Nasdaq

NASDAQ MRX System Settings

1. Hours of Operation

6:00 a.m. ET – System begins accepting orders.

9:30 a.m. ET – System begins disseminating imbalance and price information for the opening auction, including FX products.
9:30 a.m. ET – System begins executing orders.

4:00 p.m. ET – System stops accepting and executing equity orders.

4:15 p.m. ET – System stops accepting and executing ETF, FX, and Index options orders.

2. Opening

- The MRX Opening Process utilizes the Primary Listing Market for the Underlying Security. The underlying security must be open on the primary market for 100ms for the Opening Process to commence.
- **Valid Quote Differentials Table:** The table of values defined as an acceptable bid/ask differential for individual market maker quotes required to begin the opening process and open with a trade in absence of an executable opening cross.

Bid Price low end of range	Bid Price high end of range	Maximum bid/ask differential
$0.00	$1.99	$0.75
$2.00	$4.99	$1.20
$5.00	$9.99	$1.50
$10.00	$19.99	$2.40
$20.00	$20.00+	$3.00

The Options 3, Section 8 Valid Width Quote requirement shall not apply to options series where the time until expiration is less than nine (9) months for equity options, exchange-traded products, and foreign currencies and less than twelve (12) months for index options

- **Quality Opening Market Differentials Table** – The table of values defined as an acceptable bid/ask differential in order to establish a "quality opening market" made of Valid Width Quotes necessary to open with a trade.
  - **Non-Penny Issues:**

Price low end of range	Price high end of range	Maximum bid/ask differential
$0.00	$1.00	$0.15
$1.01	$2.00	$0.22
$2.01	$3.00	$0.30
$3.01	$5.00	$0.45
$5.01	$7.00	$0.60
$7.01	$10.00	$0.75
$10.01	$20.00	$0.90
$20.01	$30.00	$1.20

Price low end of range	Price high end of range	Maximum bid/ask differential
$30.01	$40.00	$1.50
$40.01	40.01+	$2.25

– Standard Penny Issues (excluding SPY/IWM/QQQQ):

Price low end of range	Price high end of range	Maximum bid/ask differential
$0.00	$1.00	$0.10
$1.01	$2.00	$0.10
$2.01	$3.00	$0.14
$3.01	$5.00	$0.20
$5.01	$7.00	$0.30
$7.01	$10.00	$0.40
$10.01	$15.00	$0.60
$15.01	$20.00	$0.80
$20.01	$30.00	$1.20
$30.01	$40.00	$1.60
$40.01	$40.01+	$2.00

– Special Penny Issues (SPY/IWM/QQQQ)

Price low end of range	Price high end of range	Maximum bid/ask differential
$0.00	$0.40	$0.06
$0.41	$1.00	$0.10
$1.01	$2.00	$0.12
$2.01	$3.00	$0.14
$3.01	$5.00	$0.18
$5.01	$7.00	$0.24
$7.01	$10.00	$0.40
$10.01	$15.00	$0.60
$15.01	$20.00	$0.80
$20.01	$30.00	$1.00
$30.01	$40.00	$1.20
$40.01	$40.01+	$1.60

- **Opening Quote Range Table** – The table of values added to the offer and subtracted from the bid to establish MRX's maximum Opening Quote Range.

– Non-Penny Issues:

Price low end of range	Price high end of range	Acceptable range (highest bid – X or lowest ask + X)	Range Multiplier for options that expire >9 months away
$0.00	$1.00	$0.10	1.5X
$1.01	$2.00	$0.15	1.5X
$2.01	$3.00	$0.20	1.5X
$3.01	$5.00	$0.30	1.5X

Price low end of range	Price high end of range	Acceptable range (highest bid – X or lowest ask + X)	Range Multiplier for options that expire >9 months away
$5.01	$7.00	$0.40	1.5X
$7.01	$10.00	$0.50	1.5X
$10.01	$20.00	$0.60	1.5X
$20.01	$30.00	$0.80	1.5X
$30.01	$40.00	$1.00	1.5X
$40.01	+	$1.50	1.5X

– Standard Penny Issues (excluding SPY/IWM/QQQQ):

Price low end of range	Price high end of range	Acceptable range (highest bid – X or lowest ask + X)	Acceptable Range for options that expire >9 months away
$0.00	$1.00	$0.05	$0.10
$1.01	$2.00	$0.05	$0.14
$2.01	$3.00	$0.07	$0.18
$3.01	$5.00	$0.10	$0.40
$5.01	$7.00	$0.15	$0.50
$7.01	$10.00	$0.20	$0.60
$10.01	$15.00	$0.30	$0.75
$15.01	$20.00	$0.40	$0.90
$20.01	$30.00	$0.60	$1.20
$30.01	$40.00	$0.80	$1.50
$40.01	+	$1.00	$2.25

– Special Penny Issues (SPY/IWM/QQQQ)

Price low end of range	Price high end of range	Acceptable range (highest bid – X or lowest ask + X)	Range Multiplier for options that expire >9 months away
$0.00	$0.40	$0.03	2.0X
$0.41	$1.00	$0.05	2.0X
$1.01	$2.00	$0.06	2.0X
$2.01	$3.00	$0.07	2.0X
$3.01	$5.00	$0.09	2.0X
$5.01	$7.00	$0.12	2.0X
$7.01	$10.00	$0.20	2.0X
$10.01	$15.00	$0.30	1.5X
$15.01	$20.00	$0.40	1.5X
$20.01	$30.00	$0.50	1.5X
$30.01	$40.00	$0.60	1.5X
$40.01	+	$0.80	1.5X

- **Imbalance Timer** – 250 milliseconds – Amount of time the system may wait before opening an option with an imbalance after broadcasting an Imbalance Message.
- **Number of Imbalance Process Iterations before an Opening with an Imbalance** – 4 iterations – Number of times the system will repeat the imbalance process before opening with a remaining imbalance.
- **Opening Route Timer** – 250 ms – Amount of time the system waits before routing to an away market as part of the opening process.
- **Opening Order Cancel Timer** – 30 seconds – Period of time after the primary market underlying has opened and MRX has not initiated an Opening Cross, at which all non-GTC orders submitted over FIX and OTTO in the affected option will be cancelled back to the sending firm. This feature is optional to participants and is engaged at the firm mnemonic level Section 8(k).

3. Acceptable Trade Range & Order Protections

- **Acceptable Trade Range (ATR) Posting Period** – 200 milliseconds - Amount of time an order or quote will be posted at the boundary price of an ATR to allow the market to refresh before continuing to execute at more aggressive prices.
- **Iterations of ATR– 5 iterations** – Number of iterations that ATR may occur before an aggressively priced order or quote will be cancelled back to the sending participant
- **Acceptable Trade Range (ATR)** – Acceptable Trade Range boundaries limiting the range of prices incoming Simple Orders and quotes (except for All-or-None Orders) will be allowed to execute.

Non-Penny Issues (S)

Price low end of range	Price high end of range	Acceptable Range from Reference Price	Leaps ATR
$0.00	$1.00	$0.10	$0.20
$1.01	$2.00	$0.15	$0.25
$2.01	$3.00	$0.20	$0.30
$3.01	$5.00	$0.30	$0.45
$5.01	$7.00	$0.40	$0.60
$7.01	$10.00	$0.50	$0.75
$10.01	$15.00	$0.60	$0.90
$15.01	$20.00	$0.60	$0.90
$20.01	$30.00	$0.80	$1.20
$30.01	+	$1.00	$1.50

Standard-Penny Issues (P)

Price low end of range	Price high end of range	Acceptable Range from Reference Price	Leaps ATR
$0.00	$1.00	$0.07	$0.14
$1.01	$2.00	$0.10	$0.20
$2.01	$3.00	$0.15	$0.30
$3.01	$5.00	$0.20	$0.40
$5.01	$7.00	$0.25	$0.50
$7.01	$10.00	$0.30	$0.60
$10.01	$15.00	$0.50	$0.75

Standard-Penny Issues (P)

Price low end of range	Price high end of range	Acceptable Range from Reference Price	Leaps ATR
$15.01	$20.00	$0.60	$0.90
$20.01	$30.00	$0.80	$1.20
$30.01	+	$1.00	$1.50

Special-Penny Issues (E) SPY/IWM/QQQ

Price low end of range	Price high end of range	Acceptable Range from Reference Price	Leaps ATR
$0.00	$1.00	$0.05	$0.10
$1.01	$2.00	$0.07	$0.41
$2.01	$3.00	$0.07	$0.14
$3.01	$5.00	$0.10	$0.20
$5.01	$7.00	$0.15	$0.30
$7.01	$10.00	$0.20	$0.40
$10.01	$15.00	$0.30	$0.45
$15.01	$20.00	$0.40	$0.60
$20.01	$30.00	$0.50	$0.75
$30.01	$40.00	$0.60	$0.90
$40.01	+	$0.80	$1.20

- **Limit Order Price protection:** Reject simple orders priced through the contra-side BBO (NBBO and internal market BBO) by the greater to absolute value of percentages configured below based on the option bid price.

LOPP Option contra Side BBO	Configurations
<= 1.00	Absolute: 0.05 Percentage: 100%
> 1.00	Absolute: 0.05 Percentage: 50%

- **Market Order Cancel Timer** -4 Seconds –Participants can designate that their Market Orders not executed after this pre-established period of time to be cancelled, once an option series has opened for trading.
- **Market Order Spread Protection** - default $5.00 – Maximum bid/ask differential permissible for a Market Order to be accepted by the trading system; if the bid/ask differential of the NBBO and internal BBO is wider than a configurable amount (configured at the underlying symbol level), a Market Order submitted into the system will be rejected; this protection is not applicable to complex orders. All symbols are configured at 5.00, with the following exceptions:

Symbol	Width
AMZN	20
AZO	20
BKNG	22
BLK	20
CHE	20
CHTR	20
CMG	20
EQIX	20
ISRG	20

Symbol	Width
LMT	20
MELI	20
MLK	22
NDX	100
NOC	20
ORLY	20
REGN	20
ROP	20
SIVB	20
TDG	20
TSLA	20
Y	20

- **Complex Limit Order Price Protection** –
- $1.00 and 1% – Complex Orders with a net limit price more than $1.00 and more than 1% through the contra side net price available from the individual options series on the Exchange will be rejected.
- **Complex Order Execution Limit** – $0.05 - The maximum amount the System will permit any leg (including stock) of a Complex Order to execute through the NBBO for the series or NBBO of the underlying.
- **QCC with Stock Execution Limit** – $0.00 for option leg/ lesser of $0.50 or 10% for stock leg - The maximum amount the System will permit an option or stock leg of a QCC with Stock Order to execute through the NBBO for the series or the NBBO of the underlying.
- **Vertical Spread Price Protection** – Lesser of $1.00 or 5% - Vertical spread orders will be rejected when entered with a negative net price or a net price greater than the absolute difference of the strikes plus the lesser of $1.00 or 5% of the absolute difference of the strikes. Vertical spreads entered as MKT orders to sell are prevented from legging at a negative net price; vertical spreads entered as MKT orders to buy are prevented from executing at a net price that is greater than the absolute difference of the strikes plus the protection value. This protection does not apply to complex crossing orders.
- **Calendar Spread Price Protection** - $0.02 - Calendar spreads entered with a net price lower than $0.02 below zero will be rejected. Calendar spreads to sell with a MKT price will be restricted from executing outside of this protection range. This protection does not apply to complex crossing orders.
- **Butterfly Spread Protection Maximum Buffer** - $0.00 and 0% – Acceptable range for a Butterfly Spread to above the intrinsic value of the spread defined as the difference in in the strike prices of the middle and outer leg for a Butterfly spread. Note this validation will also not apply to complex crossing orders
- **Butterfly Spread Protection Minimum Buffer** - $0.00– Acceptable range for a Butterfly Spread to trade below zero. Note this validation will also not apply to complex crossing orders
- **Box Spread Protection Maximum Buffer** - $0.00 and 0% – Acceptable range for a Box Spread to above the intrinsic value of the spread defined as the difference in in the strike prices of the middle and outer leg for a Box spread. Note this validation will also not apply to complex crossing orders
- **Box Spread Protection Minimum Buffer** - $0.00– Acceptable range for a Box Spread to trade below zero. Note this validation will also not apply to complex crossing orders

4. Auctions

- Auction Timers – Below are the auction timer configurations for MRX:

Auction Type	Duration
Facilitation	100 milliseconds
PIM	100 milliseconds
Solicitation	100 milliseconds
Complex Exposure	100 milliseconds
Block	100 milliseconds

5. Message Traffic Mitigation

- MRX shall disseminate an updated bid and offer price together with the associated size to OPRA when the bid or offer price changes, the quantity decreases or the quantity increases by an amount greater than or equal to 3%. *Options 3, Section 26*