

GUIDE

MOSCOW EXCHANGE

Tools in SPECTRA trading platform for Clearing members to manage risks of clients' trading activity

Moscow Exchange, Derivatives market

Tools for clearing members to manage risk of their clients' trading activity

Risk management system of SPECTRA trading platform is used for:

- Pre-trade check by CCP of margin requirements for clearing members' accounts
- Pre-trade check by clearing member of margin requirements for clearing member's client's account

Client risk management system works as follows:

- Clearing member sets a trading limit for client's account. Trading limit does not need to reflect the actual amount of money posted with the exchange.
- Before adding a new order using the client's account exchange calculates margin requirement based on the risk of client's portfolio. The order is allowed through only if the calculated margin is less or equal to the trading limit or does not increase.
- Exchange level risk management is the best tool for risk control of HFT trading. Turning on client risk checks does not effect position of client's order in the execution queue.



Tools for clearing members to manage risk of clients' trading activity

Additional instruments:

- 1) Limit control flag (limits_set)
- 2) <u>Automatic update of the limit (is auto update limit)</u>
- 3) Trading prohibitions
- 4) IM coefficient (coeff_go)
- 5) <u>Liquidity coefficient (coef_liquidity)</u>
- 6) No IM discount for futures flag (no fut discount)
- 7) <u>Parameters of accounting for risks of options' automatic exercise (D (num_clr_2delivery), W (exp_weight))</u>
- 8) <u>Automatic prohibition on position opening upon change in risk parameters</u>

For inquiries regarding clients' risk checks, please contact:

Email: help@moex.com, tdba@moex.com

Telephone: +7 495 733 9507, +7 495 287 7691



1. Limit control flag (1/6)

Purpose:

Enable/disable trading limit control. Can be set for clients and BF level. If limits are not monitored both at the client and BF level, then the check for sufficient funds is carried out only at the level of the brokerage firm.

Values:

- 1 enabled (limits are monitored);
- 0 disabled (limits are not monitored).

Commonly used values:

1 – enabled – a clearing member used Exchange's risk management system. If a clearing member uses its own risk management system, the parameter may be set to 0.

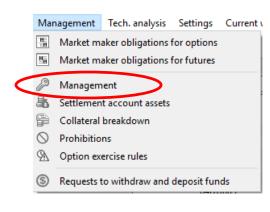


1. Limit control flag (2/6) Parameter control in SPECTRA terminal

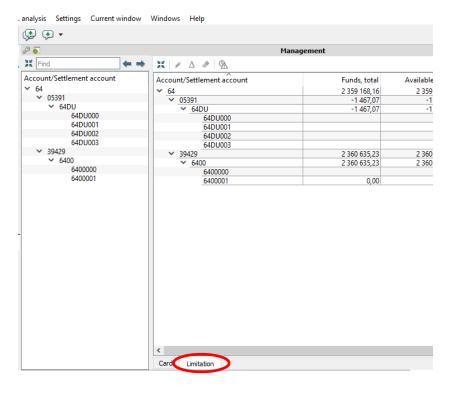
Within terminal it is possible to:

- View current values at the client's and BF's level
- Change values at the client's and BF's level

1)



2)



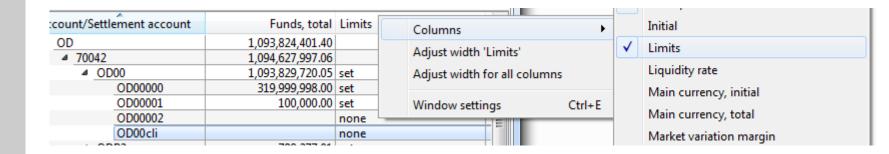


1. Limit control flag (3/6) Parameter control in SPECTRA terminal

3) Current limits are displayed in the column "Funds, total". If the field for the client's level is empty, then corresponding trading limit is not monitored monitored.

Account/Settlement account	Funds, total	Available funds
√ 64	2 359 168,16	2 359 168,16
✓ 05391	-1 467,07	-1 467,07
✓ 64DU	-1 467,07	-1 467,07
64DU000		
64DU001		

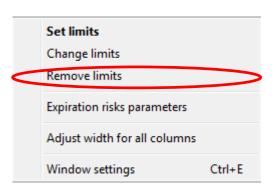
4) Current status of limit checks at the client and BF level can also be view in Limits column



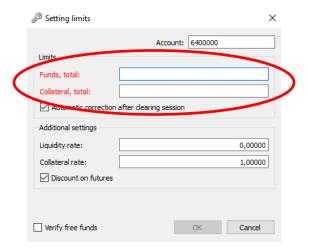


1. Limit control flag (4/6) Parameter control in SPECTRA terminal

4) In order to disable limit check right-click the client account and use "Remove limit" option.



5) To enable the check use the context menu option "Set limits" and enter new trading limits





1. Limit control flag (5/6) Parameter control via Plaza2 gateway

How to view current values:

Current values are disseminated in the stream "FORTS_PART_REPL", table "part", field "limits_set".

1 – trading limits have been set and are currently monitored. 0 – trading limits are not monitored

How to set values:

Via gateway it is possible to set change the flag only at client level Method "FutChangeClientMoney", field "mode".

To set limits use "mode" = 13

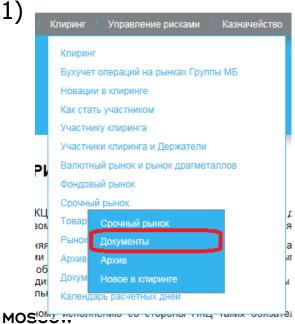
To delete limits use "mode'' = 11



1. Limit control flag (6/6) Setting up values at BF level

In order to change the flag at BF level a filled-out form should be sent to NCC via Electronic Data Interchange (EDI). The form needs to be filled-out in Russian.

Template is available at the <u>NCC website</u>:



2)

Формы документов, предоставляемых Участниками клиринга, клиентами Участников клиринга, доверенными владельцами счетов
Утверждены Правлением Банка «Национальный Клиринговый Центр» (Акционерное общество) от 09.12.2016 г. (Протокол № 52)

Действует с 26.12.2016 г.

Заявление 2.49 «на проверку достаточности Средств гарантийного обеспечения по рокерским фирмам»

2. Limit automatic correction (1/4)

Purpose:

Automatic change of limits by the amount of variation margin posted/collected. Automatic limit correction is enabled by default.

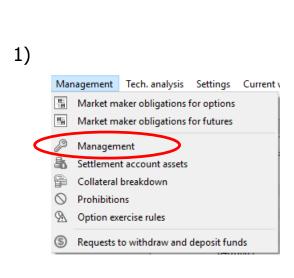
Values:

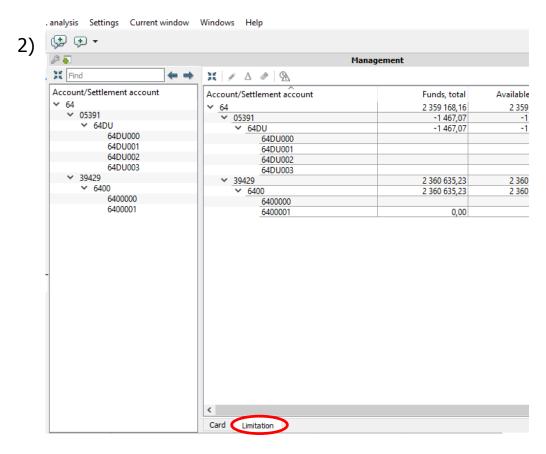
- 1 automatic correction is active;
- 0 automatic correction is NOT active.

Commonly used values:

1 – automatic correction is active (if a broker uses the Exchange's risk management system). If a broker uses its own risk management system, the parameter may take any value due to its irrelevance.

2. Limit automatic correction (2/4) Parameter control in SPECTRA terminal

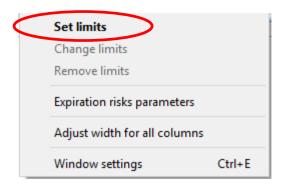




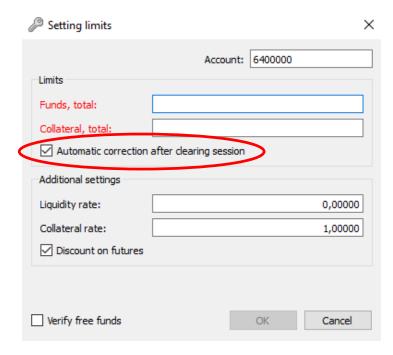


2. Limit automatic correction (3/4) Parameter control in SPECTRA terminal

3)



4)





2. Limit automatic correction (4/4) Parameter control via Plaza2 gateway

How to view current values:

Current values are disseminated in the stream "FORTS_PART_REPL", table "part", field "is_auto_update_limit". 1 – automatic correction every clearing session. 0 – automatic correction is disabled

How to set values:

Methods "FutChangeClientMoney", field "is_auto_update_limit"

3. Trading prohibitions (1/8)

Purpose:

Trading prohibitions can be used to imposed extra limitations in some or all instruments

• There are four main types of prohibitions and one extra type which can be put on top of a prohibition of a main type.

Main types of prohibitions:

- (1) on entry of orders to open positions;
- (2) on entry of any new orders;
- (3) on entry of orders to open a short position;
- (4) no prohibitions a specific type of prohibitions to make exceptions from other prohibitions.

The additional type of prohibition is on exercising of American-style options prior to expiration date as well as a prohibition on refusing to exercise in-the-money option upon expiration. It can be set on behalf of the brokerage firm (brokerage firm or settlement firm login) or chief trader (settlement firm login only).

- An order to open a position is any order except orders to close existing positions if total amount of contracts in all the closing orders does not exceed position size.
- An order to open short position is any sell order if total volume of all sell orders exceed current long position.
- Prohibitions can be applied to all instruments, all instruments with the same underlying or a specific instrument. Futures' and option's prohibitions are set separately.
- Prohibitions can be applied to individual client accounts, all client accounts within a brokerage firm or all client accounts within a clearing member. A calculation of weather an order is an order to open positions or an order to open a short position is always done at the client level.



3. Trading prohibitions (2/8)

Simultaneous use of prohibitions of different levels:

All prohibitions have a priority number depending on their type:

Туре	Priority number
BF code, all instrument	4
BF code, one underlying	5
BF code, one instrument	6
Client account, all instruments	7
Client account, one underlying	8
Client account, one instrument	9

Only the prohibition with the highest priority among all applicable prohibitions is applied.

Example.

Active prohibitions:

- 1) Any transactions are prohibited for a BF and one underlying
- 2) Prohibition "No limits" for a specific client account within the BF and one instrument on the underling. Then:
- 1) Transactions in the instrument using the client code are not prohibited.
- 2) Transactions in other instruments on the underlying using the client code are prohibited.
- 3) Transactions in instruments on the underlying on behalf of other clients of the BF are prohibited.



3. Trading prohibitions (3/8)

Rights to set, view and trade despite the prohibitions:

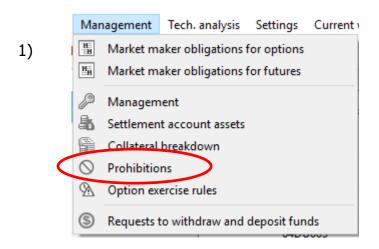
- The clearing member level login can be used to set and change prohibitions on all its BFs and their clients. In order to be able to trade despite prohibitions login needs special "Chief trader of CM" property*.
- The brokerage firm level login can be used to set and change prohibitions on the BF itself and its clients (except prohibition of early exercise of American-style options imposed by the chief trader). Trading is not allowed if the relevant prohibition has been imposed.
- **The client level login** can be used to view (not change) prohibitions on the client account and tied brokerage firm. Trading is not allowed if the relevant prohibition has been imposed.

Note: rejections of transactions due to a shortage of trading limit are not referred to in this section of the guide. They can be resolved by changing the trading limit

* In order to remove or add the "Chief trader" property, please contact help@moex.com



3. Trading prohibitions (4/8) Parameter control in the SPECTRA terminal



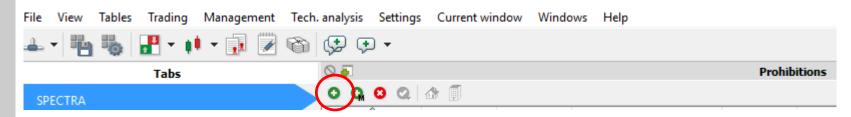
2) Current prohibitions are shown in the table. To delete existing prohibition select them and click the delete prohibition button:



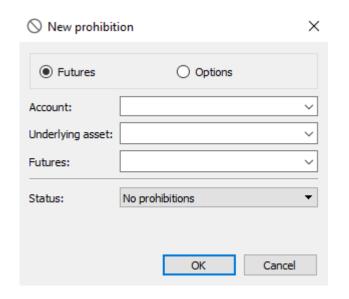


3. Trading prohibitions (5/8) Parameter control in SPECTRA terminal

3) Adding the extra single limit



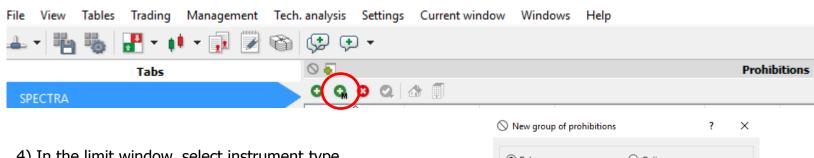
- 4) In the limit window, select instrument type (futures/option), account, underlying asset, instrument and the limit type.
- To set the prohibition at BF, select its 4-digit code from the drop-down list in the field "Account".
- To set the prohibition at underlying asset level, the instrument field should remain empty.
- To set the prohibition on all instruments, the underlying asset field should remain empty.



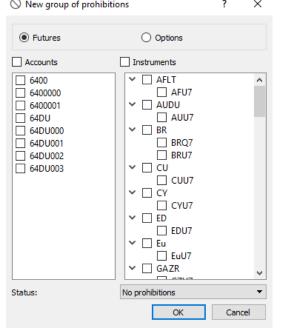


3. Trading prohibitions (6/8) Parameter control in the SPECTRA terminal

3) Adding a set of limits

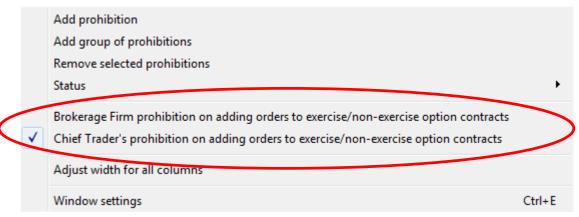


- 4) In the limit window, select instrument type (futures/option), a set of accounts, a set of underlying assets and/or instruments and the limit type.
- To set the limit at BF, its 4-digit code should be ticked.
- To select quickly all available accounts, tick "Accounts" at the top.
- To select quickly all instruments, tick "Instruments" at the top.



3. Trading prohibitions (7/8) Parameter control in the SPECTRA terminal

5) Adding prohibitions on early option exercise and refusing to auto-exercise in-the-money option upon expiration. The limit can be imposed on behalf of the BF or the chief trader. Limits imposed on behalf of the chief trader can be changed only with the clearing member login with chief trader property. Limits imposed on behalf of the brokerage firm can be changed with the clearing member or brokerage firm login:





3. Trading prohibitions (8/8) Parameter control via Plaza2 gateway

How to view current values:

Stream "FORTS_FUTINFO_REPL", table "prohibition"

How to set values:

Methods "FutChangeClientProhibit" and "OptChangeClientProhibit"



4. IM coefficient (1/4)

Purpose:

Proportionally decrease/increase margin requirement. It can be used to increase IM or establish a leverage for certain clients.

The IM coefficient shows the magnitude of increase in IM, i.e. a greater coefficient means greater IM, a smaller coefficient means a discount on IM.

Values:

Values ≤ 10 , ≥ 0 with five decimal places.

Commonly used values:

1 – margin requirement is exactly as calculated by the Exchange. It may be < 1; this means the client is given leverage. Rarely it is >1; this means increased margin requirement for the client.

4. IM coefficient (2/4) Parameter control in SPECTRA terminal

Management Tech. analysis Settings Current of Market maker obligations for options

Market maker obligations for futures

Management

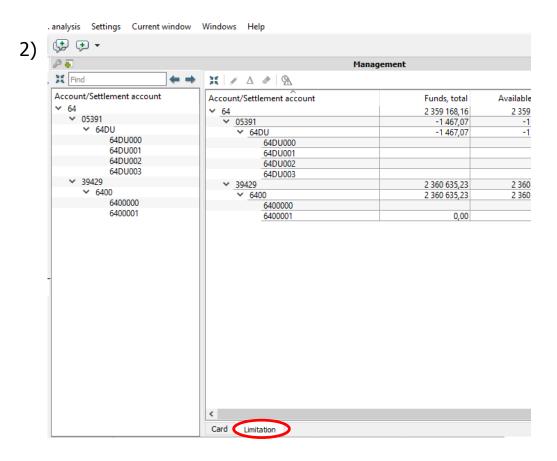
Settlement account assets

Collateral breakdown

Prohibitions

Option exercise rules

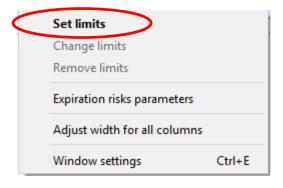
Requests to withdraw and deposit funds



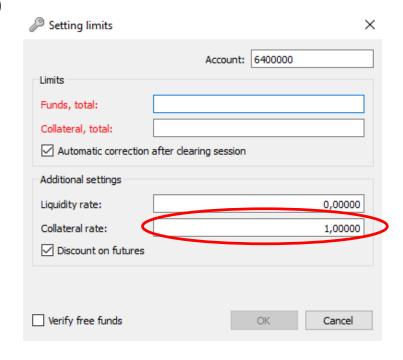


4. IM coefficient (3/4) Parameter control in SPECTRA terminal

3)



4)





4. IM coefficient (4/4) Parameter control via Plaza2 gateway

How to view current values:

Stream "FORTS_PART_REPL', table "part", field "coeff_go"

How to set values:

Method "FutChangeClientMoney", field "coeff_go"



5. Liquidity coefficient (1/4)

Purpose:

Setting the maximum possible amount of equity collateral at the client level. If the collateral registered on the client's account partially consists of, this coefficient defines the maximum possible percentage of equities in the overall collateral value.

Values:

Number from 0 to 1 (inclusive) with five decimal places.

0 – percentage of equities in collateral is not limited

1 – equities are not considered

0.5 – equity collateral cannot exceed 50% of the total collateral value (as set by NCC to calculate margin requirement at the BF and settlement account level)

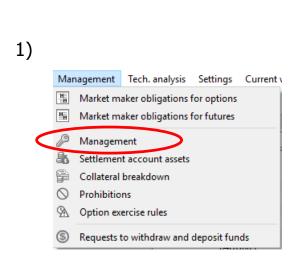
The most commonly used values:

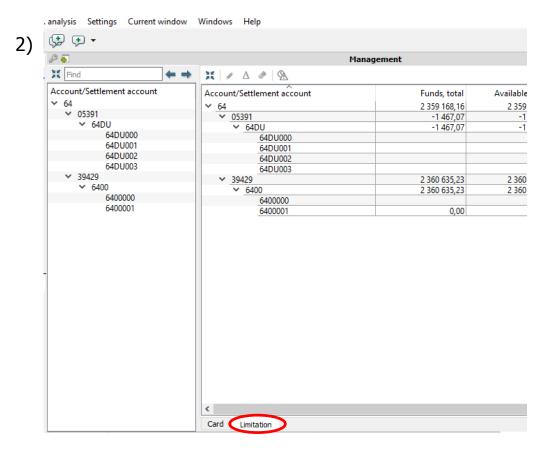
0.5 – equity collateral cannot exceed 50%. Value of this parameter is generally not important as all collateral on the client accounts is recorded in RUB.

Note: the equity value referred to here is subject to a discount.



5. Liquidity coefficient (2/4) Parameter control in SPECTRA terminal

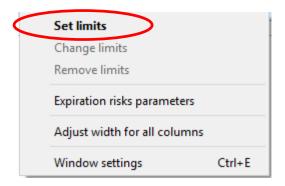




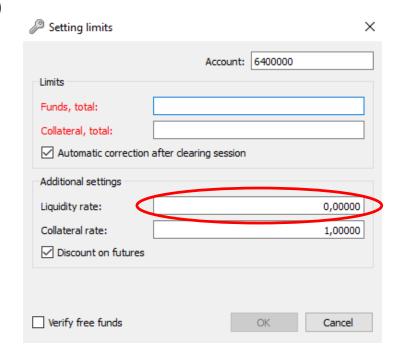


5. Liquidity coefficient (3/4) Parameter control in SPECTRA terminal

3)



4)





5. Liquidity coefficient (4/4) Parameter control via Plaza2 gateway

How to view current values:

Stream "FORTS_PART_REPL" table "part", field "coeff_liquidity".

How to set values:

Methods "FutChangeClientMoney", field "coeff_liquidity"



6. No IM discount for futures flag (1/5)

Purpose:

To increase lower bound of margin requirements for futures contracts.

If the futures discount is provided (default), IM for a futures contract bought/sold at the price lower/greater than the settlement price is less than the basic margin requirement for this a contract.

The futures discount flag can be used to disable the discount for client account. In this case, lower bound of margin requirements is basic IM.

Values:

0 – discount enabled;

1 – discount disabled.

The most commonly used values:

0 – discount enabled. It is set to "1" (discount disabled) rarely for certain clients.



6. No IM discount for futures flag (2/5)

IM for futures contracts with/without the discount:

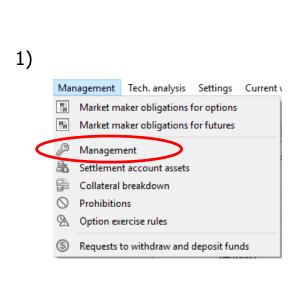
(assuming there are no positions in options)

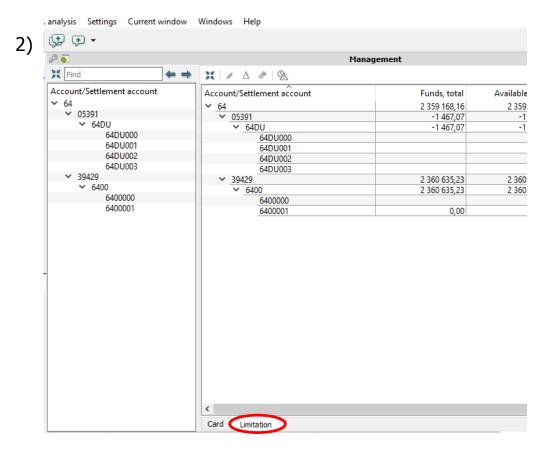
Transactions in futures	IM with the discount enabled	I IM with the discount disabled
Buy/sell at the settlement price	2L	2L
Buy at over the settlement price	(P - CP) + 2L	(P - CP) + 2L
Buy at below the settlement price	2L - (CP - P)	2L
Sell at over the settlement price	2L - (P - SP)	2L
Sell at below the settlement price	(CP - P) + 2L	(CP - P) + 2L
Buy at the upper limit	3L	3L
Buy at the lower limit	L	2L
Sell at the upper limit	L	2L
Buy at the lower limit	3L	3L

P – order price

CP – clearing price

6. No IM discount for futures flag (3/5) Parameter control in SPECTRA terminal





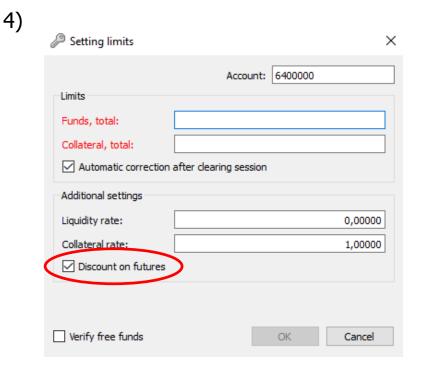


6. No IM discount for futures flag (4/5) Parameter control in SPECTRA terminal

Ctrl+E

Set limits
Change limits
Remove limits
Expiration risks parameters
Adjust width for all columns

Window settings





6. No IM discount for futures flag (5/5) Parameter control via Plaza2 gateway

How to view current values:

Stream "FORTS_PART_REPL", table "part", field "no_fut_discount".

How to set values:

Methods "FutChangeClientMoney", field "no_fut_discount"

7. Parameters of accounting for risks of options' automatic exercise (1/6)

Purpose:

- Control of the risk associated with the creation of a futures position after exercise of an option.
- Applicable to options with the exercise date other than the settlement date of the underlying futures contract.
- Margin requirement for positions in options can be increased when the expiration date is approaching due to taking into account the auto-exercise risk.
- This risk control is implemented through two parameters:
 - D (num_clr_2delivery) number of clearing sessions before the expiration date in which expiration scenarios are added
 - W (exp_weight) a weighting coefficient defining how much IM is increased

The final IM is calculated as follows:

$$IM_{client} = (1 - W) * Im_{no exp risk} + W * Im_{exp risk}$$

• The parameters are controlled by the clearing member to set the rules to calculate margin requirements for client account. Option auto-exercise risks are not taken into account when calculating margin requirements at brokerage firm and settlement account level*.

Commonly used values:

num_clr_2delivery:

1-4 – the auto-exercise risk is taken into account 1 to 4 clearing sessions (0.5 – 2 days) prior to expiration

0 – the auto-exercise risk is not taken into account

exp_weight:

1 – if the expiration risk is considered, it is generally included in full.

>= 0, < 1 – the additional risks are included partially for certain clients.

^{*} Can be change by NCC decision



7. Parameters of accounting for risks of options' automatic exercise (2/6)

Values:

For D (num_clr_2delivery):

- Integer number >= 0, <= D.ncc = 20. When a value above 20 is set, 20 will apply.
- -1 a special value

For W (exp_weight):

- Number from 0 to 1 (inclusive) with five decimal places.
- -1 a special value

7. Parameters of accounting for risks of options' automatic exercise (3/6) Setting parameters

Parameters can be set at two levels:

- At the client account level (7-character code);
- At the brokerage firm level (4-character code)

Values set at the client account level are used if the D value is not "-1"

If D = "-1" then the value set at the brokerage firm level applies to this client account.

The parameters at the client level are set online via a gateway or SPECTRA terminal.

The parameters at the brokerage firm level can be changed by sending a request via the EDI system.

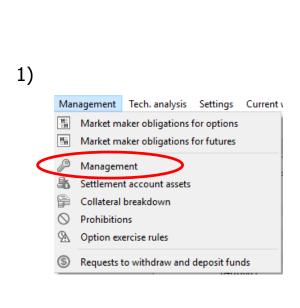
Request forms to be submitted by clearing members are available at http://nkcbank.ru/viewCatalog.do?menuKey=230

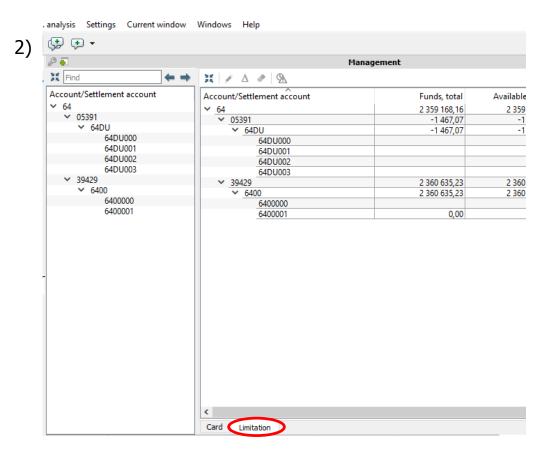
The form name is: "49. Request to set risk parameters for option exercise" («49. Заявление на установление параметров учета рисков исполнения опционных контрактов»)

The form has to be filled-out in Russian.



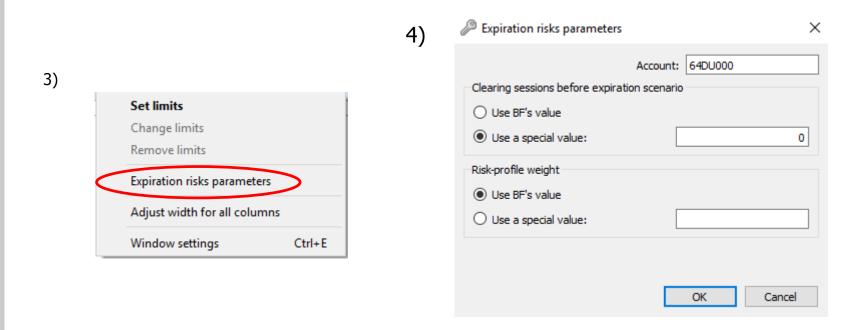
7. Parameters of accounting for risks of options' automatic exercise (4/6) Parameter control at the client account level in SPECTRA terminal







7. Parameters of accounting for risks of options' automatic exercise (5/6) Parameter control at the client account level in SPECTRA terminal



Option "Use the value set at the brokerage firm level" sets the parameter value to -1.



7. Parameters of accounting for risks of options' automatic exercise (6/6) Parameter control at the client account level via Plaza2 gateway

How to view current values:

Stream "FORTS_PART_REPL", table "part", fields "num_clr_2delivery (D)" and "exp_weight (W)"

How to set values:

```
Parameter "num_clr_2delivery (D)":

Method "OptChangeRiskParameters", fields "num_clr_2delivery", and

"use_broker_num_clr_2delivery"

To set "num_clr_2delivery" \neq -1, field "use_broker_num_clr_2delivery" should be set = 0.

To set "num_clr_2delivery" = -1 (i.e. the value set at the BF)

"use_broker_num_clr_2delivery" should be set = 1; in this case, value of field
"num_clr_2delivery" does not matter.
```

Parameter "exp_weight (W)":

Method "OptChangeRiskParameters", fields "exp_weight" and "use_broker_exp_weight".

To set "exp_weight" ≠ -1, field "use_broker_exp_weight" should be set = 0. To set it = -1 (i.e. the value set at the BF), "use_broker_exp_weight" should be set = 1; in this case, value of field "exp_weight" does not matter.



8. Automatic prohibition of position opening upon change in risk parameters (1/6)

Purpose:

- Setting an automatic prohibition on opening hedging positions after the change of risk parameters if the change resulted in great increase of margin requirements.
- The automatic prohibition setting is controlled via 4 parameters:
 - Pr_state enable/disable automatics prohibition system
 - *Pr_coeff* coefficient used to determine weather a prohibition should be set
 - *Pr_type* prohibition type
 - DelOrd enable/disable automatic active order cancellation when a prohibition is set automatically
 - The parameters can are set on brokerage firm level separately for client and BF check.

Values:

Pr_state: true/false

Pr_coeff: number > 0, 2 decimal place after the dot

Pr_type: on adding orders to open position / on adding any new orders

DelOrd: true/false



8. Automatic prohibition of position opening upon change in risk parameters (2/6)

Condition under which prohibitions are set:

Prohibition can be set after the following events:

- · Evening/intermediate clearing session calculations finished
- Price fluctuation limits changed during trading session

Prohibition is set if the following conditions are met simultaneously:

$$\begin{cases} & \textit{Limit}_\textit{set} = 1 \\ & \textit{Pr}_\textit{state} = 1 \\ & \textit{FreeMoney} < -\textit{Prohibit}_\textit{coeff}* \max (\textit{Tradelimit,0}) \leq 0 \end{cases}$$

where:

Parameter	Value
Limits_set	Limit control flag at the client account or brokerage firm
Pr_state	Automatic prohibition flag
Pr_coeff	Coefficient used to determine weather a prohibition is necessary
FreeMoney	Free trading limit at BF or client account (= trading limit – blocked margin requirement)
Trade_limit	Total trading limit on the client or BF account including money and equities subject to the limitation by liquidity coefficient

Prohibition type is determined by the Pr_type parameter

If *DelOrd* = "true" then when a prohibition is automatically set all active orders are cancelled Checks for BF and client account are carried out independently.



8. Automatic prohibition of position opening upon change in risk parameters (3/6)

How it works. Cancellation of the prohibition:

Prohibitions cannot be cancelled by a clearing member directly. However, a prohibition is cancelled automatically upon a check being made every minute if at least one of the following conditions holds true:

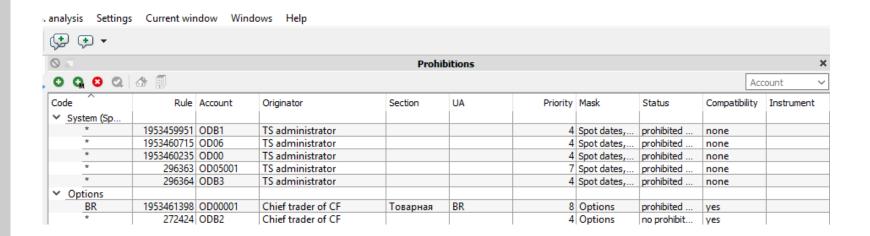
Note:

- A slippage of 2-3 seconds can occur at prohibition entry
- Prohibitions cancellation is disabled from midnight until 9:00 am MSK (i.e. during night maintenance operations even while the trading system available for non-trade transactions by clearing members)

8. Automatic prohibition of position opening upon change in risk parameters (4/6)

How it works - viewing prohibitions in the terminal:

Automatic prohibitions are shown in a new group of system prohibitions:





8. Automatic prohibition of position opening upon change in risk parameters (5/6)

How the functionality is supposed to be used

Examples of unwanted opening of hedging positions:

Option auto-exercise risk

After the auto-exercise risk is take into account, the client's free trading limit can become greatly negative. In this case, the client can open an opposite position in the futures instead of closing the option position. Such futures position may has much greater margin requirement compared to the initial trading limit set for the client account.

Risk reassessment for options

After the price fluctuation limits have been changed, margin requirement for options may drastically increase. This may occur if an out-of-money option is sold. In this case, the client can open an opposite position in the futures with the same margin requirement as the new margin requirement for the option position.

Process after the prohibition is set

- When position opening is prohibited, a client can cancel orders/close a position that causes increased margin requirement. The prohibition is cancelled automatically within one minute after trading limit becomes non-negative.
- The clearing member's risk manager may undertake required actions to manage the risk of client's portfolio. In this case, the process is may be the following:
 - 1. Setting an additional prohibition on the client account (if the client uses a client login for DMA) or prohibit transactions from the client within clearing member's trading system
 - 2. Increasing the trading limit for the client (to make the free limit positive) in order to cancel the prohibition;
 - 3. Cancel active orders and/or close-out position and/or perform other risk-management procedures
 - 4. Cancel the prohibition for the client (see paragraph 1)



8. Automatic prohibition of position opening upon change in risk parameters (6/6)

Setting parameters Prohibit_state and Prohibit_coeff:

• The parameters are set at the brokerage firm level (4-digit code) through a request send via the EDI system. The request form is available at the NCC website

http://www.nkcbank.ru/viewCatalog.do?menuKey=209

- (3. Формы документов, предоставляемых Участниками клиринга [...], заявление 2.50) The form needs to be filled-out in Russian
- New parameter values go into effect during the next clearing session (both evening and intermediate) if the request was submitted at least 1 hour prior to the clearing session start.
- By default, **Pr_state = 0**, thus automatic prohibition system is disabled



Contacts

For inquiries regarding clients' risk checks, please contact:

Email: help@moex.com, tdba@moex.com

Telephone: +7 495 733 9507, +7 495 287 7691

