



TMX AUSTRALIA EXCHANGE

Auctions In CXA Symbols

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1. Overview

1.1. Purpose of Auctions on CXA Symbols

CXA has introduced auctions on CXA symbols to facilitate liquidity events and price discovery in the following scenarios:

- Opening Auctions;
- Closing Auctions, including the determination of Closing Prices; and
- Intra-day market announcements or events requiring the halting of a symbol and the use of an opening auction process to resume trading.

For further background information on this functionality and proposed amendments to Operating Rules and Operating Rules: Procedures, refer to Consultation Paper 01/2024: Listings.

1.2. Eligibility

Auctions operate in respect of CXA quoted funds and corporate listings. CXA warrants will not be eligible for auctions. Eligible products will be referred to as 'auction eligible products' in the CXA rule framework.



2. Auction Timetable and Trading States

The CXA auction timetable and related trading states align with existing Australian market practices.

The simplified timetable comparison below shows existing CXA production timetable events on the left, together with timetable events for CXA symbols which are eligible for auctions on the right in bold font. For further details about trading phases, refer to the Operating Rule: Procedures.

Existing Market on Close (MOC) trading states on ASX symbols persist, however these states have been excluded from the comparison table for clarity.

Existing Timetable		Timetable Events for CXA Symbols Eligible for Auctions	
05:30 Technical Connectivity	Client connectivity commences.	05:30 Technical Connectivity	Client connectivity commences. Market data queries will include existing multi-day orders that have carried over from the previous trading day.
06:35 Pre-Market	Trade Reports may be lodged in accordance with the Operating Rules and the Market Integrity Rules.	06:35 Pre-Market	Trade Reports may be lodged in accordance with the Operating Rules and the Market Integrity Rules.
		07:00 Pre-Open	A call period commences for auction eligible products. Participants may enter, amend and cancel orders in a Pre-Open trading state. Overlapping order books may form (where the best bid price is greater than or equal to the best ask price), however overlapping orders will not trade.
		Between 09:59:45 and 10:00:00 Opening Auction	All auction eligible symbols that are in Pre-Open and have an overlapping order book will be subject to the CXA auction algorithm. The exact opening time will be randomised, occurring between 09:59:45 and 10:00:00, such that auction eligible symbols are in continuous trading by 10:00:00 The symbol immediately proceeds to Continuous Trading when the auction process completes.
10:00 Continuous Trading	Participants may enter limit and price improvement orders for eligible securities into the CXA Market. CXA Trading System will allow order entry and match orders.	After opening auction completes Continuous Trading	Participants may enter limit and price improvement orders for eligible securities into the CXA Market. CXA Trading System will allow order entry and match orders.



			Intra-day, certain CXA symbols may be subject to an un-scheduled market announcement or trading event which requires either a trading halt followed by a Pre-Open and auction price discovery event, or just a Pre-Open and auction price discovery event. The same Pre-Open and CXA auction process sequence would be executed for that symbol, but with a shorter call period.
		16:00 Pre-Close	Symbols eligible for auctions are placed into a Pre-Close state, at which point continuous trading stops and a call period for the closing auction begins. Orders may be entered, amended and cancelled, similar to the Pre-Open state prior to 10:00:00. Overlapping order books may form (where the best bid price is greater than or equal to the best ask price), however overlapping orders will not trade.
		Between 16:12:45 and 16:13:00 Closing Auction	At a randomised time between 16:12:45 and 16:13:00, auction eligible symbols that are in Pre-Close and have an overlapping order book, will be subject to the CXA auction algorithm. The auction uncrossing price becomes the closing price. The symbol immediately proceeds to Post-Trade Administration when the auction process completes. Symbols undergoing late market announcements may be subject to an adjusted auction time no later than 16:23.
16:13 – 18:55 Post-Trading Administration	Participants cannot enter or amend Non-MOC orders from 16:13. Orders are not matched in this period. Trade Reports may be lodged in accordance with the CXA Operating Rules and the Market Integrity Rules. All Day orders remaining in the CXA market at the end of this period will be automatically cancelled.	After closing auction completes – 18:55 Post-Trading Administration	Participants cannot enter or amend orders in the Post-Administration phase. Orders are not matched in this period. Trade Reports may be lodged in accordance with the CXA Operating Rules and the Market Integrity Rules. All Day orders remaining in the CXA market at the end of this period will be automatically cancelled.
19:00 End of Technical Connectivity	All participant connections to CXA are closed.	19:00 End of Technical Connectivity	All participant connections to CXA are closed.



3. Auction Algorithm

3.1. Auction Methodology Principles

The purpose of the CXA auction algorithm is to resolve overlapping orders that may form in an orderbook following an auction call period and determine a single price to be applied to all resulting trades.

The CXA auction algorithm leverages global CXA methodologies and is designed to be consistent with the auction algorithm principles of other CXA equity markets. It has been designed to efficiently maximise the number of shares executed at a single price. In the event of a volume-based tie at multiple price levels the algorithm applies the price that minimises imbalance, and if there is still a tie across multiple price levels, the algorithm will apply the price that is closest to the mid-point of the resulting BBO or, if this is not possible, the last traded price.

To expand on this, at the conclusion of an auction call period, if there is an overlapping orderbook in a symbol, the auction algorithm will operate as per the following principles.

- **Principle 1 – Maximise Volume.** At each price step of the buy and sell orders entered in the orderbook, determine the volume that would be traded if all orders eligible to be matched (i.e. the buy price is equal to or greater than the sell price) were matched. The auction price is the price step that would result in the largest volume being traded and all entered orders eligible to be matched at this price step are matched as auction trades, provided there is only one such price step. If there are 2 or more price steps that would result in the largest volume being traded, proceed to principle 2.
- **Principle 2 – Minimise Imbalance.** Where there are two or more price steps determined by principle 1, the auction price is the price step among these that would result in the lowest imbalance (i.e. the lowest remaining volume that is not traded in the auction) and all orders eligible to be matched at this price step are matched as auction trades, provided there is only one such price step. If there are 2 or more price steps that would result in the lowest imbalance, proceed to principle 3.
- **Principle 3 – Align with Resulting BBO.** Where there are two or more price steps determined by principle 2, the auction price is the price step among these that would be closest to the midpoint of the resulting BBO after the auction completes and all orders eligible to be matched at this price step are matched as auction trades, provided there is only one such price step. If there are 2 price steps that are equally close to



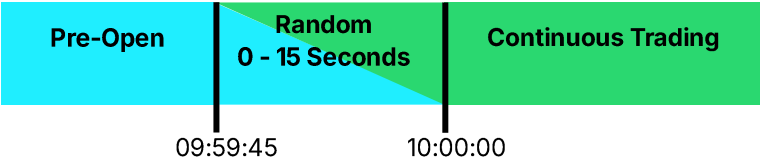
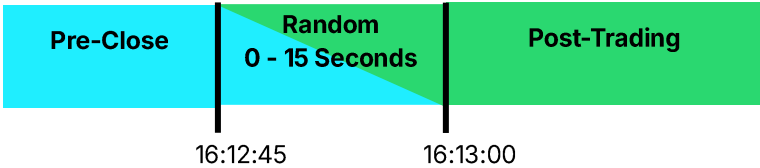
the midpoint of the resulting BBO or if there is no resulting BBO, proceed to principle 4.

- **Principle 4 – Align with Last Price.** Among the price steps determined by principle 3, the auction price is the price step that is closest to the last traded price and all orders eligible to be matched at this price step are matched as auction trades.

Based on internal simulations, CXA considers the outcomes generated by this algorithm will very closely match the outcomes generated by existing auctions in the Australian Market.

3.2. Auction Timing Randomisation

CXA opening and closing auctions occur within randomised time windows to align with Australian market standards.

• Pre-Open from 07:00:00 • Opening Auction random time between 09:59:45 and 10:00:00 • Auction eligible symbols are in Continuous Trading by 10:00:00	
• Pre-Close from 16:00:00 • Closing Auction random time between 16:12:45 and 16:13:00 • Auction eligible symbols are in Post-Trading Administration by 16:13:00	



4. Order Attribute Eligibility in the Auction

The treatment (eligibility to match, incorporation into auction price and incorporation in into PITCH) of various CXA order types will be as set out below.

- **Pegged (e.g. Midpoint)** orders: existing orders are unbooked and are ineligible to trade; new orders are rejected if the symbol is not in "Trading" status
- **MOC (Market on Close)** orders apply to ASX Equities only, hence are out of scope for CXA symbol auctions
- **Undisclosed** orders (resting lit order with price but no visible quantity) are included in the auction algorithm, hence included in eligible shares and auction price calc and disseminated in the PITCH 'auction update' (pre auction) and 'auction summary' (at the auction)
- **Iceberg** order: whole order quantity is included in the auction algorithm, hence included in eligible shares and auction price calc and disseminated in the PITCH 'auction update' (pre auction) and 'auction summary' (at the auction)
- **BestX / MarketX** orders rest as normal limit orders and are processed accordingly
- **MEQ / MEQSE** (Minimum Executable Quantity) variants are not eligible for resting lit orders, hence not applicable for auction trades
- **IOC / FOK** (Immediate or Cancel / Fill or Kill) time-in-force setting results in orders that do not rest in the lit order book, hence not applicable for auction trades
- **Broker preference** is relevant only for hidden orders, hence not applicable for auction trades
- **Self-trade prevention** is observed in auctions where:
 - A buy order and sell order match in the auction algorithm to result in a trade, and
 - Both orders meet the standard self-trade prevention criteria (which also apply in continuous trading) of:
 - 1) same first 3 digits of the Trading PID and
 - 2) same No Trade Key specified by the participant

The only self-trade protection No Trade Feat outcome available in the auction algorithm is Booking Purpose Trade (NoTradeFeat = X), regardless of what No Trade Feat value is specified by the participant.

Orders that persist through to continuous trading will respect their No Trade Feat setting as per normal.

- **Remove Crossing from Clearing** logic using FIX tag 8177 is honoured for trades generated by the auction algorithm.



5. Interaction with Market On Close (MOC)

To promote the growth of the closing auction, CXA's existing market on close (MOC) order type will not initially be available for auction eligible products. Instead, CXA will enable this functionality at an appropriate time after launch.

Once MOC support is enabled for these symbols, it will operate in the same manner as the current MOC functionality, i.e., after the closing auction completes, the symbol proceeds to the @Last Trading Phase where participants may continue to enter hidden Market on Close (MOC) orders which may overlap volume-wise and match at the established CXA Closing auction price until 16:20.

MOC orders remain available for ASX symbols where the ASX closing price is applied to all MOC trades.



6. Technical Specification Updates

CXA makes every effort to introduce functionality with optionality to reduce client impact to the extent possible. The implementation of CXA auctions, however, includes mandatory changes to direct Market Data interfaces.

6.1. PITCH Full Tick Market Data Specification

PITCH Message	Details of Updates
Trading State	The <i>Trading Status</i> message to include: • New Pre-Open / Pre-Close trading phases in the existing <i>Trading Status</i> field, • New CXAL identifier for CXA Listed symbols in the existing <i>Market ID Code</i> field.
Order Executed at Price	The <i>Order Executed at Price</i> messages are disseminated when auction trades occur. It aligns with the existing <i>Order Executed</i> message, to facilitate updating the order book when lit orders are executed, with the addition of: • <i>Auction Type</i> to indicate if this trade originated from an opening or closing auction, • <i>Price</i> to indicate the auction price.
Trade Message	The <i>Trade</i> message is used to disseminate auction trades that involve an undisclosed order. This is consistent with <i>Trade</i> messages disseminated during continuous trading.
Auction Update	The <i>Auction Update</i> message provides the following information, pre-auction, when there has been a change to a symbol's overlapping order book: • Number of shares eligible to trade if the auction were to occur now, • Indicative Auction Price if the auction were to occur now.
Auction Summary	The <i>Auction Summary</i> message provides the following information, post-auction: • Number of shares traded in the auction, • Single Auction Price.



6.2. TOP of Book Market Data Specification

TOP Message	Details of Updates
Trading State	The <i>Trading Status</i> message to include: • New Pre-Open / Pre-Close trading phases in the existing <i>Trading Status</i> field, • New CXAL identifier for CXA Listed symbols in the existing <i>Market ID Code</i> field.
TOP Trade	The <i>TOP Trade</i> message to include: • Indicator if the trade was generated from an auction in the existing <i>Trade Type</i> field.
Auction Update	The <i>Auction Update</i> message provides the following information, pre-auction, when there has been a change to a symbol's overlapping order book: • Number of shares eligible to trade if the auction were to occur now, • Indicative Auction Price if the auction were to occur now.
Auction Summary	The <i>Auction Summary</i> message provides the following information, post-auction: • Number of shares traded in the auction, • Single Auction Price.



6.3. FIX Specification

	Details of Updates
Trade acknowledgement for Order Entry, FIX Drop, and ODRÖP	The <i>Execution Report</i> message to include: Indicator if your trade originated from an auction in the existing <i>Trade liquidity Indicator</i> tag 9730.

6.4. BOE Specification

	Details of Updates
Trade acknowledgement for Order Entry	The <i>Execution Report</i> message to include: Indicator if your trade originated from an auction in existing field BaseLiquidityIndicator).



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