



## Cboe BYX Equities Introduces Periodic Auctions

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### Overview

**Applicable Cboe Exchanges:** BYX Equities

**Effective Q3 2021**, Cboe BYX Equities Exchange (“BYX”) will introduce [Periodic Auctions](#). The Periodic Auction process is a price forming auction that runs for a fixed time period of 100 milliseconds. The two Periodic Auction order types, outlined below, will only be available during the regular trading session and will be non-displayed.

### Periodic Auction Order Types

On the effective date, BYX will introduce two Periodic Auction order types: **Periodic Auction Only** and **Periodic Auction Eligible**. A Periodic Auction will start when two opposite side Periodic Auction orders of either type can match. Continuous book displayed and non-displayed orders are not eligible to initiate a Periodic Auction but may be swept into the auction at the end of the auction process.

#### **Periodic Auction Only**

- Will only execute in a Periodic Auction. Will not be eligible for trading in the continuous book.
- Eligible to initiate a Periodic Auction when matched with a contra-side Periodic Auction order.
- Must include a limit price.

#### **Periodic Auction Eligible**

- Eligible to trade in both Periodic Auction and continuous book orders.
- Eligible to initiate a Periodic Auction when matched with a contra-side Periodic Auction order.
- Will not initiate a Periodic Auction and will trade immediately when matched with a resting or incoming continuous book order, as long as an auction has not been initiated.
- Will be locked from trading in the continuous book upon initiation of a Periodic Auction.

### Periodic Auction Order Details

The following criteria will apply to both Periodic Auction Only and Periodic Auction Eligible orders (collectively, “Periodic Auction orders”) unless otherwise stated.

- Periodic Auction orders will only be available on BYX during the regular trading session (9:30 a.m. – 4:00 p.m. ET).
- Displayed continuous book orders will be executed first using price/time priority, followed by Periodic Auction orders using size/time priority. Hidden continuous book orders will be executed third using standard BYX Priority.
- The minimum size requirement for Periodic Auction orders is 100 shares for orders in symbols trading below \$500 (based on Last Sale) with no minimum size requirement for symbols trading at or above \$500. Periodic Auction Only orders will be rejected if they do not meet this requirement. Periodic Auction Eligible orders that don't meet the size requirement will be accepted and converted to a continuous book order.
- The auction process will not allow for broker preferencing.
- To prevent potential capacity or performance issues, the Exchange will cancel a Periodic Auction at the end of the Periodic Auction Period if it is unable to successfully process such Periodic Auction after three attempts.

At the end of the auction period, the price where the most shares will trade within the collar will be the auction price. If there are multiple prices where the same number of shares can trade, the price that leaves the smallest imbalance will be the auction price. If there are multiple prices where the same number of shares can trade and leave the smallest imbalance, the price closest to the volume-based tie breaker will be the auction price.

The volume-based tie breaker refers to the midpoint of the NBBO for a particular security where the NBBO is a valid NBBO. A valid NBBO refers to where there is both a NBB and NBO for the security, the NBBO is not crossed, and the midpoint of the NBBO is less than the Maximum Percentage away from both the NBB and the NBO. The Maximum Percentage varies based on the price of the NBBO midpoint.

NBBO Midpoint Price	Maximum Percentage
Less than or equal to \$25	5%
Greater than \$25 but less than or equal to \$50	2.5%
Greater than \$50	1.5%

## Periodic Auction Market Data Messages

- All Periodic Auction messages will be published only over the BYX PITCH Depth of Book feed.
- The existing `Auction Update` message will be added to BYX and sent when a Periodic Auction starts. It will be sent at a randomized time between the start of an auction period and the end of the auction period minus 1 millisecond to inform participants that an auction is taking place.
- The `Auction Update` message will not include order imbalance information or information for continuous book orders.
- The `Auction Update` message will include the following information:
  - *Reference Price* - The collared, auction execution price at the point in time the message is sent using only orders eligible for Periodic Auctions.
  - *Buy Shares/Sell Shares* – Both fields will contain the same value and will represent the paired size that would be executed in the Periodic Auction using only orders eligible for Periodic Auctions.
  - *Auction Type* – The auction will be identified as a Periodic Auction (“P”).

## Periodic Auction Order Entry

A new field, *CrossTradeFlag* (FIX Tag 9355), can be used to enter Periodic Auction orders. The following instructions can be used with either FIX or BOE protocol.

Tag	Field Name	Req'd	Description
9355	<i>CrossTradeFlag</i> (NEW)	Y	Can be entered on individual orders or as a port setting.  0 = None (to override port settings if necessary) 1 = Periodic Auction Only 2 = Periodic Auction Eligible
110	<i>MinQty</i>	N	Standard MinQty only. True Min feature not supported in Periodic Auctions.
59	<i>TimeInForce</i>	Y	R = Regular Hours only (Required for Periodic Auction Only orders)  All TIFs except FOK supported for Periodic Auction Eligible orders. Use of IOC instruction requires "Locked In" port setting to be enabled.
18	<i>ExecInst</i>	N	Only the following are accepted for Periodic Auction Only orders:  R = Primary Peg M = Midpoint Peg  All instructions allowed for Periodic Auction Eligible orders except:  m = Midpoint (peg to NBBO Midpoint, but do not match when NBBO is locked)
211	<i>PegDifference</i>	N	For Periodic Auction Only orders, aggressive offsets only for primary peg orders.  No restrictions for Periodic Auction Eligible orders. Orders with passive offsets will be rejected.
9479	<i>DisplayIndicator</i>	Y	I = Invisible

Additionally, the Execution Report will contain a new value for Periodic Auction orders on *TradeLiquidityIndicator* (FIX Tag 9730).

Tag	Field Name	Req'd	Description
9730	<i>TradeLiquidityIndicator</i>	Y	<b>1<sup>st</sup> Character</b> P = Periodic Auction (NEW)

## New Port Attributes

Two new port attributes will be added to FIX and BOE to support Periodic Auctions on BYX.

The “Default CrossTradeFlag” port attribute will enable Members to designate all orders sent on a port as either Periodic Auction Only or Periodic Auction Eligible using *CrossTradeFlag* = 1 or 2. If this port attribute is set, *CrossTradeFlag* = 0 can be used to override the port setting on an order-by-order basis.

The “Lock Auction Orders” port attribute will allow Members to configure whether orders that are participating in a Periodic Auction may be cancelled. A value of “False” (default) will allow cancellations to occur during a Periodic Auction. For Members that wish to send IOC orders that initiate a Periodic Auction, the value for this port attribute must be updated to “True” in order to allow an IOC order to initiate a Periodic Auction.

All port attributes may be updated by using the [Logical Port Request](#) tool located within the Customer Web Portal.

## **Testing Opportunities**

Availability of Periodic Auctions in the BYX certification environment will be announced in the coming weeks.

## **Additional Information**

For more information, please refer to the following technical specifications:

- [US Equities FIX Specification](#)
- [US Equities BOE Specification](#)
- [US Equities Auction Process Specification](#)
- [US Equities TCP Depth of Book Specification](#)
- [US Equities/Options Multicast Depth of Book Specification](#)

Please contact the Cboe Trade Desk for support or with any questions.

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