

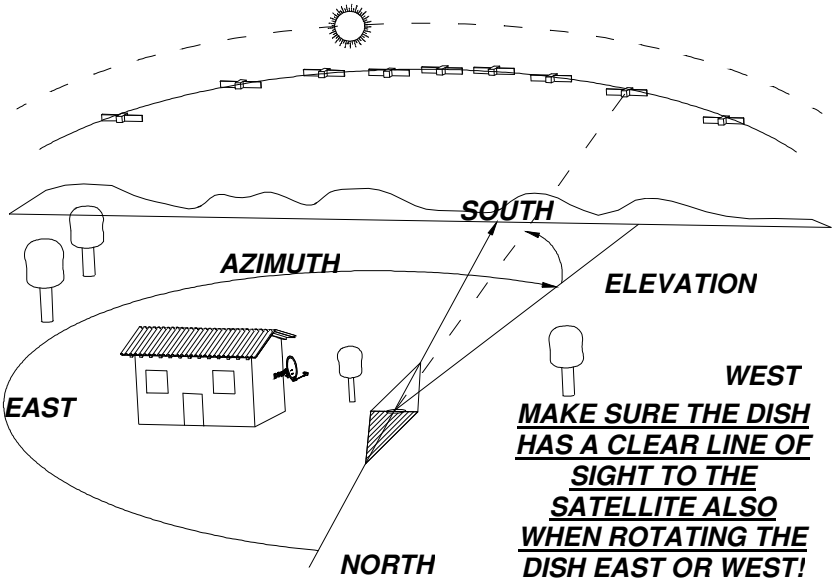
Latitude: on a map of your country, region or city find the horizontal line that is the closest to your place (Oslo 60, London 51.5, Berlin 52.5, Munich 48, Paris 49, Ljubljana 46, Rome 42, Madrid 40.5, Ankara 40, Algiers 37, Cairo 30). The latitude must be determined with a precision of 0.5 degree.

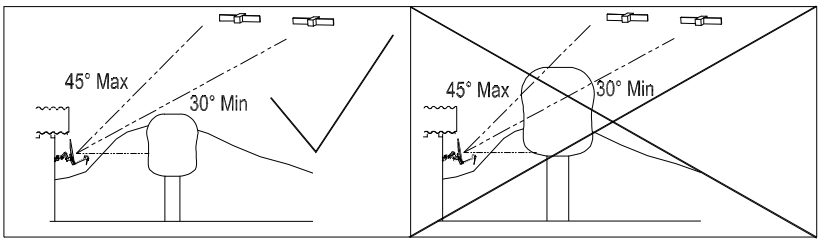
E) SELECTING THE INSTALLATION LOCATION

- The entire surface of the parabolic dish must have a line of sight (clear shot) to a satellite (the path must be clear of obstructions, such as trees, roof tiles and the like). *Satellites circle in a geostationary orbit, which is slightly below the orbit of the sun at the equinoxes (figure below). You can find the elevation angle for the highest (southern) satellite - depending on the latitude of your location - in the Table of elevation angles (second column).*

Make sure to prevent a possibility of causing injuries to passers-by, should the dish accidentally fall down.

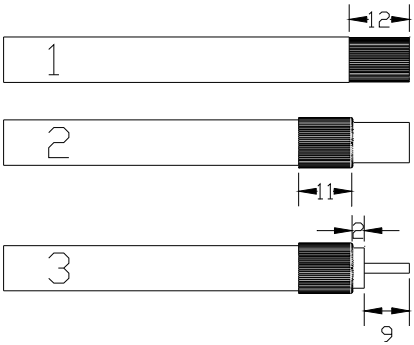
The motor is watertight; nevertheless, it is recommended that you mount it under a roof. Rain and, moreover, snow on the dish surface and at the LNB input reduce the reception quality. ***Naturally, the roof must not obstruct the sight to a satellite.***



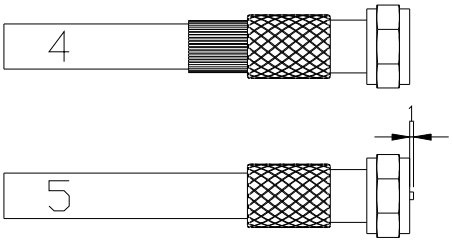


F) CONNECTING CABLE ASSEMBLY

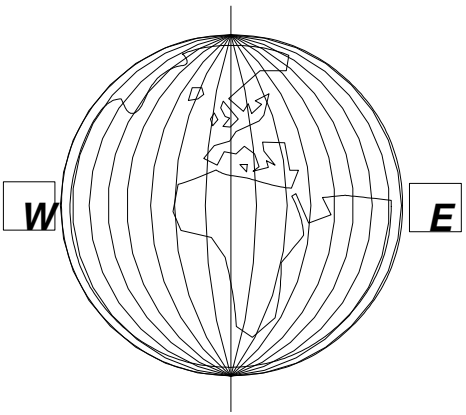
You need two cables fitted with F connectors to interconnect the LNB, the motor and the satellite receiver. The first cable connects the LNB and the motor, and the second one the motor and the satellite receiver. Make sure that the F connectors match the cable diameter. Too small connectors may damage the shielding, while too big may get loose. Prepare the cables as shown in the diagram below, and then attach the F connectors to them.



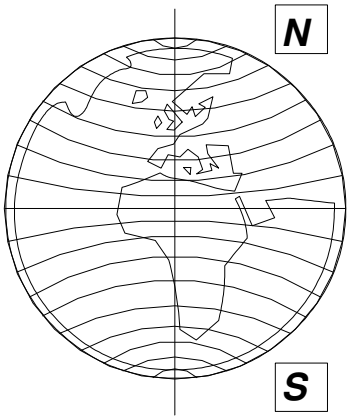
F-CONNECTOR ASSEMBLY



*No tools whatsoever should be used for connecting the cables (F connectors) to the receiver, motor or LNB: **you can only fix them by hand**. All connectors that might be exposed to moisture must be protected. Self-vulcanizing rubber makes the best protection, but a quality insulating tape will do as well. In the beginning, the tape should be tightened firmly; at the end you should loosen it slightly, or else the tape will unwind or will not provide watertight protection.*



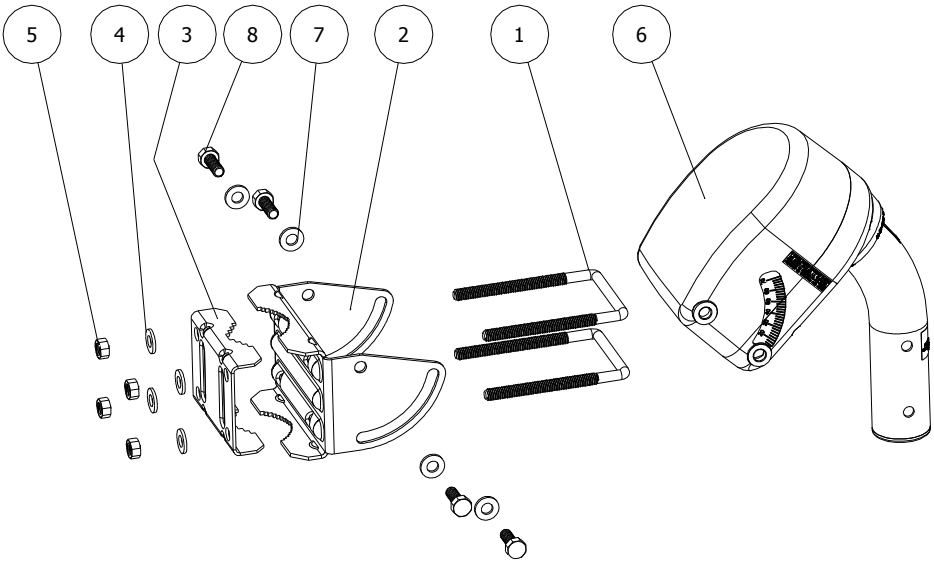
LONGITUDE OF YOUR LOCATION – READ IT FROM A MAP – SEE THE MERIDIANS



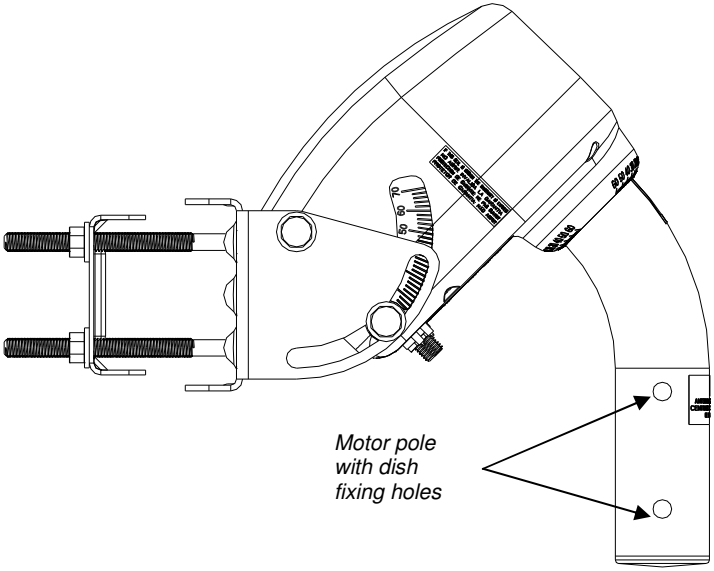
LATITUDE OF YOUR LOCATION – READ IT FROM A MAP – SEE THE PARALLELS

G) MOTOR ASSEMBLY

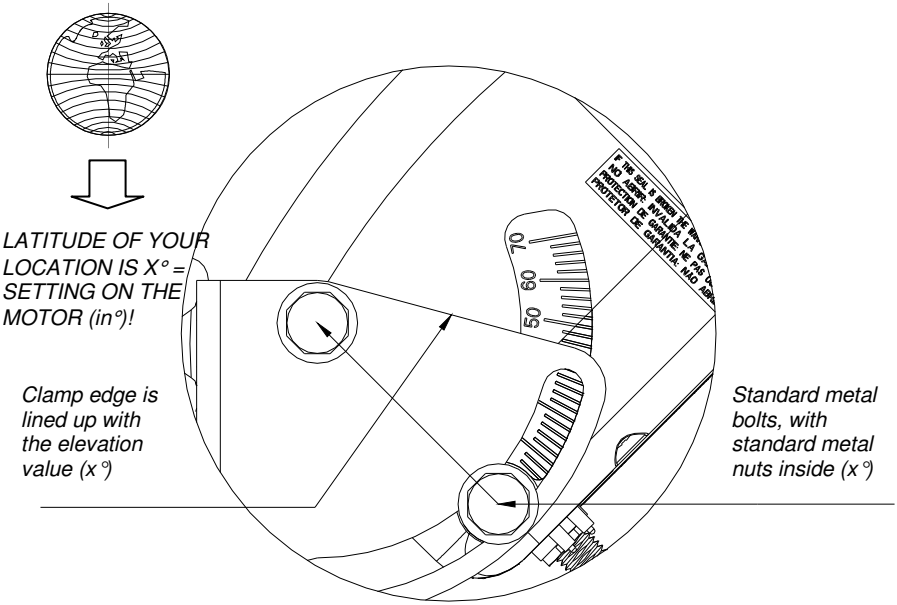
Assemble the motor following the sequence shown in the figure below. First assemble all the components fixed to the motor bracket, and then put the assembly onto the motor.



When assembled, the motor looks like this:



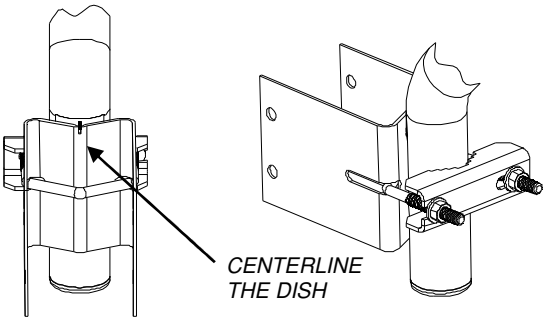
H) SETTING THE SCALE ON THE MOTOR CLAMP TO YOUR LATITUDE



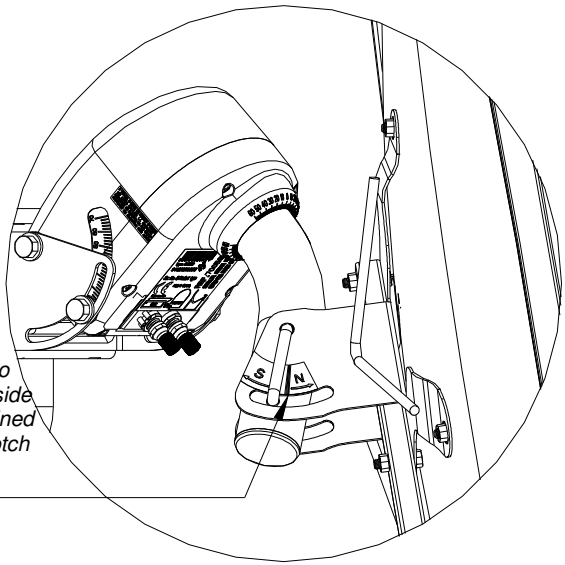
You must set the motor clamp at the angle that corresponds to your latitude. The latitude given in degrees directly corresponds to the setting on the motor clamp (X°). Example: for Paris at a latitude of 49° the angle will be 49°, for Slovenia at a latitude of 46° the angle will be 46°. You can tighten the screws firmly as there are standard metal nuts inside the motor.

I) MOUNTING THE DISH ON THE MOTOR POLE

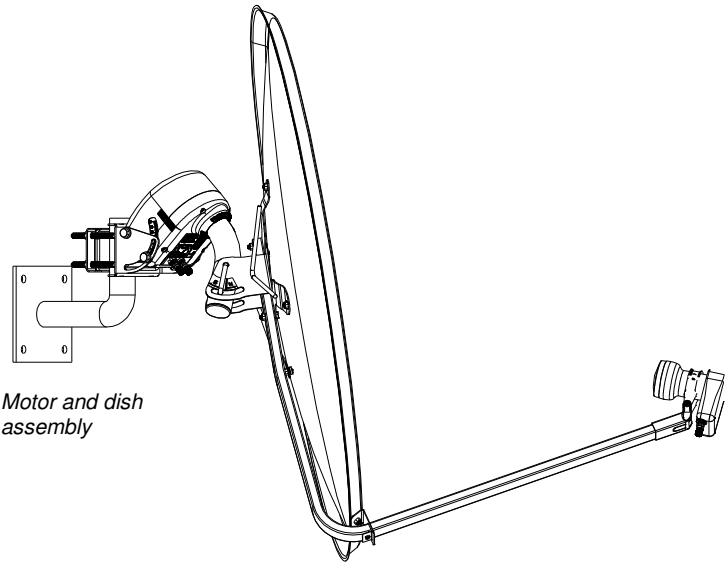
Mount the dish clamp onto the motor pole as shown in the figure below. The label and the point on the motor pole make the adjustment of the dish easier. The middle of the clamp must be precisely lined up with the centerline on the label. Finally, mount the dish on the dish clamp.
If you have a dish specially adapted for a motor, fix it with the U-bolt (enclosed to the dish) through the holes on the motor pole.
Fix the dish clamp at least 1 cm from the bottom in order to reduce the force exerted on the motor. Make sure the dish does not slide off the pole. Secure it.



The following two figures show how to assemble and set a dish adapted for the motor;

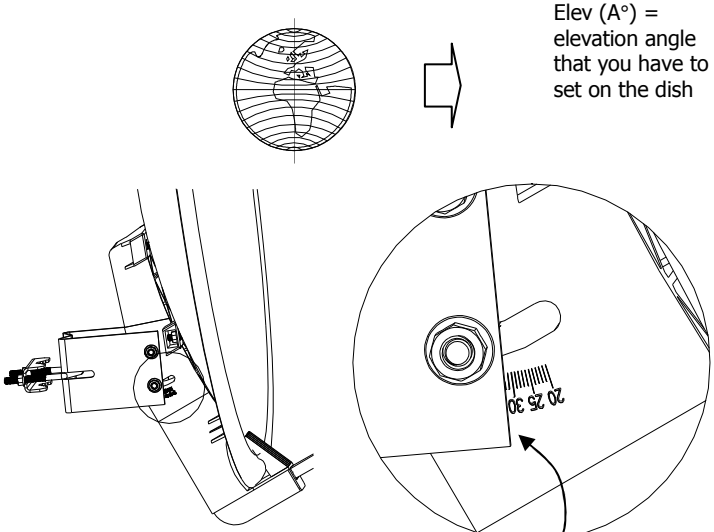


Set the dish so that the right side of the bolt is lined up with the notch mark



Motor and dish assembly

Ordinary dish assembly and setting:
set the dish elevation angle as indicated in the table with regard to your latitude.



Set the dish to the angle indicated in the table for your latitude (third column).

Table:
Lat = latitude of the user's location
Elev (A°) = elevation angle that you have to set on the dish

GL	Elev (S°)	Elev (A°)
30	57.0	41.5
31	55.9	41.5
32	54.7	41.0
33	53.6	41.0
34	52.5	41.0
35	51.3	40.5
36	50.2	40.5
37	49.1	40.5
38	48.0	40.5
39	46.8	40.0
40	45.7	40.0
41	44.6	40.0
42	43.5	40.0
43	42.4	40.0
44	41.3	39.5
45	40.2	39.5
46	39.1	39.5
47	38.0	39.5
48	36.9	39.5
49	35.8	39.0
50	34.7	39.0
51	33.6	39.0
52	32.5	39.0
53	31.4	39.0
54	30.3	38.5
55	23.7	38.5
56	28.2	38.5
57	27.1	38.5
58	26.1	38.5
59	25.0	38.5
60	23.9	38.5

CAUTION: ***A dish not tightened securely can slide off the motor pole, thus causing material damage, injuries to people or even death! Make sure that the dish cannot possibly slide off.*** ***SECURE IT.***	**!**

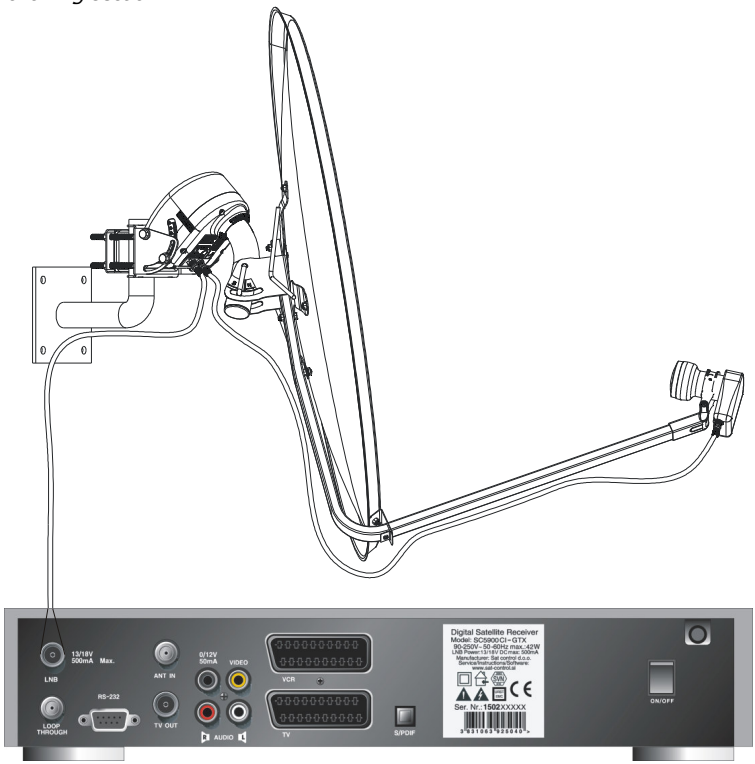
EXAMPLE:
PARIS, APPROX. LATITUDE 49° ► SET THE DISH AT 39.0°

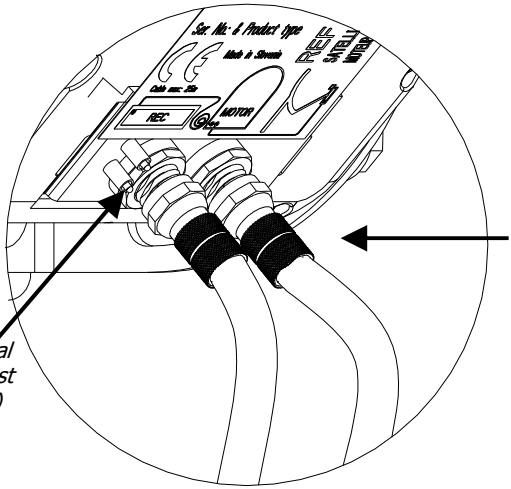
The table shows the "dish elevation angles" on the motor pole depending on the latitude. The first column shows the latitude, the second column the elevation angle of the southern satellite, and the third column the elevation angle that you have to set on the dish.

On the dish, set the value you can find in the third column of the table. Actually, this is not a true elevation, but the value set on the dish elevation scale. Due to a possible incorrect bending of the motor pole and because other errors add up, the dish elevation angle may deviate by one degree or even more.

J) CONNECTING THE RECEIVER AND THE MOTOR

Connect the cables as shown in the figure. Then, turn the receiver on, enable the DiSEqC mode or the "Go To X" function on the receiver, and enable the motor and the LNB power supply. When you read the instructions and learn how the motor works, you can mount the assembly on the mast. See the following section.





Detail view of F-connectors attachment

Detail view of buttons for manual motor rotation east (E), and west (W)

K) MOTOR CONTROL USING THE MOTOR BUTTONS

Functions of the buttons, and an explanation of how to control the motor by using the E / W buttons on the motor (E-EAST, W-WEST)

*E=(_ -_) A short press at the **E** button rotates the motor east **(E)** by 1 minimum step.*
*E=(_ ----------) Keeping the **E** button depressed rotates the motor east **(E)** as long as the button is depressed.*

*W=(_ -_) A short press at the **W** button rotates the motor west (**W)** by 1 minimum step.*
*W=(_ ----------) Keeping the **W** button depressed rotates the motor west **(W)** as long as the button is depressed*

	E	***W***	
(_ -_)=short movement (_ ----------)=long movement	*rotating E←*	*rotating →W*	*(_ -_)=short movement (_ ----------)=long movement*

L) MOTOR CONTROL BY USING THE »Go To X« FUNCTION

You can only use this function is your receiver supports it, too. If you have the "Go To X" function, you should ignore the section below (M).

This function requires no programming at all.

It operates in the following manner: the receiver computes coordinates for any SATELLITE (e.g. ASTRA) on the basis of your location latitude and longitude that you have previously entered; then it sends this computed value by using DiSEqC communication via the coaxial cable to the SM3D12 motor. The motor, in turn, rotates so that it points precisely at such satellite, depending on your location on the earth.

This will work on one condition, i.e. that all the desired satellites (e.g. ASTRA) have been pre-programmed in your receiver

By rotating the motor with the dish on the mast, you only have to find the satellite that you have set in the receiver (e.g. ASTRA).

M) PROGRAMMING THE SOUTHERN-MOST SATELLITE ON A MOTOR WITH THE DiSEqC 1.2 RECEIVER

Please read the instructions for the use of the receiver so that you will know how to rotate the motor to the left (E), or to the right (W), store the satellite position in a program location, and change a satellite or a channel. The motor recognises the following commands:

1) *Rotate East.*
2) *Rotate West*
3) *Store the current position for satellite xx.*
4) *Call satellite xx.*
5) *Go to the outermost or »HOME« position (or call satellite 00) (you should call satellite 00 whenever the motor loses a position status due to an external electrical disturbance).*

The setting of satellite positions varies with receivers, therefore follow the receiver manual if you have a receiver that supports the DiSEqC 1.2 protocol or function. In the receiver, the satellite positions are normally stored under numbers (e.g. from 1 to 30); so it is recommendable to follow some logical sequence.

Following the instructions from this section you can only select and program the southern-most satellite (for other satellites, see the following section). Proceed as follows: by using the satellite receiver commands, first rotate the motor pole so that the arrow points precisely at the value on the motor scale (ring) that has been calculated according to the formula given below for the southern-most satellite; then store the position under a number chosen in the table below.
On your site, the southern-most satellite is the one that is the closest to your location's south.

CAUTION: the southern-most satellite must not be more than 5° east (E) or west (W) of your location's south, or the setting will be wrong. See the table below.

EXAMPLE: if your mounting site is 14° E, choose the satellite HOT BIRD as your southern-most satellite (see the table below); HOT BIRD is at 13°E, so you will have to set the motor pole at 1.15°W.

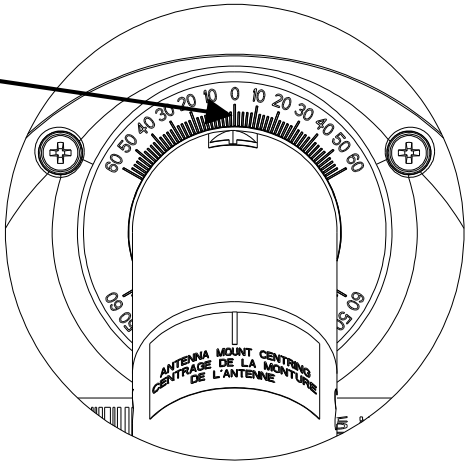
FORMULA FOR THE CALCULATION OF THE SOUTHERN-MOST SATELLITE ON THE MOTOR:

(Satellite longitude – Longitude of your location) x 1.15 = Setting on the motor.

For west (W), use the + SIGN	***For east (E), use the - SIGN***

This means: (-13°) – (-14°) = +1° x 1.15 = +1.15° *See the figure.*

Detail view of the motor set at 1.15°W.

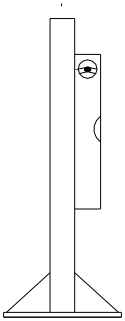


For searching and programming other satellites, see the table in the link below and the following section.

http://sadoun.com/Sat/Satellites/Satellite-List.htm

If the receiver is not provided with pre-programmed satellite numbers, assign them in accordance with the link above. Some receivers do not use satellite numbers at all, in which case satellite names are used as positions and the table above is irrelevant.

N) INSTALLING THE SATELLITE ON A MAST, AND SEARCHING THE SATELLITE SIGNAL



Before mounting the motor and the dish onto a mast, make sure the mast is vertically plumb. Even a deviation of only a quarter of a degree (inclination of 0.5 cm at a height of 1 m) may cause deviations due to which corrections will be required.

Using the satellite finder and/or the satellite receiver, align the motor with the dish to the selected southern-most satellite (not more than 5°E or W of south). *Horizontal alignment should be made by rotating the motor on the mast,* ***and not by rotating the motor pole or the dish itself*** *–* ***see the figure below in this section****. The elevation is corrected by adjusting the dish elevation angle,* ***and not by changing the motor tilt. Make sure that the signal received is the southern-most satellite signal.***

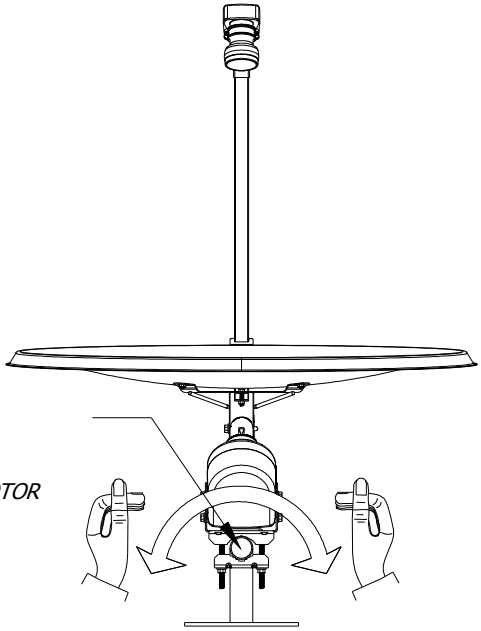
The accuracy of the alignment is very important and you should not be satisfied with just any picture you get on the TV set*. A digital receiver and its indicator of the reception quality are very useful tools for the precise dish setting; with an analog receiver we recommend that you decrease or increase the dish elevation angle to the limit of signal reception (the picture is sparkling). You can also do a trick by placing an obstacle (a damp cloth or paper) in front of the LNB (over the input facing the dish); as a result, the reception deteriorates, making optimal alignment easier.*

All you have to do now is to precisely set the dish elevation angle to get optimum reception*, and tighten the bolts. In this way, the alignment to the southern-most satellite is finished.*

Attention: it is the satellite programme schedule on the basis of which you will know which satellite (channel) you are actually viewing. Therefore, check up at web pages or in a magazine that contains all programme schedules and frequencies for each satellite.

Now you can start searching and programming both east and west satellites. Point the receiver at the next east satellite (see the table, and sort the satellites by longitude from the easternmost to the westernmost), and check for the signal strength by a minimum dish rotating east/west. If – on rotating the dish – the signal deteriorates, program the position via the receiver under the number indicated in the table. Continue until you reach the motor rotation limit. Then do the same in the west direction.

CAUTION: do not forget that you have to store each satellite under a different number! You can also change the satellite numbers.



TO SET THE SOUTHERN SATELLITE, YOU SHOULD ONLY ROTATE THE MOTOR ON THE POLE TOWARDS THE SOUTH

O) FINE TUNING

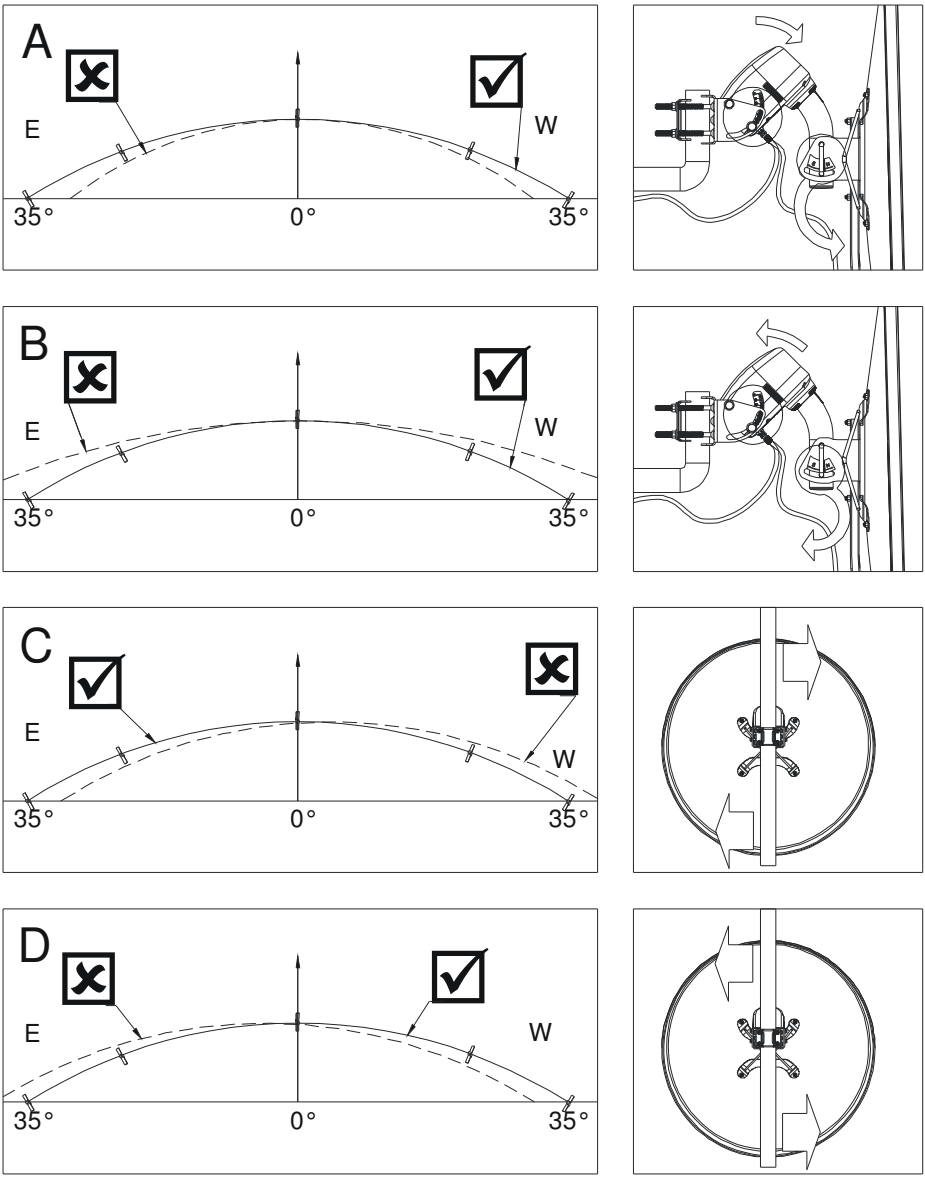
If you followed the instructions and you had some luck, positioning to the south was precise enough, so the major part of the job is now done. Otherwise, deviations will be slightly bigger, so fine tuning will take longer.

First check up the setting of all the angles. Any error affects the outermost (east and west) satellites most of all, and results in a wrong dish elevation angle. This is a high-precision job for a person with some technical skills, equipped with at least a simple satellite finder.

1.) On the satellite receiver, select the easternmost satellite that you have programmed. *If the outermost satellite has a weak signal, we recommend that you select a nearer one, with a stronger signal. Never choose an obsolete inclined satellite (please see the GLOSSARY).*

2.) The second step is to check up the dish elevation for the aligned east satellite*. The easiest way to do this is by leaning the mast back and forth towards the satellite or - if this is not possible - by leaning the dish itself. With this minimum leaning nothing is detached or actually moved; all you have to do is a minimum bending of the mast or dish,* ***not causing a permanent deformation****.*

This job will be difficult to accomplish without an instrument or reception quality indicator provided with virtually all digital receivers. To notice a drop in the quality of analog reception on a TV set, the mast or the dish have to be leant a long way, therefore use the tricks described in the previous section. Put down or memorise the results obtained to compare them with those described below.



3.) Repeat steps from items 1 and 2 with the westernmost satellite as well. *There can be 5 basic result combinations. The four combinations that require corrections are shown in the figure above.*

A.) The dish is "too low" at both outermost points - when leaning the mast or dish back (away from the satellite), the reception improves.
Reduce the motor tilt – set a smaller angle, and increase the dish elevation – set a bigger angle.

B.) The dish is "too high" at both outermost points - when leaning the mast or dish forth (towards the satellite), the reception improves.
Increase the motor tilt – set a bigger angle, and reduce the dish elevation – set a smaller angle.

C.) The east satellite is too low, and the west one is too high.
Rotate the mast with the motor slightly towards the right (west), viewing from the rear (even though the mast has been vertically plumb, you must now lean it and fix it this way).

D.) The east satellite is too high, and the west is too low.
Lean the top of the mast with the motor slightly towards the left (east), viewing from the rear (even though the mast has been vertically plumb, you must now lean it and fix it this way).

E.) Both outermost points (west and east) have optimum reception.
Congratulations! You have done an excellent job.

Correct and repeat the procedure of checking up the outermost satellites until you get satisfactory results. The tuning completed, do not forget to remove the cloth or paper if you have used them.

Remember: firmly secure the bolts so that the dish or the motor does not get loose, thus losing the signal and the settings, or that it does not fall down. The set-up of your system is now finished.

P) TROUBLESHOOTING

Should an error occur in the operation, first attempt to remedy the problem on your own.

1.) Whenever the motor does not operate correctly, the first step to be taken is
- Resetting the motor, i.e. sending it to the selected outermost (HOME) point,
- If the motor does not respond, plug the satellite receiver out of the mains for a minute, and then plug it in again.

2.) Despite taking steps from item 1, the motor will not move.
- The connection between the receiver and the motor may be broken or there is a short circuit in the LNB or in one of the F connectors. The error may have occurred in the satellite receiver as well – either the LNB power supply has been switched off, or the DiSEqC 1.2 mode has been disabled.

3.) Even after you have reset the motor, wrong satellite positions persist. The reason may be an obstruction preventing dish rotation to the outermost point. When the dish is halted by an obstruction while being sent to the outermost point, the motor recognizes the point as a new outermost point, and all the satellites are positioned to once more, but relative to this new point.
- Reset the motor again and check if it can rotate to the outermost position. Remove the obstruction, if any.

4.) All satellite positions deviate by an equal angle; everything seems all right with regard to the motor scale – please see the item above.
- Obviously, the motor has been rotated on the mast or the mast itself has rotated. Do not correct positioning to satellites by programming, but by returning the motor to its original position. If you have already "corrected" any of the positions, align the motor to a satellite not having been "corrected" yet to get an optimum motor position.

5.) Certain satellite positions only are incorrect. Most likely, these satellite positions have been re-programmed by mistake.
- Re-program the wrongly positioned satellites.

6.) On manual rotation, the motor keeps stopping at the same point and does not move on.
- Most likely, there is a micro-controller error; reset the motor (send it to the outermost – HOME point).

7.) The dish does not rotate at the same speed all the time.

- *Due to horizontal or vertical polarization, the satellite receiver does not supply the same voltage at all times, so this is a normal condition.*

End.

Dear customer,

If you were not able to put the system into operation or have problems installing it, call the Technical Assistance phone as indicated on the first and the last pages. We shall be pleased to provide you with further information.
If you have installed the system to your satisfaction, we congratulate you. If you are satisfied, tell other people, if you are not satisfied, tell us.

Your supplier.

Q) TABLE OF CONTENTS

R) WARRANTY

Warranty statement

We hereby declare that:
Within the warranty period, the product will operate error-free if used for the purpose it has been designed for, following the instructions for installation and use.
Within the warranty period, but not later than within 45 days of reporting a fault in writing, we shall remedy free of charge - upon your request - any faults on the product due to which the product does not operate flawlessly.
At your request, a product not repaired within 45 days from reporting a fault will be replaced by a new one. The warranty period for the product shall be extended for the time of repair.
The warranty period starts on the day of purchase in a retailer's store, which can be proved either by a correctly filled in warranty form or the original invoice received on purchase.
Warranty period: 24 (twenty-four) months for all products and components.
Warranty terms:
The buyer is liable to report any fault to our address in writing. The product will be repaired under the warranty terms on condition it is sent to our address and at our expense via regular mail or through a delivery company.
For a telephone no. to order product delivery call your local supplier.
Should you not be able to use the services of the delivery company, we shall acknowledge and account the mailing and transport expenses at the valid mail or railway tariff.
The warranty is void in the following cases or as a result of:
Failure to follow the instructions for use;
Repair carried out by an unauthorized person;
Building in non-original parts;
Damage being a result of mechanical impacts caused by the buyer or a third person.
Repair within the warranty period
Any repair within the warranty period will be carried out upon the presentation of a correctly filled in warranty or the original invoice you received on the purchase of the product.
Repair outside of the warranty period:
Do not hesitate to call us after the expiration of the warranty period. We provide original parts; for some newly installed parts, a new warranty will apply.
Warranted servicing time
Warranted servicing time - a period throughout which the manufacturer warrants servicing and provision of accessories and spare parts - starts on the date of the product purchase. Servicing is carried out in authorized service centers listed below. The product service life and warranted maintenance time is at least 7 (seven) years.

Product type	*Serial number*	*Date of sale*	*Seller's stamp and signature*
SM3D12			

Repair and replacement of parts, extension of the product warranty

Serial number:	*Date:*	*Repair and replaced parts*	*Service technician's stamp and signature*

Authorized service centers:	*Authorized service centers:*	*Authorized service centers:*

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