

REMA6W

CONTROL SOFTWARE FOR JR-6 / JR-6A
SPINNER MAGNETOMETERS



Rema6
JR-6A Instrument Control Program
for Windows



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Software Manual

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User Manual Conventions

 **Warning** symbol is used to draw a special attention to an important information.

 **Information** symbol is used to give a useful hint or tip for more comfortable work with the instrument.

REMA6W Software Conventions

Azimuth



User interface terms.

User interface buttons.

Execute|Calibration

[F1]

Menu Item.

Keyboard shortcuts.

1 REMA6W Introduction

REMA6W is data acquisition software for AGICO Spinner magnetometers JR-6 and JR-6A. REMA6W supports standard magnetic remanence measurements as well as measurements of anisotropy of anhysteretic magnetic remanence (AARM). User friendly interface allows full control of JR-6 magnetometers, immediate visualization of results and exporting of data files as well as graphics outputs. REMA6W can be run on any MS Windows operating system from Windows 98 up to Windows 10.

Main Features

- Supports manual, semi-automatic or automatic measurements
- Enables Anisotropy of Magnetic Remanence measurements (AARM)
- Graphics can be exported into Windows Meta files
- Visualization of results with respect to the magnetic state or name of the specimen
- User friendly interface
- Last version can be downloaded for free from www.agico.com

2 Installation and Uninstallation

2.1 Software installation

The installation is very straightforward and consists of several easy steps. You can navigate a step forward or backward by clicking on the **Next** or **Back** buttons.

1. Run the installation wizard by double-clicking on `REMA6W-Setup.exe`. The Setup window appears.
2. Select the installation directory. It is recommended to keep the default directory (`C:\Agico\REMA6W`) as set by the installation wizard.
3. Choose the folder name in the Start menu.
4. Indicate whether you want to create a desktop icon.
5. After making/revising your preferences start the installation by clicking on the **Install** button.
6. Finish the installation by clicking on the **Finish** button.

2.2 Uninstalling of the software

To remove **REMA6W** from your computer, select the `Uninstall REMA6W` item in the `Start|Programs|REMA6W` menu option. Most of the application files, desktop icons, and shortcuts will be deleted. Configuration files and data files will not be deleted.

3 Main Window

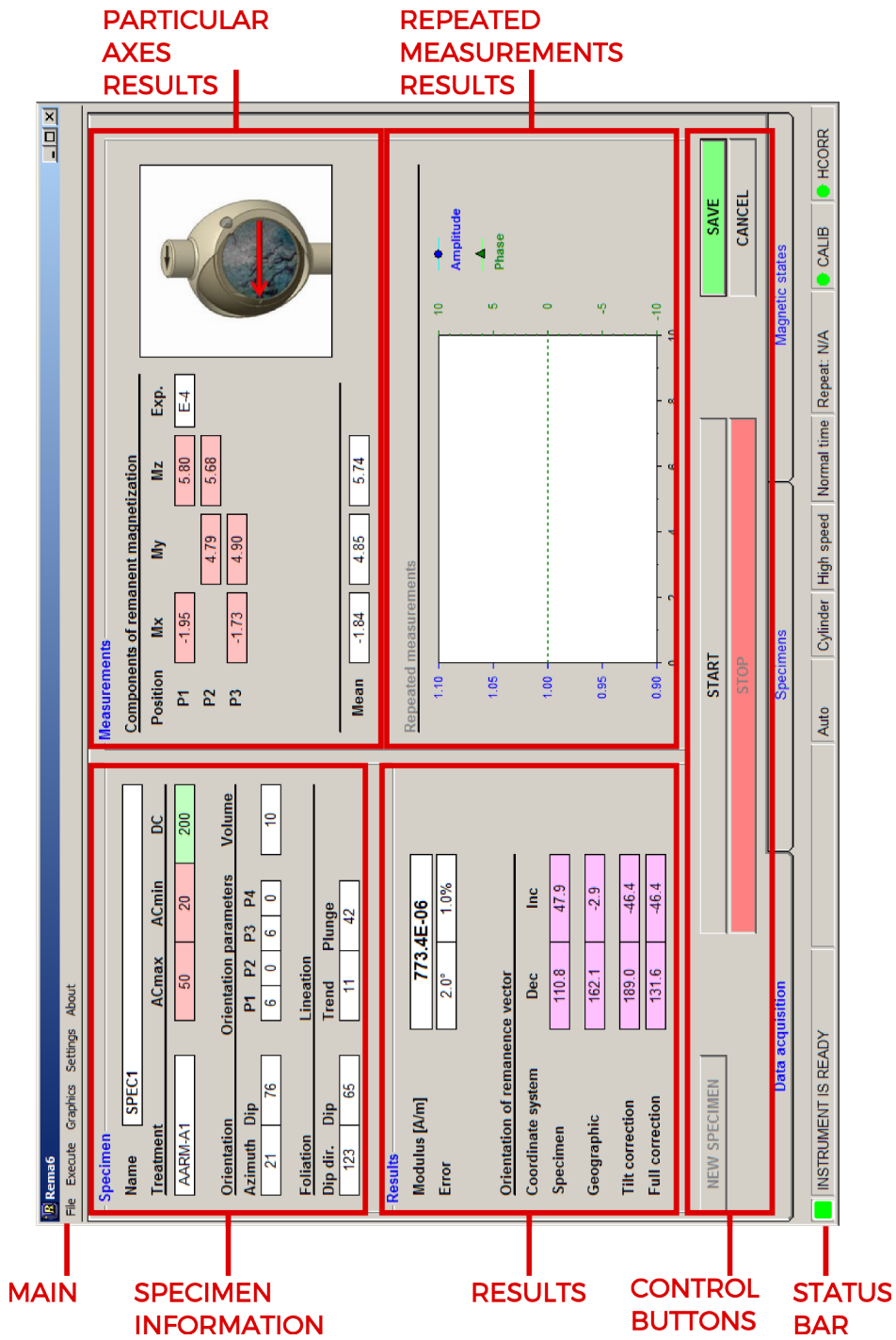


Figure 1: REMA6W main window.

4 Instrument Initialization

The initialization is started by clicking on the **INITIALIZE** button in the control panel (keyboard shortcut: [Ctrl+Ins]). Initialization routine is monitored in the **Instrument initialization** window (Fig. 2), result of each initialization step is displayed and successfully completed steps are highlighted in green. The initialization routine consist of the following steps:

1. Searching for instrument connection via serial port.
2. Setting auto ranging.
3. Testing firmware version.
4. Testing of the automatic manipulator (if present)
5. Setting speed of the rotation.
6. Setting acquisition time.
7. Setting holder initial position.

Initialization window is closed by clicking the **OK** button.

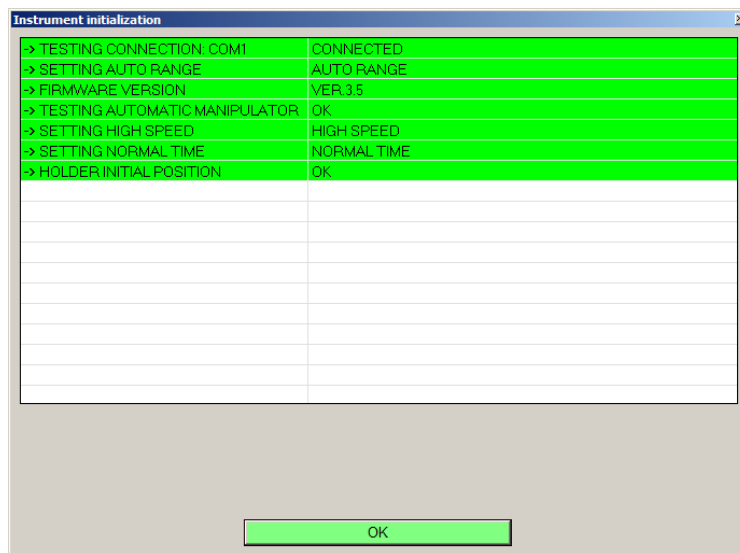


Figure 2: Instrument initialization window.

5 Instrument Configuration

Parameters of the measurement such as specimen shape, speed of rotation and other can be set in **Instrument configuration** window. The Instrument configuration window (Fig.3) can be accessed by the Main menu item `Setting|Instrument` or using shortcut [F12]. The Instrument configuration window allows to set:

- **Holder type** – automatic, semi-automatic (automatic holder is used, but position is changed manually) or manual holder can be chosen. Manual measurements can be performed in two, four or six positions. Automatic or semi-automatic measurements are performed in three perpendicular axes. See page 17 to learn how to insert specimen into holder.
- **Specimen type** – Cylindrical (diameter 25.4 mm, length 22 mm) or cubic sample (20×20×20 mm, or 23×23×23 mm with respect to your specimen holder) shape can be chosen.
- **Acquisition time** – length of data acquisition. Normal time is recommended for standard measurements. Long time option can improve sensitivity if magnetically weak samples are measured, Short time option can save a little bit of time if magnetically strong samples are measured.
- **Speed of rotation** - High speed (87.7 rev/s) is designed for regularly shaped and solid specimens, Low speed can be used for slightly irregular specimens or for fragile samples such as sediments. High speed option gives slightly better sensitivity of the measurements.
- **Repeat mode** – In repeat mode any particular position is repeatedly measured and the average from the given number of last measurements is calculated – only average data are stored, the individual repeated results are not available.
- **Actual volume** – actual volume of the specimen with respect to its geometry can be set.

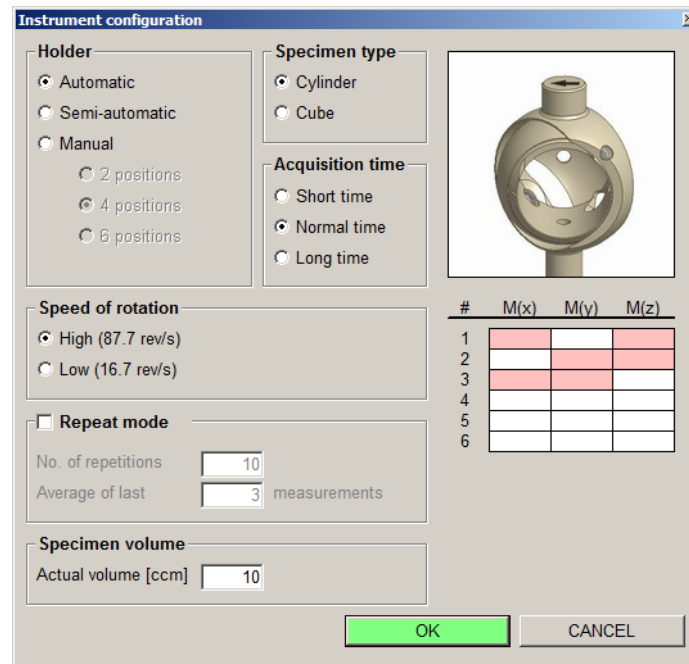


Figure 3: Instrument configuration window.

6 Orientation Parameters Window

Orientation parameters are crucial for correct transformation of remanent magnetization vector direction from **Specimen** coordinate system to **Geographic, Tilt** or **Full corrected system**. Orientation parameters are described in more detail on page 18. Orientation parameters window is opened in the Settings | Orientation Parameters in the Main menu bar. Values can be changed after click on **CHANGE** button. Desired set of the orientation parameters is saved by clicking on **SAVE** button. Click on the **CANCEL** button keeps orientation parameters as set before.

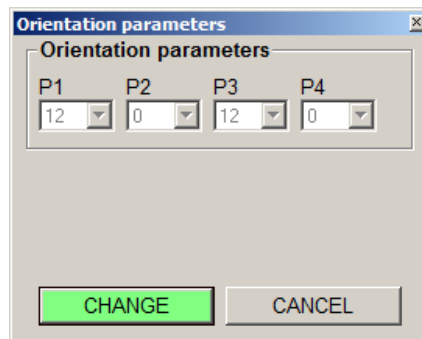


Figure 4: Orientation parameters window.

7 Calibration

7.1 Setting of the Calibration Standard Values

Magnetization and volume of the calibration standard can be changed in the **Calibration standard values** window (Fig. 5). This window can be accessed thru **Settings | Calibration standard** item in the Main menu bar.

Values can be changed after depressing **CHANGE** button. Values of the magnetization (A/m units) and volume (cm³) are saved by clicking on the **OK** button. If **CANCEL** button is used, previous values are kept.



Changing of the calibration standard values zeroes previous calibration results and holder correction values.

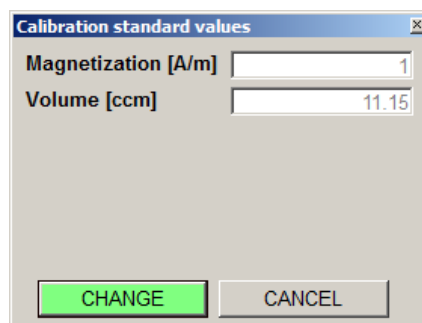


Figure 5: Calibration standard values window.




7.2 Calibration Routine

Item **Execute | Calibration** in Main menu bar or shortcut [F3] opens **Instrument calibration window** (Fig. 6). Check calibration standard values, fix calibration standard into the holder as shown on the picture, close coils and install shielding hat. Then run calibration by clicking on the **START** button or pressing [Enter]. Results of the calibration routine (**Gain** and **Phase**) must be within these ranges:

	High speed	Low speed
Gain	7±0.7	77±10
Phase	-40±15	70±15

Table 1: Proper calibration values ranges for both speeds of rotation.

Software checks calibration results and informs about successful or invalid calibration. Calibration results are saved by clicking on **SAVE** button. If **CANCEL** button is used, then previous calibration constants remain valid.

-  In the case of emergency (ie. standard leaves holder during procedure) calibration routine can be stopped immediately using **STOP** button or shortcut [SpaceBar].
-  Saving of the calibration results zeroes holder correction values.
-  Information about calibration is also Shown in the **Status bar**.
Red mark next to the CALIB indicates non-calibrated instrument.
Green mark is for correct calibration.

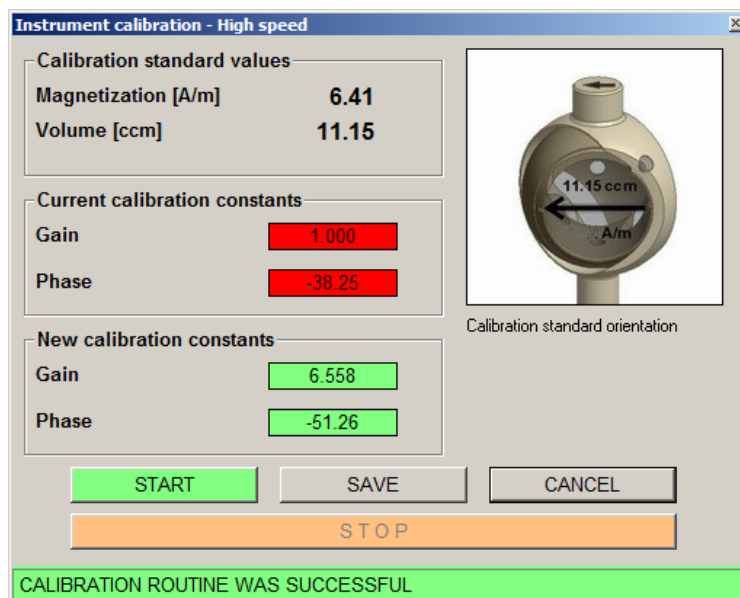


Figure 6: Calibration routine window.

8 Holder Correction

Holder correction is crucial for correct measurement of the weakly magnetized samples. Window (Fig. 7) for such routine is opened by item `Execute | Holder Correction` in the Main menu bar or by shortcut [F4]. Make sure that your holder is clean and empty, close the coils, install shielding hat and run the Holder correction by clicking on the **START** button. Measurement along single (manual holders) or three axes (automatic holder) is performed. Holder correction values are saved by the **SAVE** button. If **CANCEL** button is used, then previous holder correction values remains valid. If magnetization of the empty holder is too high software warning will notify you to clean the holder.



Information about holder correction is also shown in the **Status bar**. Red mark next to the HOLDER indicates non-calibrated instrument. Green mark is for correct holder correction values.

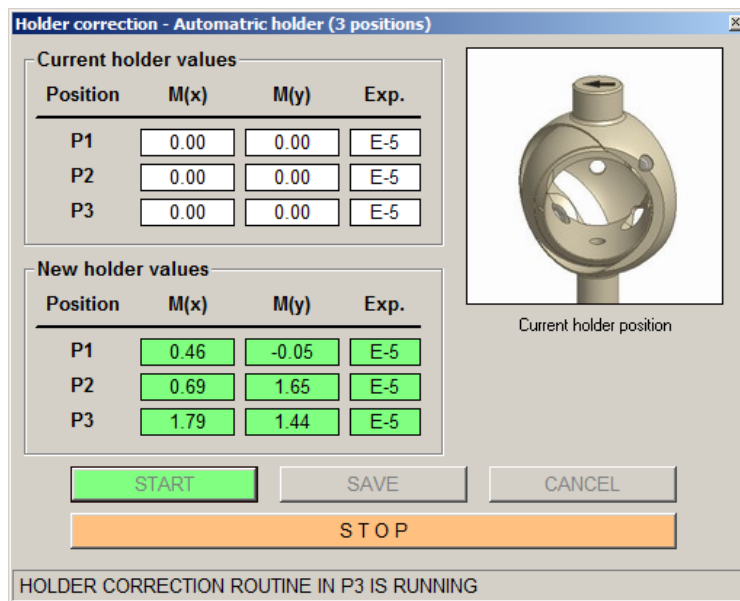


Figure 7: Holder correction routine window.

9 Specimen Measurement

9.1 New Specimen

New specimen window (Fig. 8) is activated by pressing the **NEW SPECIMEN** button on the main screen (shortcut [Enter]). There are two ways how to fill the information about specimen.

- **Manual entry**

All the information about current specimen has to be written into respective boxes.

- **Using of Geological file**

Geological data file (more information on page 19) can be loaded using menu item on the left top side of the window. After writing exact name one of the specimens from the ged file all the information about particular specimen, except **Magnetic treatment**, are filled into the respective boxes.

Treatment		ACmax [mT]	ACmin [mT]	DC [uT]		
AARM		50	20	200		
A-mode (12 positions)				A1		
Orientation		Orientation parameters				Volume
Azimuth	Dip	P1	P2	P3	P4	
21	76	6	0	6	0	10
Foliation		Lineation				
Dip dir.	Dip	Trend	Plunge			
123	65	11	42			

Figure 8: New specimen window.



Proper **Calibration** is mandatory for specimen measurement. **Holder correction** is highly recommended especially if the weakly magnetized samples are measured.

9.2 Measurement Procedure

Measuring procedure differs for automatic, semi-automatic and manual measurement mode.



In the case of emergency (ie. specimen leaves holder during procedure) measuring routine can be stopped immediately using the **STOP** button or shortcut [SpaceBar].

9.2.1 Measurement in Automatic Mode

1. Insert specimen into the automatic holder with respect to the figure on the left top side of the main screen.
2. Use the **NEW SPECIMEN** button and fill the specimen information.
3. Press the **START** button (shortcut [Enter]) to start the measurement. Specimen orientation is changed by the automatic manipulator during the measuring process, measurement routine is performed automatically.
4. Results from particular measurements are shown in the **Measurements** box.
5. When all three particular measurements about y, x and z axes are completed the results for the specimen are shown in the **Results** box
6. Successful results are saved by the **SAVE** button. If some data file is opened then result is appended to this file. If not, then new data file has to be created in the pop-up window.
7. The **CANCEL** button deletes all the results from the actual measurement.

9.2.2 Measurement in Semi-automatic Mode

Similar to the automatic mode, but requires user to change position of the sample holder.

1. Insert the specimen into the automatic holder with respect to the figure on the left top side of the main screen.
2. Use the **NEW SPECIMEN** button and fill the specimen information.
3. Press the **P1** button (shortcut [Enter]) to start the measurement.
4. After the measurement in first position, change position of the sample holder to the position 2, close the coils, install the shielding hat and hit the **P2** button (shortcut [Enter]).

5. After the measurement in second position, change position of the sample holder to the position 3, close the coils, install the shielding hat and hit the **P3** button (shortcut [Enter]).
6. Successful results are saved with the **SAVE** button. If some data file is opened then the result is appended to this file. If not, then new data file has to be created in the pop-up window.
7. The **CANCEL** button deletes all the results from actual measurement.

9.2.3 Measurement in Manual Mode

1. Insert specimen into the chosen manual holder into the position 1 with respect to the figure on the left top side of the main screen.
2. Use **NEW SPECIMEN** button and fill the information about specimen.
3. **P1** button (shortcut [Enter]) to start the measurement.
4. When measurement in first position is finished, change position of the specimen into the holder to position 2, close coils, install shielding hat and hit **P2** button (shortcut [Enter]).
5. Continue with previous steps until all positions (two, four or six) are measured.
6. Successful results are saved by the **SAVE** button. If some data file is opened then result is appended to this file. If not, then new data file has to be created in the pop-up window.
7. **CANCEL** button deletes all the results from actual measurement.

9.3 Notes on the Results

- **Modulus** of the magnetic remanence vector is calculated, after the measurement procedure. Units are [A/m] with respect to the SI system.
- **Errors** are expressed as
 - Error of the vector direction – **Confidence angle** [deg].
 - Error of the vector modulus – **Relative error** [%].
- **Direction of the magnetic remanence vector** is shown in various coordinate systems with respect to the inserted sampling angles and the set of orientation parameters

10 Results Visualization

Switching from the **Data acquisition** tab to the **Specimens** or the **Magnetic states** (shortcuts [PgUp/PgDn]) allows basic visualization of the results from the current file with respect to the specimen name or to the magnetic treatment.

10.1 Specimens

The **Specimens** tab shows results of the magnetic treatment of the individual specimens from the current file. If one of the specimens from the list on left side is selected, then magnetic remanence vector directions are shown in the Wulf (equal-angle) projection and in the Zijderveld diagram. Normalized modulus of the remanent magnetization is shown as well as the data table. All the results can be shown in four coordinate systems – **Specimen, Geographic, Tilt corrected** and **Full corrected** systems.

Data table can be exported as *.dat (ASCII text file) file using File|Export function from the Main menu bar.



Data are always exported in the chosen coordinate system.

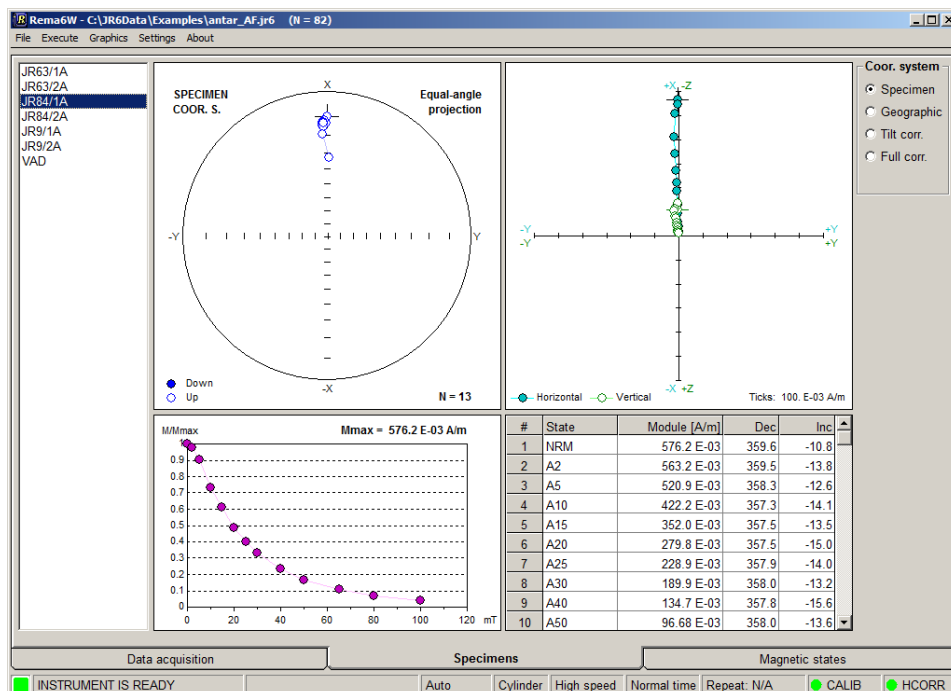


Figure 9: Specimens tab.

10.2 Magnetic States

Magnetic states tab shows results of the specimens with respect to the magnetic treatment of the specimens from the current file. If one of the magnetic states from the list on left side is picked, then magnetic remanence vector directions are shown in the Wulf (equal-angle) projection. Modulus of the remanent magnetization is shown as well as data table. All the results can be shown in four coordinate systems – **Specimen**, **Geographic**, **Tilt corrected** and **Full corrected** systems.

Data table can be exported as *.dat (ASCII text file) file using File | Export function from the Main menu bar.



Data are always exported in the chosen coordinate system.

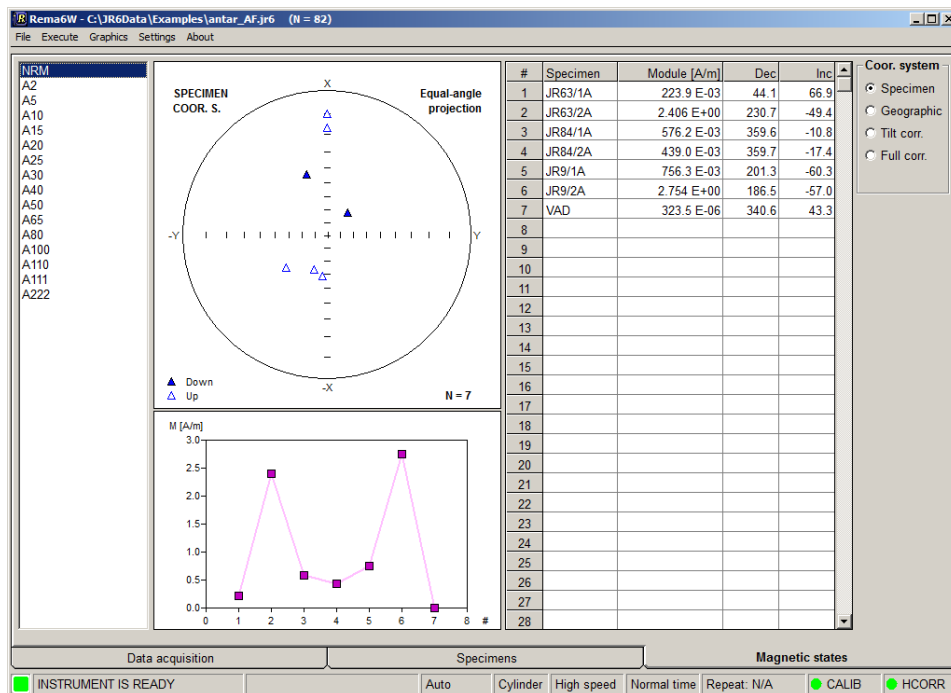


Figure 10: Magnetic states tab.

11 Data Formats

Results of the measurements are automatically saved to two data formats *.jr6 and *.txt. Both are ASCII-text files, but with a different structure. Software also allows to export the results to other data formats.

11.1 JR6 Data File

JR6 is fundamental data file (ASCII-text file) which can be loaded by the REMA6W or the Remasoft3 software. Structure of the single line of file is as follows:

Variable	Characters
Specimen name	10
Magnetic treatment	8
X component in specimen coordinate system	6
Y component in specimen coordinate system	6
Z component in specimen coordinate system	6
Magnitude of components (exponent of 10)	4
Azimuth	4
Dip	4
Foliation azimuth of dip	4
Foliation dip	4
Lineation trend	4
Lineation plunge	4
Orientation parameter P1	3
Orientation parameter P2	3
Orientation parameter P3	3
Orientation parameter P4	3
Precision of measurement	4
End of line	2

Table 2: Structure of the single line of JR6 file

11.2 TXT Data File

TXT file is more or less copy of all the information obtained after the successful measurement. Example of such file is below.

SPEC1 / A1					03-15-2017
SPEC.ANGLES					21 76
TECT.ANGLES	123	65	11	42	
E-4 H	M(x)	M(y)	M(z)		
1	-1.95		5.80		
2		4.79	5.68		
3	-1.73	4.90			
MEAN	-1.84	4.85	5.74		
Modulus	773.4E-06	A/m	Prec 2.0°	1.0%	
O.P:	6 0	6 0	DECL	INCL	
SPEC. S.			111	48	
GEOGR.S.			162	-3	
TILT Corr.			189	-46	
FULL Corr			132	-46	

Table 3: Structure of the single record of TXT file

11.3 RS3 Data File

RS3 file is binary data format used by the Remasoft3 software (can be downloaded for free from www.agico.com). This specimen file can be obtained using File|Export function from the Main menu bar.

11.4 DAT Data File

DAT format is simple ASCII-file in the form of table. Such data file is created if the table from the **Specimens** or **Magnetic states** tabs are exported.

11.5 ARE Data File

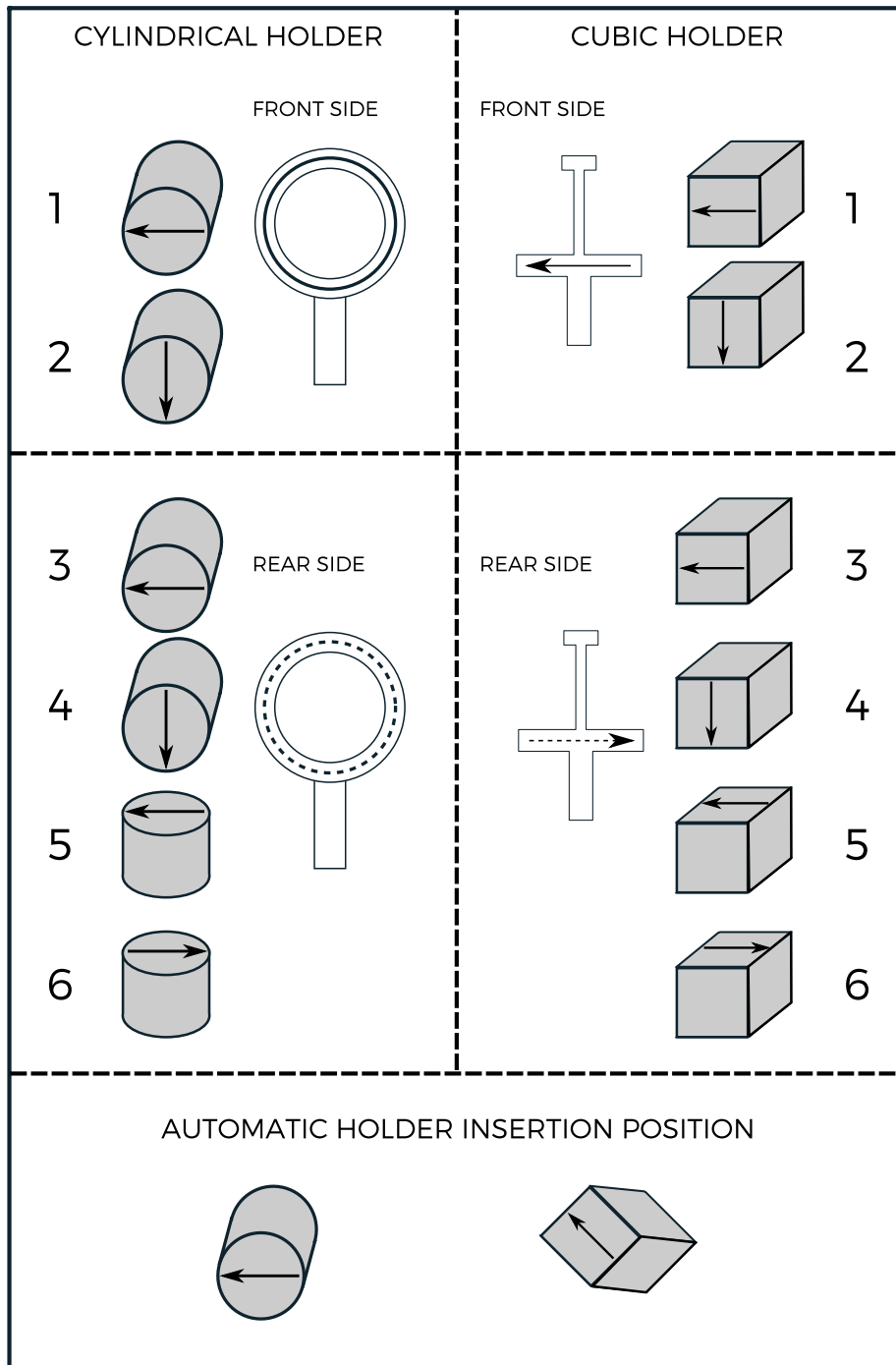
ARE data file is a binary data format created after complete Anisotropy of Magnetic Remanence routine (see page 20 for more details). This file can be loaded by the Anisoft4.2 software (can be downloaded for free from www.agico.com).

11.6 Other Formats

REMA6 software also allows to export results into the Enkin file (*.PMD), SuperIAPD (*.dat) formats, but their functionality is not guaranteed.

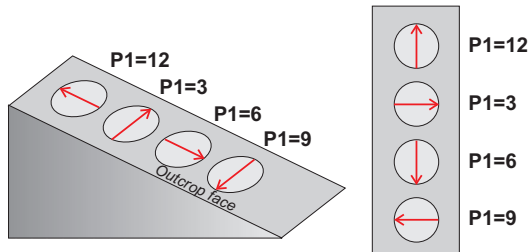
12 Appendix

12.1 Measuring Positions



12.2 Orientation Parameters

Parameter P1

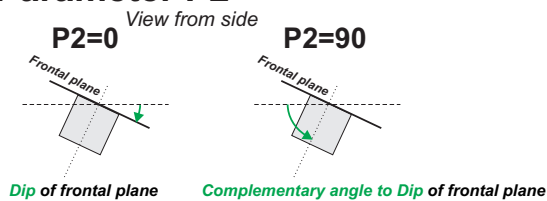


P1 is a clock value orientation of the **Arrow** which represents the x-axis of Specimen coordinate system (right hand rule, see *Legend*). The **Arrow** may be drawn:

- P1=12 Upslope
- P1=3 To the Right
- P1=6 Downslope
- P1=9 To the Left

Note that the **Azimuth** of the **Arrow** may, or may not be measured (see Parameter P3).

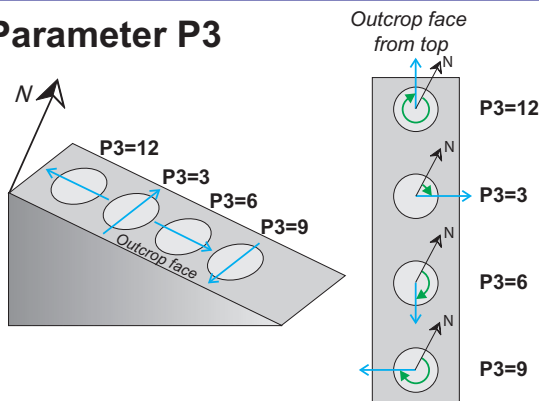
Parameter P2



P2 indicates which angle is measured as the specimen inclination.

- P2=0 **Dip** of specimen frontal plane
- P2=90 **Plunge** of specimen z-axis (Complementary angle to Dip of specimen frontal plane)

Parameter P3

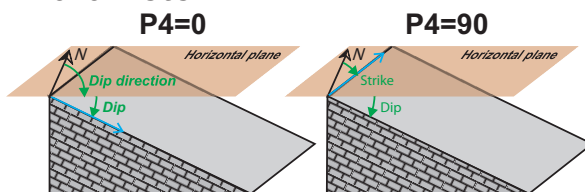


P3 is a clock value that indicates which **Direction** on the specimen frontal plane (x-y plane) is measured using geological compass and expressed as **Azimuth**.

- P3=12 Antipode of Dip direction
- P3=3 Right-handed Strike
- P3=6 Dip direction
- P3=9 Left-handed Strike

Note that the measured **Direction** may, or may not, coincide with **Arrow** (see Parameter P1).

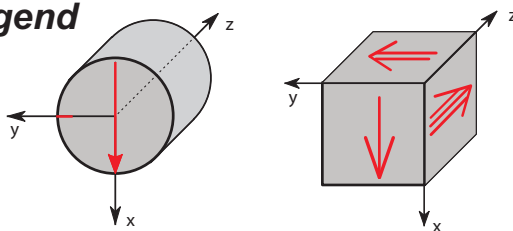
Parameter P4



P4 indicates how mesoscopic foliation adjacent to the specimen is measured.

- P4=0 **Dip direction/Dip** notation is used
- P4=90 **Strike/Dip** notation is used (right hand rule)

Legend



- Red Markings drawn on specimen
- Blue Measured directions (not drawn)
- Green Orientation angles

Azimuth is measured as a clockwise angle from North and it is expressed in degrees <0-360°). Anticlockwise angles are not allowed!

12.3 Geological Data File

The Geological data file (*.GED) is an ASCII file with the length of the record being 64 bytes. This file can be optionally used to input field data. Best way how to create such file is to use **Geological File Editor.xls** (Excel file with Macros) downloadable from www.agico.com web pages. You can simply enter information about site and individual specimens and then use Save function. This will create file with proper GED format structure.

12.4 Auxiliary Commands

Auxiliary commands are used for testing the instrument and for setting the automatic manipulator. This screen can be accessed through the Execute|Auxiliary commands in the Main menu bar or by using shortcut [Alt+Bksp].

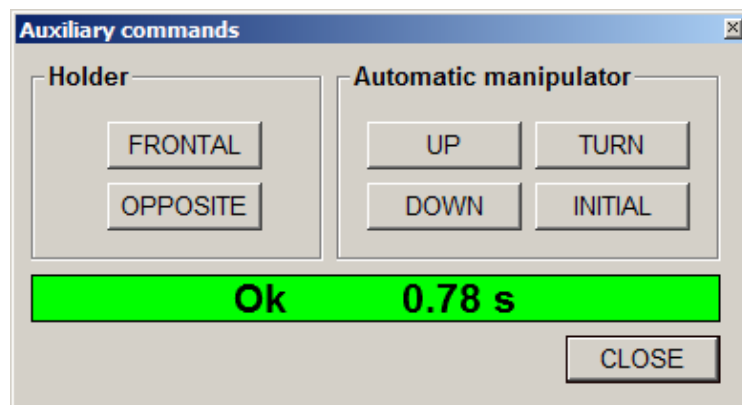


Figure 11: Auxiliary commands window.

12.5 Measurement of Anisotropy of Magnetic Remanence

12.5.1 Introduction

Anisotropy of magnetic remanence (AMR) is a directional variability of ability to acquire a remanent magnetization (e.g. anhysteretic, isothermal). In the contrary to the anisotropy of magnetic susceptibility (AMS) its geological interpretation highlights the preferred orientation not of all rock constituent minerals but solely of the ferromagnetic (s.l.) fraction. The measurement procedure consists of the directional acquisition of the magnetic remanence subsequently performed following a scheme of directions. AMR tensor is then calculated from a set of components of directional remanent magnetizations.

Anhysteretic remanent magnetization (ARM) is acquired when a specimen is subjected to an AC field of gradually decreasing amplitude simultaneously with a steady DC field (also referred to as a bias field). The combined action of AC and DC fields is much more efficient in producing a remanence than the application of a DC field alone. Simply said, AC field amplitude controls which particles, based on their coercivity, are involved in the magnetization process while DC field intensity controls how much these particles in question are magnetized. Typically, the DC field is maintained during the entire course of AC field decrease. In a special case, a DC field is applied only for a limited time within an AC coercivity window (AC_{max} to AC_{min}), to acquire a partial ARM (pARM).

Isothermal remanent magnetization (IRM) is usually understood as a remanence resulting from the application of a DC field to an assemblage of magnetic particles (without any aid of AC field).

12.5.2 Selection of AC and DC Fields and Magnetizing Mode

Prior to any directional measurements, some sort of the ARM (IRM) acquisition (and AF demagnetization) experiment should be performed on representative specimens to get some idea about:

1. Coercivity distribution of rock constituent ferromagnetic (s.l.) minerals
2. Ability to get magnetized and demagnetized
3. Strength and direction of residual magnetization (not possible to demagnetize)

An example of such experiment is shown on Figure 12. Based on the experiment one can decide which combination of AC and DC fields and which set of magnetizing directions (Figure 13) will be used. AC field is set according to the coercivity of

magnetic fraction of interest, DC field controls how much the specimen is magnetized. Considering the choice of magnetizing scheme, the generally rule is that the more magnetizing directions the more precise the tensor calculation is. Usually, we try to reach the optimum balance between precision and speed of the measurement. Whole procedure strongly depends on the residual magnetization so the first obvious step would be to demagnetize the specimen using the highest AC field possible. If the strength of the residual magnetization is in the same order of magnitude as that of that magnetized states, one is strongly advised to use magnetizing schemes employing pairs of antipodal magnetizing directions (A- or C-modes) where the constant residue is fully compensated (Figure 14). By selecting higher DC field, one may reach up to two orders of magnitude difference between the magnetized and demagnetized states. If this is the case then B- or D-modes are sufficient. When the residual magnetization is comparable or higher than that of the magnetized states, AMR calculations may get very imprecise even when the antipodal magnetizing directions are used.

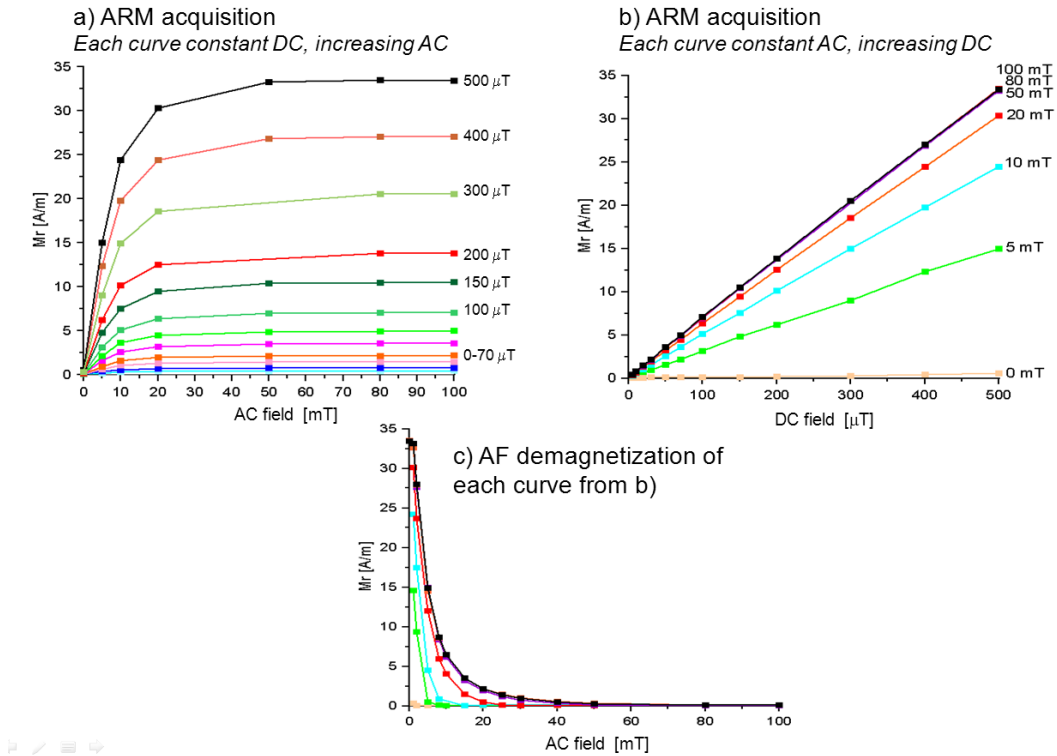
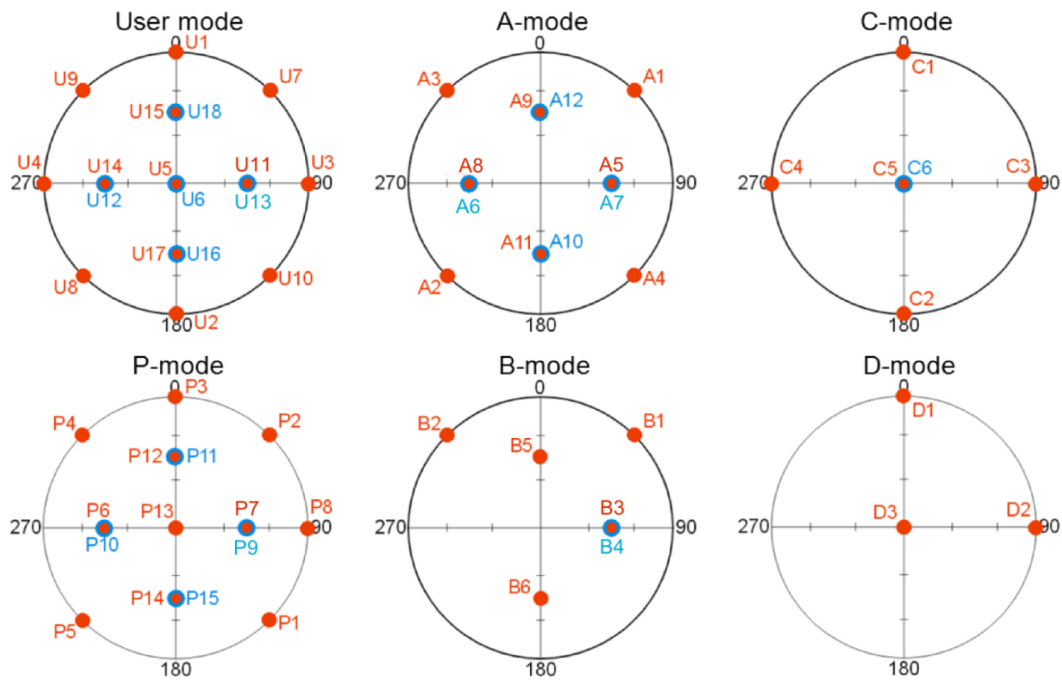


Figure 12: An example of the ARM acquisition experiment for a representative specimen of volcanic rock. a) or b) show that the coercivity distribution in the specimen is below 50 mT, i.e. using AC > 50 mT will not magnetize the specimen any further. Fig. b) shows that the specimen is linearly magnetized with the increasing DC field up to 500 μ T. Fig. c) demonstrates that all previously acquired magnetization can be erased using AC field \leq 50 mT. For that particular example the optimal combination of the fields would be AC = 50 mT and DC = 500 μ T; AF demag. field should be slightly higher than AC mag. field, let's say 60 mT to make sure that all artificial magnetization has been erased.



User mode	Principal axes	A-mode	B-mode	C-mode	D-mode	P-mode	Direction
U1	+x-axis			C1	D1	P3	0/0
U2	-x-axis			C2	D2	P8	180/0
U3	+y-axis			C3	D3	P13	90/0
U4	-y-axis			C4	D4	P8	270/0
U5	+z-axis			C5	D3	P13	0/90
U6	-z-axis			C6	D4	P13	0/-90
U7		A1	B1			P2	45/0
U8		A2	B2			P5	225/0
U9		A3	B2			P4	315/0
U10		A4	B1			P1	135/0
U11		A5	B3			P7	90/45
U12		A6	B4			P10	270/-45
U13		A7	B4			P9	90/-45
U14		A8	B3			P6	270/45
U15		A9	B5			P12	0/45
U16		A10	B6			P15	180/-45
U17		A11	B6			P14	180/45
U18		A12	B5			P11	0/-45

Figure 13: The spherical projections of various sets of magnetizing directions, red dots – lower hemisphere, blue dots – upper hemisphere. Note that the User mode, A-mode, and C-mode consist of pairs of antipodal directions.

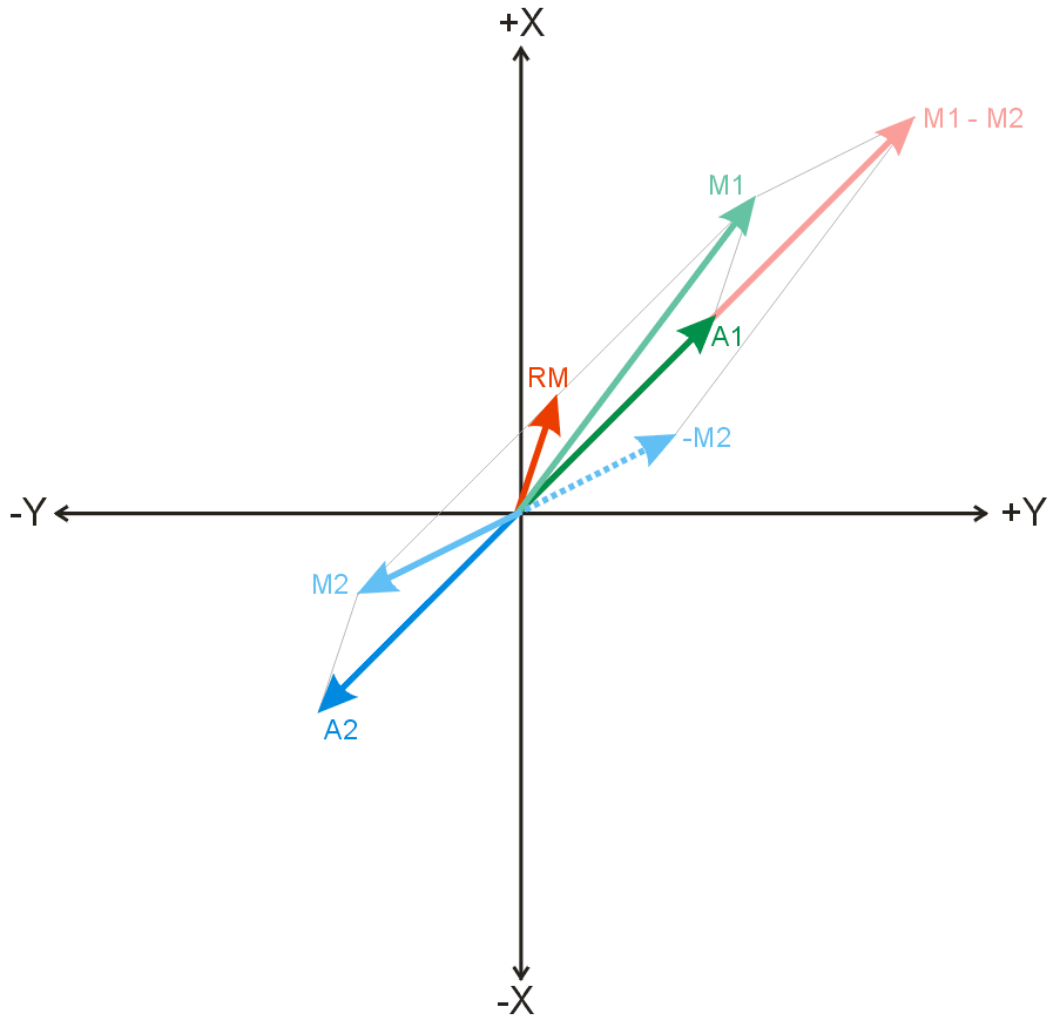
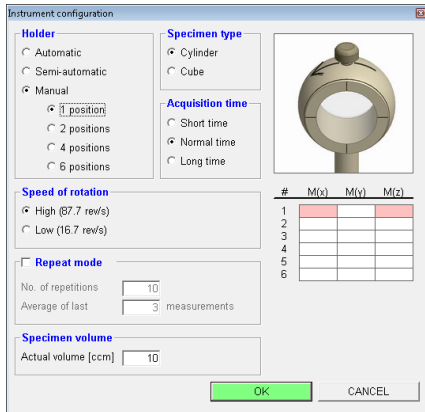


Figure 14: A sketch showing the principle of geometrical compensation of the residual magnetization effect applied in A- and C-modes. For the sake of simplicity the 3D situation is projected to the XY plane. When we magnetize an ideally isotropic specimen parallel to the A_1 direction it acquires a remanent magnetization (A_1 vector) but due to the residual magnetization (RM) we measure M_1 vector instead. Magnetizing the same specimen along anti-parallel A_2 direction the A_2 vector is acquired but combined with RM we actually measure M_2 vector. By subtracting $M_1 - M_2$ vectors and dividing the resulting vector by two we obtain the original vector A_1 without any directional effect of RM . Following this principle for other pairs of antipodal directions we end up with six or three (A- or C-modes, respectively) remanence vectors clear of any residual magnetization. The six-direction B-mode or the three-direction D-mode is then used to calculate the anisotropy tensor.

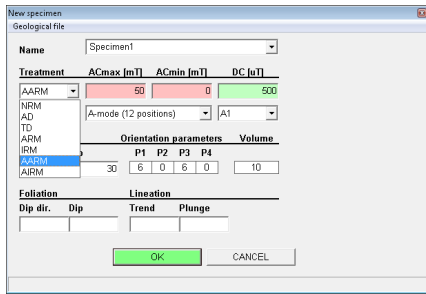
12.5.3 Data Acquisition

1. Start the program and initialize the JR-6 spinner magnetometer.
2. Go to the Main menu: Settings|Instrument configuration, and select the desired settings of the magnetometer.

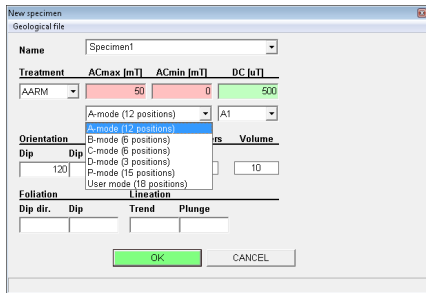


*A hint: For the ARM (IRM) acquisition experiment you may save a great deal of time by magnetizing along one of the specimen axes (e.g. x-axis) and set the magnetometer to measure in 1 position only. Please note that not the full vector is measured but only its projection to the plane perpendicular to the spinning axis; component of magnetization parallel to spinning axis is not measured. Make sure that the magnetizing direction does not coincide with the specimen spinning axis. **The 1 position measurement is NOT POSSIBLE to be used for actual directional measurements where a full vector is necessary!** Automatic holder or 4-position manual scheme is recommended.*

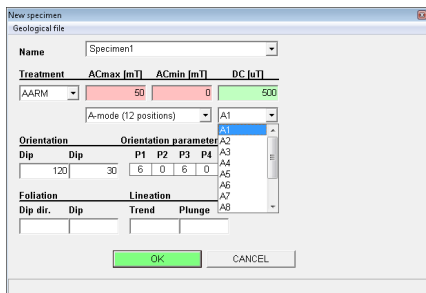
3. Open new jr6-file.
4. Switch to the Data acquisition tab.
5. Start **NEW SPECIMEN**. Please note that the specimen should be fully demagnetized prior to any artificial magnetization is imparted.
6. Fill the specimen **Name**, and respective orientation values.
7. Select desired **Treatment** (AARM or AIRM), fill respective **ACmax**, **ACmin**, **DC field** values. Please note that currently these values serve for the reference only, you will be prompted to enter them again prior to the tensor calculation.)



8. Select desired design of magnetizing directions.



9. Select the current magnetizing direction, and hit OK.

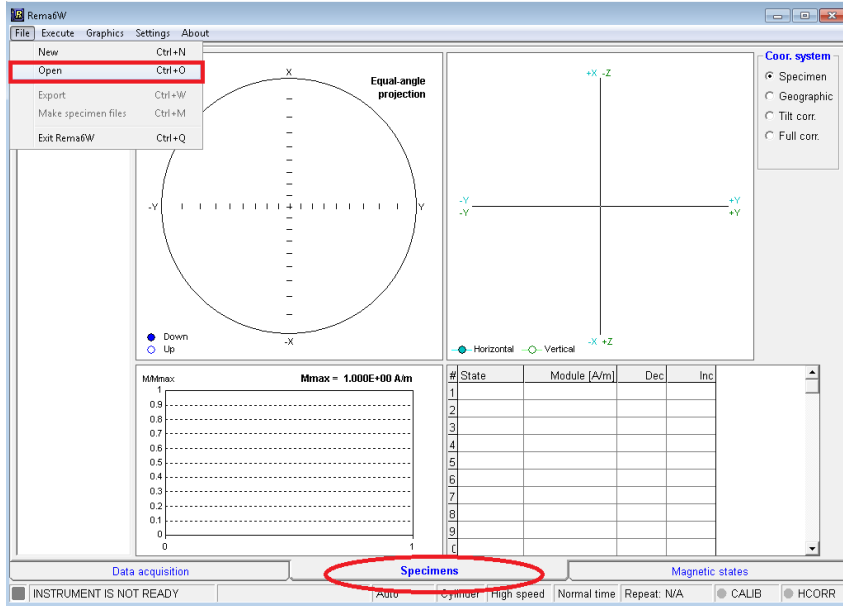


10. Magnetize the specimen, mount it to JR-6 holder and start the measurement.

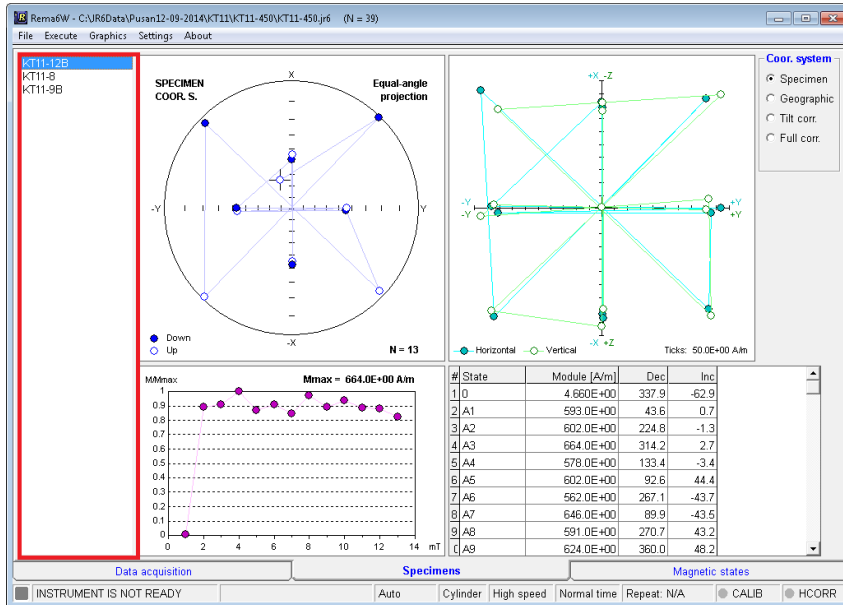
11. Repeat Steps 9 and 10 until all the necessary directions are measured. Before each magnetizing step, the previously imparted magnetization must be erased by AF demagnetization (the demagnetized state is not necessary to be measured).
12. Alternatively, multiple specimens can be treated simultaneously by magnetizing (and measuring) each of them parallel to a certain direction and repeating Steps 9 and 10 until all necessary directions for all specimens are measured.

12.5.4 Data Processing

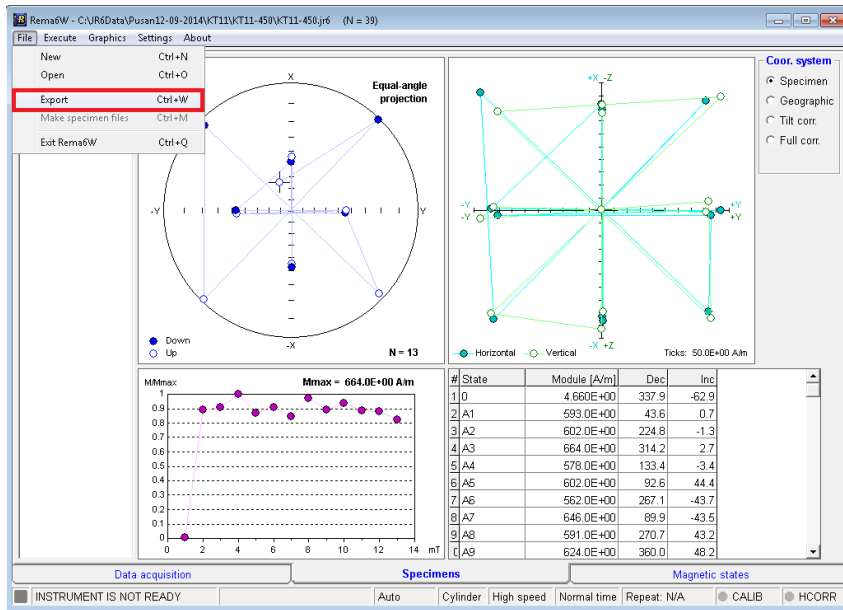
1. Switch to the *Specimen* tab.
2. When no file is open, go to the Main menu: File|Open.



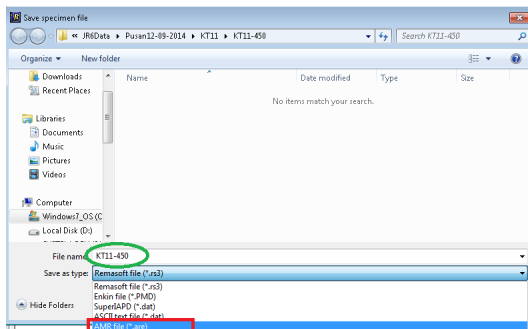
3. Click on the desired specimen name in the left-hand specimen list.



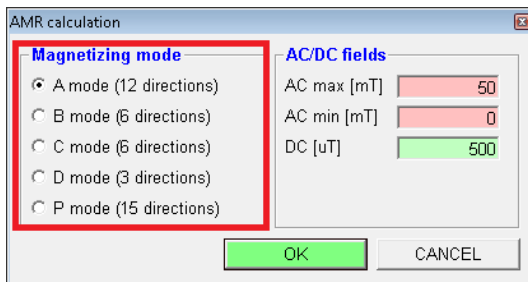
4. Go to the Main menu: File|Export.



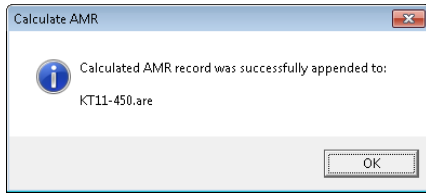
5. Select AMR file (*.are) as Save as type and assign new are-file name.



6. Select AMR mode and respective AC and DC fields.



7. If everything is OK, AMR tensor is calculated and new record is appended into *.are file.



If there are some missing directions you are warned by the following message:



8. Repeat Steps 3 – 7 until the AMR of all desired specimens is calculated.
9. Data for each specimen are appended as a new record to the following files:
- *.are – binary file (can be visualized by Anisoft software)
 - *.prec – text file containing results of the F-test and Confidence ellipses
 - *.dat – text file with raw data used for tensor calculation (can be processed by old MS-DOS AREF software)