Cboe Titanium Cboe U.S. Equities Binary Order Entry Specification

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Introduction

Overview

This document describes Cboe Binary Order Entry (BOE), the Cboe proprietary order entry protocol.

Where applicable, the terminology (e.g., time in force) used in this document is similar to that used by the FIX protocol to allow those familiar with FIX to more easily understand BOE. This document assumes the reader has basic knowledge of the FIX protocol.

BOE fulfills the following requirements:

- CPU and memory efficiency. Message encoding, decoding, and parsing are simpler to code and can be optimized to use less CPU and memory at runtime.
- Application level simplicity. State transitions are simple and unambiguous. They are easy to apply to a Member's representation of an order.
- Session level simplicity. The session level protocol (login, sequencing, replay of missed messages, logout) is simple to understand.
- CPU and memory efficiency. Message encoding, decoding, and parsing are simpler to code and can be optimized to use less CPU and memory at runtime.
- Application level simplicity. State transitions are simple and unambiguous. They are easy to apply to a Member's representation of an order.
- Session level simplicity. The session level protocol (login, sequencing, replay of missed messages, logout) is simple to understand.

While Cboe strives to preserve feature parity between FIX and BOE where possible, some features may only be available in one protocol or the other.

All binary values are in little Endian (used by Intel x86 processors), and not network byte order.

Each message is identified by a unique message type. Not all message types are used in all of Cboe's trading environments globally. A listing of the supported message types is provided in List of Message Types on page 88.

All communication is via standard TCP/IP.

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Certification Requirement

All customers must complete a formal certification in the appropriate Cboe Certification test environment before production orders or quotes will be accepted by Cboe. Formal certification scripts can be found in the Cboe Customer Web Portal. Customers may complete the formal certification using the Certification Tool app and selecting the applicable certification script. Customers are advised to test all functionality they plan to use in production in the Cboe Certification test environment.

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Data Types

The following data types are used by BOE. The size of some data types varies by message. All data types have default values of binary zero, in both Member to Cboe and Cboe to Member contexts.

- Binary: Little Endian byte order, unsigned binary value. The number of bytes used depends on the context.
  - One byte: FE=254
  - Four bytes: 64 00 00 00=100
- Signed Binary: Little Endian byte order, signed two's complement, binary value. The number of bytes used depends on the context.
  - One byte: DF=-33
  - Four bytes: 64 00 00 00=+100
- Binary Price: Little Endian byte order value, signed two's complement, eight bytes in size, with four implied decimal places. So, if the value is 123,400, the actual value taking into account implied decimal places is -12.34.
  - 08 E2 01 00 00 00 00 00=123,400/10, 000=12.34
  - F8 1D FE FF FF FF FF FF= -123,400/10, 000=-12.34
- Short Binary Price: Little Endian byte order value, signed two's complement, four bytes in size, with four implied decimal places. So, if the value is 12,300, the actual value taking into account implied decimal places is 1:23.
  - 0C 30 00 00=12,300/10, 000=1.34
- Signed Binary Price: Little Endian byte order value, signed two's complement, eight bytes in size, with four implied decimal places. So, the value is -123,400 is -12.34 after taking account for the four implied decimal places.
  - 08 E2 01 00 00 00 00 00=123,400/10, 000=12.34
  - F8 1D FE FF FF FF FF FF=-123,400/10, 000=-12.34
- Signed Binary Fee: Little Endian byte order value, signed two's complement, eight bytes in size, with five implied decimal places. So, the value is -123,000 is -1.23 after taking account for the five implied decimal places.
  - 88 1F FE FF FF FF FF FF=-123,000/100, 000=-1.23
- Alpha: Uppercase letters (A-Z) and lowercase letters (a-z) only. ASCII NUL (0x00) filled on the right, if necessary. The number of bytes used depends on the context.
- Alphanumeric*:* Uppercase letters (A-Z), lowercase letters (a-z) and numbers (0-9) only. ASCII NUL (0x00) filled on the right, if necessary.
- Text: Printable ASCII characters only. ASCII NUL (0x00) filled on the right, if necessary.
- DateTime: 8 bytes. The date and time, in UTC, represented as nanoseconds past the UNIX epoch (00:00:00 UTC on 1 January 1970). The nanoseconds portion is currently ignored and

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treated as 0 (i.e. the times are only accurate to microseconds) on input, and will always be set to 0 by Cboe in outgoing messages. However, **Cboe may begin populating the nanoseconds portion at any time without warning.**

For example: 1,294,909,373,757,324, 000=2011-01-13 09:02:53.757324 UTC.

- Date: Little Endian byte order, unsigned binary value, 4 bytes in size. The YYYYMMDD expressed as an integer.

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Optional Fields and Bit fields

Some messages such as **`New Order`** and **`Modify Order`** messages have a number of optional fields. A count and number of bitfields in the message specify which optional fields will be present at the end of the message. If a bit is set, the field will be present. Fields are appended to the end of the message. There is no implicit framing between the optional fields. In order to decode the optional fields, they must be appended in a particular order to the end of the message. The fields of the first bitfield are appended first, lowest order bit first. Next, the fields of the next bitfield are appended, lowest order bit first. This continues for all bitfields. While certain reserved bits within a defined bitfield are used within another Cboe market and will be ignored, bits that are reserved for future expansion must be set to 0 when noted in the bitfield description.

The size, data type, and values for each field are described in the List of Optional Fields on page 77.

Note that the set of optional fields returned for each Cboe to Member message type is determined at session login (using the **`Login Request`** message); hence, the exact size and layout of each message received by the client application can be known in advance. **Any requested optional field which is irrelevant in a particular context will still be present in the returned message, but with all bytes set to binary zero (0x00)**.

Each return message from Cboe to Member indicates the optional fields which are present, even though the Member indicated during login which optional fields are to be sent. The reason for the inclusion (and duplication) is so that each message can be interpreted on its own, without having to find the corresponding login request or response to know which optional fields are present. So, for example, in a log file, decoding a message requires only that single message.

Example messages are shown with each message type which should help to make this concept clear.

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Hours of Operation

All times noted are Eastern Time zone (ET) based.

Refer to the website for the Cboe Holiday schedule.

BZX Exchange supports an opening and closing auction for BZX Exchange listed securities (refer to the Cboe US Equities Auction Process Specification for more information).

Orders entered prior to the start of the Pre-Market or Regular Trading Session which are accepted will be queued for trading in the session designated by the order. Once trading begins, queued orders will be released to the respective book and crossing orders will be matched by time priority. Refer to the Cboe US Equities Opening Process for more information.

Orders are rejected if they are received outside the hours Cboe is available for trading or queuing. All orders remaining after the Post Market Session will be cancelled automatically (Execution Reports will be delivered).

Table 1. Trading Sessions

SESSION	START TIME (ET)	END TIME (ET)
Early Order Acceptance	6:00 a.m. 2:30 a.m. (BZX and EDGX only)	7:00 a.m. 4:00 a.m. (BZX and EDGX only)
Early Trading Session	7:00 a.m. 4:00 a.m. (BZX and EDGX only)	8:00 a.m.
Pre-Market Trading Session	8:00 a.m.	9:30 a.m.
Regular Trading Session	9:30 a.m.	4:00 p.m.
Post-Market Session	4:00 p.m.	8:00 p.m.

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Protocol Features

For a full list of supported order types and relevant fields please refer to the Order Types and Features section in the US Equities FIX Specification.

The exchange does not guarantee messages sent by Members/TPHs to the exchange, including through protocols such as TCP. Members/TPHs are responsible to monitor the status of the messages they send to the exchange.

Architecture and Message in Flight Settings

Each BOE order handler process will allow a single TCP connection from a member. Connection attempts from unknown source IP ranges will be blocked to prevent unauthorized access to BOE ports. The Cboe NOC should be contacted in the event that a Member desires to connect from a new source IP range.

Each BOE order handler will connect, using a proprietary UDP protocol, to all matching units. Connections from order handlers to matching engines are latency equalized. The connections between order handlers and matching units are governed by an internal flow control mechanism to control burst rates.

The number of messages in flight between each order handler and matching engine is 32. In addition, when the total number of unacknowledged messages exceeds 1,024, the BOE order handler will stop reading from the member-facing TCP socket. This will cause the order handler to stop removing bytes from the TCP receive buffer, and will prevent the member from sending more TCP data once the member's send buffer is full.

When the total number of unacknowledged messages falls below 960, the reading of the member facing TCP socket will be resumed.

For message in flight counting purposes each new order, cancel/replace, or cancel message will count as one message.

Cboe may either update the message in flight or the total number of unacknowledged messages settings with notice. Changes to reduce either limit will be made only with two weeks' notice. Cboe reserves the ability to increase either limit immediately with notice.

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Cboe Market Close (BZX Only)

Cboe Market Close on the BZX Exchange allows for Members to submit buy and sell Market-On-Close orders designated for participation in CMC in order to obtain the official closing price for any matched shares. Any remaining shares will be cancelled back to Members.

At 2:30 a.m. ET, Members may enter new orders to participate in CMC. Members will populate the following BOE fields to send a CMC order.

Table 2. CMC `New Order` Fields

FIELD NAME	REQ'D	DESCRIPTION
OrdType	Y	1=Market
TimeInForce	Y	7=At the Close
RoutingInst	Y	B=Book Only
CmcSessions	N	A=3:15 p.m. D = 3:30 p.m. L = 3:49 p.m. S = 3:54 p.m. (NASDAQ-listed only)

An **`Order Restated`** message will be sent for any fully or partially matched CMC order after the order executes in a CMC matching session. A standard **`Order Canceled`** message will be sent for any CMC order that does not have any matched quantity after the final CMC session when the eligible order has finished. The restatement will contain the following fields:

Table 3. CMC `Order Restated` Fields

FIELD NAME	DESCRIPTION
RestatementReason	C=CMC Restatement
LastShares	Number of Shares Cancelled (if any)
LeavesQty	Quantity of unexecuted shares. Will include shares already matched in a previous session.
CmcMatchQty	Matched size for CMC matching session.

After the closing price is received one or more **`Order Execution`** messages, totaling the sum of the matched size from each restatement, will be sent for each CMC order. The execution message will contain the following fields:

Table 4. CMC `Order Execution` Fields

FIELD NAME	DESCRIPTION
LastShares	Execution Size
LastPx	Execution Price (official close price)

If a closing price is not received from the primary listing exchange by 8:00 p.m. ET, then all CMC matched shares will be cancelled. In the event that a closing price is updated by the primary listing exchange after its initial publication, then a Trade Cancel or Correct message will be sent to update the execution price for each CMC execution impacted by the changed closing price. **As a result, all**

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firms that wish to submit CMC orders must be certified for Trade Cancel or Correct messages on BOE before they will be allowed to submit CMC orders.

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Periodic Auctions (BYX Only)

The Periodic Auction process is a price forming auction that runs for a fixed time period of 100 milliseconds and is only available during the regular trading session. A Periodic Auction starts 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. Members can populate the following instructions to send a Periodic Auction order.

Table 5. Periodic Auctions Fields

FIELD NAME	REQ'D	DESCRIPTION
CrossTradeFlag	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
TimeInForce	Y	R=Regular Hours only (Required for Periodic Auction Only orders) All TIFs except FOK and IOC supported for Periodic Auction Eligible orders.
DisplayIndicator	Y	I=Invisible
MinQty	N	Minimum total fill quantity, which may be made up of several consecutive smaller fills. If Enable True *MinQty* port attribute is set to 'Yes', orders will be converted into standard *MinQty* during a Periodic Auction. Periodic Auction Eligible orders will remain as True *MinQty* in the continuous book.
ExecInst	N	If *OrdType* (40) = P, only the following are accepted for Periodic Auction Only orders: R=Primary Peg M=Midpoint Peg If *OrdType* (40) = P, all instructions allowed for Periodic Auction Eligible orders. If *ExecInst* = m, the 'No Trade in a Locked Market' instruction will only be applied when the PAE order is live in continuous book trading and will not apply to either initiating a Periodic Auction or to executing at the conclusion of the Periodic Auction.
PegDifference	N	For Periodic Auction Only Orders, aggressive offsets only for primary peg orders. Orders with passive offsets will be rejected. No restrictions for Periodic Auction Eligible Orders.

The Execution Report will contain a new ***SubLiquidityIndicator*** value for Periodic Auction orders.

Table 6. Periodic Auctions Execution Report Field

FIELD NAME	REQ'D	DESCRIPTION
SubLiquidityIndicator	Y	P=Periodic Auction

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Maximum Open Order Limits

The exchange limits the maximum number of open orders allowed on a BOE port to 100,000 per port (BYX/EDGA) and 300,000 per port (BZX/EDGX). New orders will be rejected once this limit is breached until the number of open orders drops back below the limit.

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Stale NBBO

A stale NBBO will occur when the Cboe trading system determines that one or more SIP quote channels is impaired or down completely. If the trading system detects that an NBBO is stale, new orders for the affected symbol(s) will be rejected. Any existing orders will remain on the book but will not be allowed to update (user updates, peg movements, or sliding updates). Members will be allowed to cancel any open orders. Regular trading will resume when the NBBO for a given symbol is determined to be healthy by the Cboe trading system.

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Session

Message Headers

Each message has a ten byte header. The two initial *StartOfMessage* bytes are present to aid in message reassembly for network capture purposes. The *MatchingUnit* field is only populated on sequenced, non-session level messages sent from Cboe to the Member. Messages from Member to Cboe and all session level messages must always set this value to 0.

Table 7. Message Header Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	Message type.
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in BOE correspond to matching units on Multicast PITCH. **For session level traffic, the unit is set to 0.** **For messages from Member to Cboe, the unit must be 0.**
SequenceNumber	6	4	Binary	The sequence number for this message. Messages from Cboe to Member are sequenced distinctly per matching unit. Messages from Member to Cboe are sequenced across all matching units with a single sequence stream. Member can optionally send a 0 sequence number on all messages from Member to Cboe. Cboe highly recommends that Members send sequence number on all inbound messages.

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Login, Replay and Sequencing

Session level messages, both inbound (Member to Cboe) and outbound (Cboe to Member) are unsequenced.

Inbound (Member to Cboe) application messages are sequenced. Upon reconnection, Cboe informs the Member of the last processed sequence number; the Member may choose to resend any messages with sequence numbers greater than this value. A gap forward in the Member's incoming sequence number is permitted at any time and is ignored by Cboe. Gaps backward in sequence number (including the same sequence number used twice) are never permitted and will always result in a **`Logout`** message being sent and the connection being dropped.

Most (but not all) outbound (Cboe to Member) application messages are monotonically sequenced per matching unit. Each message's documentation will indicate whether it is sequenced or unsequenced. While matching units on BOE correspond directly to matching units on Multicast PITCH, sequence numbers do not.

Upon reconnection, a Member sends the last received sequence number per matching unit in a **`Login Request`** message. Cboe will respond with any missed messages. However, when the **`Login Request`** message *NoUnspeciedUnitReplay* flag is enabled, Cboe will exclude messages from unspecified matching units during replay. Cboe will send a **`Replay Complete`** message when replay is finished. If there are no messages to replay, a **`Replay Complete`** message will be sent immediately after a **`Login Response`** message. Cboe will reject all orders during replay.

Assuming a Member has requested replay messages using a properly formatted **`Login Request`** message after a disconnect, any unacknowledged orders remaining with the Member after the **`Replay Complete`** message is received should be assumed to be unknown to Cboe.

Unsequenced messages will not be included during replay.

A session is identified by the username and session sub-identifier (both supplied by Cboe). Only one concurrent connection per username and session sub-identifier is permitted.

If a login is rejected, an appropriate **`Login Response`** message will be sent and the connection will be terminated.

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Sequence Reset

A reset sequence operation is not available for Binary Order Entry. However, a Member can send a **`Login Request`** message with *NoUnspecifiedUnitReplay* field enabled, and *NumberOfUnits* field set to zero. Then, upon receiving a **`Login Response`** message from Cboe, the Member can use the field *LastReceivedSequenceNumber* as the sequence starting point for sending future messages.

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Heartbeats

`Client Heartbeat` messages are sent from Member to Cboe and **`Server Heartbeat`** messages are sent from Cboe to Member if no other data has been sent in that direction for one second. Like other session level messages, heartbeats from Cboe to the Member do not increment the sequence number. If Cboe receives no inbound data or heartbeats for five seconds, a **`Logout`** message will be sent and the connection will be terminated. **Members are encouraged to have a one second heartbeat interval and to perform similar connection staleness logic.**

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Logging Out

To gracefully log out of a session, a **`Logout Request`** message should be sent by the Member. Cboe will finish sending any queued data for that port and will then respond with its own **`Logout`** message and close the connection. After receipt of a **`Logout Request`** message, Cboe will ignore all other inbound (Member to Cboe) messages except for **`Client Heartbeat`** message.

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Session Messages

Member to Cboe

Login Request Message Fields

A **`Login Request`** message must be sent as the first message upon connection.

A number of repeating parameter groups, some of which may be required, are sent at the end of the message. Ordering of parameter groups is not important. New parameter groups may be added in the future with no notice.

Table 8. Login Request Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x37`
MatchingUnit	5	1	Binary	Always 0 for inbound (Member to Cboe) messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.
SessionSubID	10	4	Alphanumeric	Session Sub ID supplied by Cboe.
Username	14	4	Alphanumeric	Username supplied by Cboe.
Password	18	10	Alphanumeric	Password supplied by Cboe.
NumberOfParam Groups	28	1	Binary	A number, n (possibly 0), of parameter groups to follow.
$ParamGroup_1$				First parameter group.
…				
$ParamGroup_n$				Last parameter group.

Unit Sequences Parameter Group

This parameter group includes the last consumed sequence number per matching unit received by the Member. Cboe uses these sequence numbers to determine what outbound (Cboe to Member) traffic, if any, was missed by the Member. If this parameter group is not sent, it's assumed the Member has not received any messages (e.g., start of day).

The Member does not need to include a sequence number for a unit if they have never received messages from it. For example, if the Member has received responses from units 1, 3, and 4, the **`Login Request`** message need not include unit 2. If the Member wishes to send a value for unit 2 anyway, 0 would be the only allowed value.

Only one instance of this parameter group may be included.

Table 9. Login Request Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
ParamGroupLength	0	2	Binary	Number of bytes for the parameter group, including this field.

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
ParamGroupType	2	1	Binary	`0x80`
NoUnspecified UnitReplay	3	1	Binary	Flag indicating whether to replay missed outgoing (Cboe to Member) messages for unspecified units. `0x00` = False (Replay Unspecified Units) `0x01` = True (Suppress Unspecified Units Replay)
NumberOfUnits	4	1	Binary	A number, n (possibly 0), of unit/sequence pairs to follow, one per unit from which the Member has received messages.
$UnitNumber_1$		1	Binary	A unit number.
$UnitSequence_1$		4	Binary	Last received sequence number for the unit.
…				
$UnitNumber_n$		1	Binary	A unit number.
$UnitSequence_n$		4	Binary	Last received sequence number for the unit.

This parameter group, which may be repeated, indicates which attributes of a message will be returned by Cboe for the remainder of the session. This allows Members to tailor the echoed results to the needs of their system without paying for bandwidth or processing they do not need.

Listing of the return bitfields which are permitted per message is contained in Return Bitfields Per Message on page 66.

Table 10. Return Bitfields Parameter Group

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
ParamGroupLength	0	2	Binary	Number of bytes for the parameter group, including this field.
ParamGroupType	2	1	Binary	`0x81`
MessageType	3	1	Binary	Return message type for which the bitfields are being specified (e.g., `0x25` for an Order Acknowledgment message).
NumberOfReturn Bitfields	4	1	Binary	Number of bitfields to follow.
$ReturnBitfield_1$	5	1	Binary	Bitfield identifying fields to return.
…				
$ReturnBitfield_n$		1	Binary	Last bit field.

Note this example is for illustrative purposes only. Actual login messages will contain specification of return bitfields for a larger set of messages and each return bitfield specification will be complete whereas the example below is only an illustration for purposes of demonstrating the construction of the **`Login Request`** message.

Table 11. Login Request Message Example

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	Start of message bytes.
MessageLength	`43 00`	67 bytes
MessageType	`37`	**Login Request**
MatchingUnit	`00`	Always 0 for inbound messages
SequenceNumber	`00 00 00 00`	Always 0 for session level messages

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FIELD NAME	HEXADECIMAL	NOTES
SessionSubID	30 30 30 31	0001
Username	54 45 53 54	TEST
Password	54 45 53 54 49 4E 47 00 00 00	TESTING
NumberOfParam Groups	03	3 parameter groups
ParamGroupLength	14 00	20 bytes for this parameter group
ParamGroupType	80	0x80 = Unit Sequences
NoUnspecified UnitReplay	01	True (replay only specified units)
NumberOfUnits	03	Two unit/sequence pairs to follow;
UnitNumber$_1$	01	Unit 1
UnitSequence$_1$	4A BB 01 00	Last received sequence of 113,482
UnitNumber$_2$	02	Unit 2
UnitSequence$_2$	00 00 00 00	Last received sequence of 0
UnitNumber$_3$	04	Unit 4
UnitSequence$_3$	79 A1 00 00	Last received sequence of 41,337
ParamGroupLength	08 00	8 bytes for this parameter group
ParamGroupType	81	0x81 = Return Bitfields
MessageType	25	0x25 = Order Acknowledgment
NumberOfReturn Bitfields	03	3 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	*Symbol, Capacity*
ReturnBitfield$_3$	05	*Account, ClearingAccount*
ParamGroupLength	0C 00	12 bytes for this parameter group
ParamGroupType	81	0x81 = Return Bitfields
MessageType	2C	0x2C = Order Execution
NumberOfReturn Bitfields	07	7 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	*Symbol, Capacity*
ReturnBitfield$_3$	07	*Account, ClearingFirm, ClearingAccount*
ReturnBitfield$_4$	00	No bitfields from byte 4
ReturnBitfield$_5$	40	*BaseLiquidityIndicator*
ReturnBitfield$_6$	00	No bitfields from byte 6
ReturnBitfield$_7$	01	*SubLiquidityIndicator*

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Logout Request Message Fields

To end the session, the Member should send a **`Logout Request`** message. Cboe will finish sending any queued data and finally respond with a **`Logout`** message and close the connection.

A Member may simply close the connection without logging out, but may lose any queued messages by doing so.

Table 12. Logout Request Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x02`
MatchingUnit	5	1	Binary	Always 0 for inbound (Member to Cboe) messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Table 13. Logout Request Message Example

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`08 00`	`8 bytes`
MessageType	`02`	`Logout Request`
MatchingUnit	`00`	`Always 0 for inbound messages.`
SequenceNumber	`00 00 00 00`	`Always 0 for session level messages.`

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Client Heartbeat Message Fields

See Heartbeats on page 18 for more information about heartbeats and the session level protocol.

Table 14. Client Heartbeat Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x03`
MatchingUnit	5	1	Binary	Always 0 for inbound (Member to Cboe) messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Table 15. Client Heartbeat Message Example

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`08 00`	`8 bytes`
MessageType	`03`	`Client Heartbeat`
MatchingUnit	`00`	`Always 0 for inbound messages.`
SequenceNumber	`00 00 00 00`	`Always 0 for session level messages.`

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Cboe to Member

Login Response Message Fields

`A Login Response` message is sent in response to a **`Login Request`** message. On a successful login, the *LoginResponseStatus* will be set to A. On a failed login, *LoginResponseStatus* will be set to a value other than A, and *LoginResponseText* will be set to an appropriate failure description. The length of the *LoginResponse* will vary depending on acceptance or rejection of the *LoginRequest* and the parameter groups included on the *LoginResponse*. Customers should be prepared to handle variable length *LoginResponse* messages.

Cboe will verify Return Bitfields at login time. If the Return Bitfields in a Return Bitfields Parameter Group are invalid, *LoginResponseStatus* will be set to F, and *LoginResponseText* will include a description of which byte and bit are invalid. This is done to ensure that reserved fields are not used, and only options that apply to the local market are set. See Return Bitfields Per Message on page 66 for additional information.

Note that two sets of sequence numbers are available on the **`Login Response`** message. The set of sequence numbers in the body are the actual Cboe to Member sequence numbers indicating the highest sequence numbers available per matching unit. If specified during login, the Unit Sequences Parameter Group will be returned as an echo of the sequence numbers the Member presented during login as the highest received. If the sequence numbers are different, the gap will be filled by Cboe during the replay. A subset of units can be provided in the **`Login Request`**; however, all units will be provided in the **`Login Response`** message.

Table 16. Login Response Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x24`
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.
LoginResponseStatus	10	1	Alphanumeric	Accepted, or the reason for the rejection. A = Login Accepted N = Not authorized (invalid username/password) D = Session is disabled B = Session in use S = Invalid session Q= Sequence ahead in Login message I = Invalid unit given in Login message F = Invalid return bit field in Login message M= Invalid Login Request message structure
LoginResponseText	11	60	Text	Human-readable text with additional information about the reason for rejection. ASCII NUL (0x00) filled on the right, if necessary.

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
NoUnspecified UnitReplay	71	1	Binary	Echoed back from the original **Login Request** message.
LastReceived SequenceNumber	72	4	Binary	Last inbound (Member to Cboe) message sequence number processed by Cboe.
NumberOfUnits	76	1	Binary	A number, n, of unit/sequence pairs to follow, one per unit. A pair for every unit will be sent, even if no messages have been sent to this port today. For unsuccessful logins, this will be 0.
UnitNumber$_1$		1	Binary	A unit number.
UnitSequence$_1$		4	Binary	Highest available Cboe to Member sequence number for the unit.
...				
UnitNumber$_n$		1	Binary	A unit number.
UnitSequence$_n$		4	Binary	Highest available Cboe to Member sequence number for the unit.
NumberOfParam Groups		1	Binary	Echoed back from the original **Login Request** message.
ParamGroup$_1$				Echoed back from the original **Login Request** message.
...				
ParamGroup$_n$				Echoed back from the original **Login Request** message.

Table 17. Login Response Message Example

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`88 00`	`136 bytes`
MessageType	`24`	`Login Response`
MatchingUnit	`00`	`Always 0 for session messages.`
SequenceNumber	`00 00 00 00`	`Always 0 for session level messages.`
LoginResponseStatus	`41`	`A = Login Accepted`
LoginResponseText	`41 63 63 65 70 74 65 64 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`Accepted`
NoUnspecified UnitReplay	`01`	`True (replay only specified units)`
Last Received Sequence Number	`54 4A 02 00`	`Last sequence Cboe received of 150,100`
NumberOfUnits	`04`	`Four unit/sequence pairs to follow;`
UnitNumber$_1$	`01`	`Unit 1`
UnitSequence$_1$	`4A BB 01 00`	`Actual last sequence of 113,482`

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FIELD NAME	HEXADECIMAL	NOTES
UnitNumber$_2$	02	Unit 2
UnitSequence$_2$	00 00 00 00	Actual last sequence of 0
UnitNumber 3	02	Unit 3
UnitSequence3	00 00 00 00	Actual last sequence of 0
UnitNumber$_4$	02	Unit 4
UnitSequence4	79 A1 00 00	Actual last sequence of 41,337
NumberOfParam Groups	03	3 parameter groups
ParamGroupLength	14 00	20 bytes for this parameter group
ParamGroupType	80	0x80 = Unit Sequences
NoUnspecified UnitReplay	01	True (replay unspecified units)
NumberOfUnits	03	Three unit/sequence pairs to follow;
UnitNumber$_1$	01	Unit 1
UnitSequence$_1$	4A BB 01 00	Last received sequence of 113,482
UnitNumber$_2$	02	Unit 2
UnitSequence$_2$	00 00 00 00	Last received sequence of 0
UnitNumber$_3$	04	Unit 4
UnitSequence3	79 A1 00 00	Last received sequence of 41,337
ParamGroupLength	08 00	8 bytes for this parameter group
ParamGroupType	81	0x81 = Return Bitfields
MessageType	25	0x25 = Order Acknowledgment
NumberOfReturnBitfields	03	3 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	*Symbol, Capacity*
ReturnBitfield$_3$	05	*Account, ClearingAccount*
ParamGroupLength	0C 00	12 bytes for this parameter group
ParamGroupType	81	0x81 = Return Bitfields
MessageType	2C	0x2C = Order Execution
NumberOfReturn Bitfields	07	7 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	41	*Symbol, Capacity*
ReturnBitfield$_3$	07	*Account, ClearingFirm, ClearingAccount*
ReturnBitfield$_4$	00	No bitfields from byte 4
ReturnBitfield$_5$	40	*BaseLiquidityIndicator*
ReturnBitfield$_6$	00	No bitfields from byte 6
ReturnBitfield$_7$	01	*SubLiquidityIndicator*

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Logout Message Fields

A **Logout** message is usually sent in response to a **Logout Request** message. Any queued data is transmitted, a **Logout** message is sent, and Cboe will close the connection. However, a **Logout** message may also be sent if the Member violates the protocol specification (e.g., by moving backwards in sequence number).

The **Logout** message contains the last transmitted sequence number for each unit, allowing the Member to check that their last received sequence number matches.

Table 18. Logout Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x08`
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.
LogoutReason	10	1	Alphanumeric	The reason why the **Logout** message was sent. U = User Requested E = End of Day A = Administrative ! = Protocol Violation
LogoutReasonText	11	60	Text	Human-readable text with additional information about the reason for logout. Particularly useful if *LogoutReason* = ! (Protocol Violation).
LastReceived SequenceNumber	71	4	Binary	Last inbound (Member to Cboe) message sequence number processed by Cboe.
NumberOfUnits	75	1	Binary	A number, *n* (possibly 0), of unit/sequence pairs to follow, one per unit from which the client has received messages.
$UnitNumber_1$		1	Binary	A unit number.
$UnitSequence_1$		4	Binary	Highest available sequence number for the unit.
…				
$UnitNumber_n$		1	Binary	A unit number.
$UnitSequence_n$		4	Binary	Highest available sequence number for the unit.

Table 19. Logout Response Message Example

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	Start of message bytes.
MessageLength	`55 00`	85 bytes
MessageType	`08`	Logout
MatchingUnit	`00`	Always 0 for session level messages
SequenceNumber	`00 00 00 00`	Always 0 for session level messages
LogoutReason	`55`	`U` = User Requested

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FIELD NAME	HEXADECIMAL	NOTES
LogoutReasonText	55 73 65 72 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	User
LastReceived SequenceNumber	54 5A 02 00	Last Cboe received sequence of 150,100
NumberOfUnits	03	Two unit/sequence pairs to follow;
$UnitNumber_1$	01	Unit 1
$UnitSequence_1$	4A BB 01 00	Last sent sequence of 113,482
$UnitNumber_2$	02	Unit 2
$UnitSequence_2$	00 00 00 00	Last sent sequence of 0
$UnitNumber_3$	04	Unit 2
$UnitSequence_3$	79 A1 00 00	Last sent sequence of 41,337

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Server Heartbeat Message Fields

See Heartbeats on page 18 for more information about heartbeats and the session level protocol.

Table 20. Server Heartbeat Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x09`
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Table 21. Server Heartbeat Message Example

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`08 00`	`8 bytes`
MessageType	`09`	`Server Heartbeat`
MatchingUnit	`00`	`Always 0 for inbound messages`
SequenceNumber	`00 00 00 00`	`Always 0 for session level messages`

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Replay Complete Message Fields

See Login, Replay and Sequencing on page 16 for more information.

Table 22. Replay Complete Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x13`
MatchingUnit	5	1	Binary	Always 0 for session level messages.
SequenceNumber	6	4	Binary	Always 0 for session level messages.

Table 23. Replay Complete Message Example

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`08 00`	`8 bytes`
MessageType	`13`	`Replay Complete`
MatchingUnit	`00`	`Always 0 for inbound messages`
SequenceNumber	`00 00 00 00`	`Always 0 for session level messages`

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Application Messages

Member to Cboe

New Order Message Fields

A **`New Order`** message consists of a number of required fields followed by a number of optional fields. The optional fields used are specified by setting bits in the ***NewOrderBitfields***. Fields must be appended at the end of the message, starting with the lowest order enabled bit in the first bit field first.

Permitted input optional fields are described in New Order on page 62.

Table 24. New Order Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x38`
MatchingUnit	5	1	Binary	Always 0 for inbound (Member to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
ClOrdID	10	20	Text	Corresponds to *ClOrdID* (11) in Cboe FIX. ID chosen by the client. Characters in the ASCII range 33-126 are allowed, except for comma, semicolon, pipe, the 'at' symbol and double quotes. If the *ClOrdID* matches a live order, the order will be rejected as duplicate. Note: Cboe only enforces uniqueness of *ClOrdID* values among currently live orders. However, we strongly recommend that you keep your *ClOrdID* values unique.
Side	30	1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1 = Buy 2 = Sell 5 = Sell Short (client affirms ability to borrow) 6 = Sell Short Exempt
OrderQty	31	4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 shares.
NumberOf NewOrder Bitfields	35	1	Binary	Bitfield identifying which bitfields are set. Field values must be appended to the end of the message.
NewOrderBitfield[1]	36	1	Binary	Bitfield identifying fields to follow.
….				
NewOrderBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Required Order Attributes:

The following are required to be sent on new orders:

- Some form of symbology (see Symbology below);

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- *Price* (limit orders) or *Price* and/or *OrdType* (limit order market orders); and,
- *Capacity*

All other values have defaults. See the table in Purge Rejected on page 76 for additional information about each optional field, including its default value.

Symbology:

For additional information, refer to Cboe US Symbology Reference.

Table 25. *New Order Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes.
MessageLength	4A 00	73 bytes
MessageType	38	New Order
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
Side	31	Buy
OrderQty	E8 03 00 00	1,000 shares
NumberOfNewOrder Bitfields	03	3 bitfields to follow
NewOrderBitfield$_1$	04	*Price*
NewOrderBitfield$_2$	C1	*Symbol, Capacity, RoutingInst*
NewOrderBitfield$_3$	01	*Account*
Price	44 D6 12 00 00 00 00 00	$123.45
Symbol	4D 53 46 54 00 00 00 00	MSFT
Capacity	50	P=Principal
RoutingInst	52 00 00 00	R=Routable
Account	44 45 46 47 00 00 00 00 00 00 00 00 00 00 00 00	DEFG

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Cancel Order Message Fields

Request to cancel an order.

Permitted input optional fields are described in Cancel Order on page 63.

Table 26. Cancel Order Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x39`
MatchingUnit	5	1	Binary	Always 0 for inbound (Member to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
OrigClOrdID	10	20	Text	Corresponds to *OrigClOrdID* (41) in Cboe FIX. *ClOrdID* of the order to cancel.
NumberOf CancelOrderBitfields	30	1	Binary	Bitfield identifying bitfields which are set. May be 0. Field values must be appended to the end of the message.
CancelOrder Bitfield[1]	31	1	Binary	Bitfield identifying fields to follow. Only present if *NumberOfCancelOrderBitfields* is non-zero.
...				
CancelOrder Bitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 27. *Cancel Order Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`22 00`	`34 bytes`
MessageType	`39`	`Cancel Order`
MatchingUnit	`0`	`Always 0 for inbound messages`
SequenceNumber	`64 00 00 00`	`Sequence Number 100`
OrigClOrdID	`41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`ABC123`
NumberOfCancel OrderBitfields	`01`	`1 bitfield to follow`
CancelOrderBitfield$_1$	`01`	*ClearingFirm*
ClearingFirm	`54 45 53 54`	`TEST`

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Modify Order Message Fields

Request to modify an order. The order attributes to be modified are selected using *NumberOfModifyBitfields* and some number of bitfields to follow.

Only *Price*, *Side*, *OrderQty*, *StopPx*, *MaxFloor*, and *OrdType* may be adjusted. Modifies will result in a loss of time priority unless the modification involves a decrease in *OrderQty*, a change to *MaxFloor*, a change to *StopPx*, or a change in *Side* from sell long to sell short or vice-versa.

Other fields (including *ExecInst* will be ignored, and the value from the original order will be reused. In particular, note that when a Day ISO is modified, the ISO designation is applied to the new order.

A change in *MaxFloor* takes effect on the next reserve reload. A zero value for *MaxFloor* will be ignored. If *MaxFloor* is to be removed completely, then the order should be cancelled and a new order sent.

Changes in *OrderQty* result in an adjustment of the current order's *OrderQty*. The new *OrderQty* does not directly replace the current order's *LeavesQty*. Rather, a delta is computed from the current *OrderQty* and the replacement *OrderQty*. This delta is then applied to the current *LeavesQty*. If the resulting *LeavesQty* is less than or equal to zero, the order is cancelled. This results in safer behavior when the modification request overlaps partial fills for the current order, leaving the Member in total control of the share exposure of the order.

A **`Modify Order`** message should not be issued until the **`Order Acknowledgment`** message for the previous **`New Order`** or **`Order Modified`** message for the previous **`Modify Order`** message has been received. The BOE handler will reject a new **`Modify Order`** message if it has not been accepted or it has not seen the result of the prior modification from the Matching Engine. However, **`Modify Order`** message requests that merely reduce *OrderQty* may be overlapped if the existing *ClOrdID* is reused, as long as the trading identifier has not been opted-in to daily limit trading risk controls. This is the only case where reuse of the *ClOrdID* is allowed.

The *OrderQty* and *Price* fields in the optional field block must be present on allModify Ordermessage requests. Messages sent without *OrderQty* or *Price* fields will be rejected. *Price* is optional for market orders.

A maximum of 1,295 **`Modify Order`** message requests may be made to a single order each trading day. Once the 1,295th modification is made, the next user-generated message on the order should be a **`Cancel Order`** message request.

Permitted input optional fields are described in Modify Order on page 64.

Table 28. Modify Order Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
MessageType	4	1	Binary	0x3A
MatchingUnit	5	1	Binary	Always 0 for inbound (Member to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
ClOrdID	10	20	Text	New *ClOrdID* for this order.
OrigClOrdID	30	20	Text	Corresponds to *OrigClOrdID* (41) in Cboe FIX. *ClOrdID* of the order to replace. In the case of multiple changes to a single order, this will be the *ClOrdID* of the most recently accepted change.
NumberOfModifyOrder Bitfields	50	1	Binary	Bitfield identifying bitfields which are set. May be 0. Field values must be appended to the end of the message.
ModifyOrderBitfield1	51	1	Binary	Bitfield identifying fields to follow.
...				
ModifyOrderBitfieldn		1	Binary	Last bitfield.
Optional fields. . .				

Table 29. *Modify Order Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes
MessageLength	3E 00	62 bytes
MessageType	3A	Modify Order
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence Number 100
ClOrdID	41 42 43 31 32 34 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC124
OrigClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
NumberOfModify OrderBitfields	01	1 bitfield to follow
ModifyOrderBitfield$_1$	0C	*OrderQty, Price*
OrderQty	E0 2E 00 00	12,000 shares
Price	08 E2 01 00 00 00 00 00	$12.34

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Purge Orders

Request to cancel a group of orders across all of the firm's sessions. **`Purge Orders`** messages are only accepted on dedicated BOE Purge Ports. The *MassCancelInst* optional field is required and must be selected and populated. In addition, a firm may choose to implement one or more filters:

- MPID Filter - optionally cancel based on MPID. This is required for any self-imposed lockouts or for service bureaus. Set using first character of *MassCancelInst* and sending *ClearingFirm*.
- Symbol Filter - optionally cancel based on symbol. Set by sending a valid symbol. Cannot be combined with *RiskGroupID* filter.
- *RiskGroupID* Filter - optionally cancel based on *RiskGroupID.* A maximum of 10 *RiskGroupID*s may be included on a single **`Purge Orders`** message. Set by populating *RiskGroupIDCnt* to a non-zero value. Cannot be combined with symbol filter.

A firm may use the second character of *MassCancelInst* to set the acknowledgment style. If a single **`Mass Cancel Acknowledgment`** message is selected, then *MassCancelID* must be sent.

A firm may also impose a lockout using the third character of *MassCancelInst*, which cancels any open orders and causes inbound orders received after the lockout to be rejected. A self-imposed lockout requires an MPID (*ClearingFirm*) to be sent. The firm may also choose to lockout by symbol or *RiskGroupID* but not by both.

RiskGroupID or MPID purges with no *Symbol* may be directed to a specific matching unit using the *MatchingUnit* optional field. If *MatchingUnit* is zero or not specified, then these purge types will be sent to all matching units starting with unit 1. **Note that this may result in self-imposed, risk lockouts occurring on select units while other units are still trading.**

The system limits the rate at which identical **`Purge Orders`** message requests can be submitted to the system. Requests are restricted to twenty (20) messages per second per port.

An identical purge message is defined as a message having all of the same *RiskGroupID*, *Symbol*, *SymbolSfx, ClearingFirm*, *MatchingUnit*, and Lockout Instruction field values, as a previously received message.

Permitted input optional fields are described in Purge Orders on page 65.

Table 30. Purge Order Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x47`
MatchingUnit	5	1	Binary	Always 0 for inbound (Member to Cboe) messages.
SequenceNumber	6	4	Binary	The sequence number for this message.
ReservedInternal	10	1	Binary	Reserved for Cboe internal use.

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
NumberOfPurgeOrders Bitfields	11	1	Binary	Bitfield identifying bitfields which are set. May be 0. Field values must be appended to the end of the message.
PurgeOrdersBitfield1	12	1	Binary	Bitfield identifying fields to follow.
...				
PurgeOrdersBitfieldn		1	Binary	Last bitfield.
RiskGroupIDCnt		1	Binary	Number of repeating *RiskGroupID* values included in this message.
RiskGroupID1		2	Binary	First *RiskGroupID*. Only present if *RiskGroupIDCnt* is non-zero.
...				
RiskGroupIDn		2	Binary	Last *RiskGroupID*.
Optional fields. . .				

Table 31. *Purge Orders Message with RiskGroupID and Lockout Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes
MessageLength	29 00	58 bytes
MessageType	47	Purge Orders
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
ReservedInternal	00	Reserved
NumberOfPurgeOrdersBitfields	01	1 bitfield to follow
PurgeOrdersBitfield1	15	*ClearingFirm, MassCancelInst, MassCancelID*
RiskGroupIDCnt	02	Two *RiskGroupID* values to follow
RiskGroupID1	BF BE	48831
RiskGroupID2	C0 BE	48832
ClearingFirm	54 45 53 54	TEST
MassCancelInst	46 53 4C 00 00 00 00 00 00 00 00 00 00 00 00 00	F=Cancel orders matching *ClearingFirm* S=Single ack L=Lockout both *RiskGroupIDs*
MassCancelID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123

Table 32. *Purge Orders Message with Symbol and Lockout Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes
MessageLength	3F 00	63 bytes
MessageType	47	Purge Orders
MatchingUnit	00	Always 0 for inbound messages
SequenceNumber	64 00 00 00	Sequence number 100
ReservedInternal	00	Reserved
NumberOfPurgeOrdersBitfields	02	2 bitfields to follow
PurgeOrdersBitfield1	15	*ClearingFirm, MassCancelInst, MassCancelID*
PurgeOrdersBitfield2	01	*Symbol*
RiskGroupIDCnt	00	No *RiskGroupID* values to follow
ClearingFirm	54 45 53 54	TEST

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FIELD NAME	HEXADECIMAL	NOTES
MassCancelInst	46 53 4C 00 00 00 00 00 00 00 00 00 00 00 00 00	F=Cancel orders matching *ClearingFirm* S=Single ack L=Lockout symbol
MassCancelID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
Symbol	41 42 43 44 45 00 00 00	ABCDE

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Cboe to Member

Order Acknowledgment Message Fields

`Order Acknowledgment` messages are sent in response to a **`New Order`** message. The message corresponds to a FIX Execution Report with *ExecType* (150) = 0 (New).

Per the instructions given in a Return Bitfields Parameter Group on the **`Login Request`** message (see Login Request Message Fields on page 20) optional fields may be appended to echo back information provided in the original **`New Order`** message. Fields which have been requested to be echoed back but which were not filled in will still be sent, but filled with binary zero (`0x00`).

Permitted return optional fields are described in Order Acknowledgment on page 67.

Table 33. Order Acknowledgment Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x25`
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	Echoed back from the original order.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. Order identifier supplied by Cboe. This identifier corresponds to the identifiers used in Cboe market data products.
ReservedInternal	46	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	47	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	48	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 34. *Order Acknowledgment Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`4E 00`	`78 bytes`
MessageType	`25`	**`Order Acknowledgment`**
MatchingUnit	`03`	`Matching Unit 3`
SequenceNumber	`64 00 00 00`	`Sequence number 100`
TransactionTime	`E0 FA 20 F7 36 71 F8 11`	`1,294,909,373,757,324,000`

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FIELD NAME	HEXADECIMAL	NOTES
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	03	3 bitfields to follow
ReturnBitfield[1]	00	No bitfields from byte 1
ReturnBitfield[2]	41	*Symbol, Capacity*
ReturnBitfield[3]	05	*Account, ClearingAccount*
Symbol	4D 53 46 54 00 00 00 00	MSFT
Capacity	50	P=Principal
Account	41 42 43 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC
ClearingAccount	00 00 00 00	(empty)

Table 35. *Minimal Order Acknowledgment Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes.
MessageLength	2E 00	46 bytes
MessageType	25	**Order Acknowledgment**
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	00	No bitfields to follow

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Order Rejected Message Fields

`Order Rejected` messages are sent in response to a **`New Order`** message which must be rejected. This message corresponds to a FIX Execution Report with *ExecType* (150) = 8 (Rejected). **`Order Rejected`** messages are unsequenced.

Permitted return optional fields are described in Order Rejected on page 68.

Table 36. Order Rejected Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x26`
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	Echoed back from the original order.
OrderRejectReason	38	1	Text	Reason for an order rejection. See Reason Codes on page 87 for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	101	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 37. *Order Rejected Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes`
MessageLength	`76 00`	`118 bytes`
MessageType	`26`	**`Order Rejected`**
MatchingUnit	`0`	`Unsequenced message, unit=0`
SequenceNumber	`00 00 00 00`	`Unsequenced message, sequence=0`
TransactionTime	`E0 FA 20 F7 36 71 F8 11`	`1,294,909,373,757,324,000`
ClOrdID	`41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`ABC123`
OrderRejectReason	`44`	`D`

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FIELD NAME	HEXADECIMAL	NOTES
Text	44 75 70 6C 69 63 61 74 65 20 43 6C 4F 72 64 49 44 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	Duplicate ClOrdID
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	03	3 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	01	*Symbol*
ReturnBitfield$_3$	06	*ClearingFirm, ClearingAccount*
Symbol	4D 53 46 54 00 00 00 00	MSFT
ClearingFirm	54 45 53 54	TEST
ClearingAccount	00 00 00 00	(empty)

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Order Modified Message Fields

`Order Modified` messages are sent in response to a **`Modify Request`** to indicate that the order has been successfully modified.

Note: You must opt-in to receiving *LeavesQty* inOrder Modifiedmessages. In some cases, the last message to be received on an order's lifecycle will be an **`Order Modified`** message. The way to know the order is no longer live is to inspect *LeavesQty*. An example of this would be modification of an order whilst an execution is being generated, resulting in the order being reduced to zero outstanding quantity.

Permitted return optional fields are described in Order Modified on page 69.

Table 38. Order Modified Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x27`
MatchingUnit	5	1	Binary	The Matching Unit which created this message. Matching units in BOE correspond to Matching Units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per Matching Unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	Client order ID. This is the *ClOrdID* from the **`Modify Order`** message.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. The unique *OrderID*. Modifications do *not* change the *OrderID*.
ReservedInternal	46	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	47	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	48	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 39. *Order Modified Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`35 00`	`63 bytes`
MessageType	`27`	**`Order Modified`**
MatchingUnit	`03`	`Matching Unit 3`
SequenceNumber	`64 00 00 00`	`Sequence number 100`
TransactionTime	`E0 FA 20 F7 36 71 F8 11`	`1,294,909,373,757,324,000`
ClOrdID	`41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`ABC123`

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FIELD NAME	HEXADECIMAL	NOTES
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	05	5 bitfields to follow
ReturnBitfield$_1$	04	*Price*
ReturnBitfield$_2$	00	No fields from byte 2
ReturnBitfield$_3$	00	No fields from byte 3
ReturnBitfield$_4$	00	No fields from byte 4
ReturnBitfield$_5$	02	*LeavesQty*
Price	08 E2 01 00 00 00 00 00	$12.34
LeavesQty	00 00 00 00	0 (order done)

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Order Restated Message Fields

`Order Restated` messages are sent to inform the Member that an order has been asynchronously modified for some reason without an explicit **`Modify Order`** message request having been sent. Some example (non-exhaustive) reasons for **`Order Restated`** messages being sent:

- A reserve (iceberg) order has been reloaded.
- An order's remaining quantity was decremented because of a prevented wash trade.
- A routed order has returned to rest on the book after matching liquidity on another market.

Members should be prepared to accept and apply **`Order Restated`** messages for any reason. The return bitfields indicate the characteristics of the order which have changed. Optional fields will be present at the end of the message with the new values.

Note: You must opt-in to receiving *LeavesQty* inOrder Restatedmessages. In some cases, the last message to be received on an order's lifecycle will be an **`Order Restated`** message. The way to know the order is no longer live is to inspect *LeavesQty*. An example of this would be restatement of an order in some cases due to *PreventMatch* being set to d.

Permitted return optional fields are described in Order Restated on page 70.

Table 40. Order Restated Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be 0xBA 0xBA.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	0x28
MatchingUnit	5	1	Binary	The Matching Unit which created this message. Matching units in BOE correspond to Matching Units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per Matching Unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	The *ClOrdID* is the identifier from the open order.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. The unique *OrderID*. For informational purposes only. Restatements do *not* change the *OrderID*.
RestatementReason	46	1	Alphanumeric	The reason for this Order Restated message. C = Cboe Market Close (CMC) L = Reload P = Peg or Price Sliding Reprice Q= Liquidity Updated R = Reroute S = Reduction of *OrderQty* due to SWP W= Wash or MTP Decrement

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
				Cboe reserves the right to add new values as necessary without prior notice.
ReservedInternal	47	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	48	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	49	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 41. *Order Restated Message for a Reserve (Iceberg) Reload Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes.
MessageLength	41 00	65 bytes
MessageType	28	**Order Restated**
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
RestatementReason	4C	L=Reload
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	06	6 bitfields to follow
ReturnBitfield$_1$	00	No fields from byte 1
ReturnBitfield$_2$	00	No fields from byte 2
ReturnBitfield$_3$	00	No fields from byte 3
ReturnBitfield$_4$	00	No fields from byte 4
ReturnBitfield$_5$	02	*LeavesQty*
ReturnBitfield$_6$	01	*SecondaryOrderID*
LeavesQty	64 00 00 00	100 shares
SecondaryOrderID	0A 10 1E B7 5E 39 2F 02	171WC100000A (base 36)

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User Modify Rejected Message Fields

`User Modify Rejected` messages are sent in response to a **`Modify Order`** message for an order which cannot be modified. **`User Modify Rejected`** messages are unsequenced.

This message corresponds to a FIX Execution Report with *MsgType* (35) = 9 (Order Cancel Reject) and *CxlRejResponseTo* (434) = 2 (Order Cancel/Replace Request).

Permitted return optional fields are described in User Modify Rejected on page 71.

Table 42. User Modify Rejected Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x29`
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	The *ClOrdID* of the modify request which was rejected.
ModifyReject Reason	38	1	Text	Reason for a modify rejection. See Reason Codes on page 87 for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	101	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 43. *User Modify Rejected Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`63 00`	`99 bytes`
MessageType	`29`	**`User Modify Rejected`**
MatchingUnit	`00`	`Unsequenced Message, unit=0`
SequenceNumber	`00 00 00 00`	`Unsequenced Message, sequence=0`
TransactionTime	`E0 FA 20 F7 36 71 F8 11`	`1,294,909,373,757,324,000`
ClOrdID	`41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`ABC123`
ModifyRejectReason	`50`	`Pending Fill`

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FIELD NAME	HEXADECIMAL	NOTES
Text	50 65 6E 64 69 6E 67 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	Pending
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	00	No optional fields

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Order Cancelled Message Fields

An order has been cancelled.

Permitted return optional fields are described in Order Cancelled on page 72.

Table 44. Order Cancelled Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x2A`
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	The order which was cancelled.
CancelReason	38	1	Text	Reason for the order cancellation. See Reason Codes on page 87 for a list of possible reasons.
ReservedInternal	39	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	40	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	41	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 45. *Order Cancelled Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes
MessageLength	48 00	72 bytes
MessageType	2A	**Order Cancelled**
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
CancelReason	55	U=User Requested
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	05	5 bitfields to follow
ReturnBitfield$_1$	00	No fields from byte 1
ReturnBitfield$_2$	00	No fields from byte 2
ReturnBitfield$_3$	06	*ClearingFirm*, *ClearingAccount*
ReturnBitfield4	00	No fields from byte 4
ReturnBitfield5	01	*OrigClOrdID*
ClearingFirm	54 45 53 54	TEST

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FIELD NAME	HEXADECIMAL	NOTES
ClearingAccount	31 32 33 34	1234
OrigClOrdID	41 42 43 31 32 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC121

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Cancel Rejected Message Fields

A **Cancel Rejected** message is sent in response to a **Cancel Order** message to indicate that the cancellation cannot occur. **Cancel Rejected** messages are unsequenced.

Permitted return bitfields are described in Cancel Rejected on page 73.

Table 46. Cancel Rejected Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x2B`
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	The order whose cancel was rejected.
CancelRejectReason	38	1	Text	Reason for the order cancellation. See Reason Codes on page 87 for a list of possible reasons.
Text	39	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	99	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	100	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	101	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 47. *Cancel Rejected Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes`
MessageLength	`63 00`	`99 bytes`
MessageType	`2B`	**`Cancel Rejected`**
MatchingUnit	`00`	`Unsequenced Message,` unit=0
SequenceNumber	`00 00 00 00`	`Unsequenced Message,` sequence=0
TransactionTime	`E0 FA 20 F7 36 71 F8 11`	`1,294,909,373,757,324,000`
ClOrdID	`41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`ABC123`
CancelRejectReason	`4A`	`J`
Text	`54 4F 4F 20 4C 41 54 45 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`TOO LATE`

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FIELD NAME	HEXADECIMAL	NOTES
ReservedInternal	00	Ignore
NumberOfReturn	00	No optional fields
Bitfields		

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Order Execution Message Fields

An **`Order Execution`** message is sent for each fill on an order.

Rather than returning a monetary value indicating the rebate or charge for an execution, the *FeeCode* is an indication of a fee classification corresponding to an item on the venue's fee schedule.

Permitted return bitfields are described in Order Execution on page 74.

Table 48. Order Execution Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x2C`
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	Order receiving the execution.
ExecID	38	8	Binary	Corresponds to *ExecID* (17) in Cboe FIX. Execution ID. Unique across all matching units on a given day. Note: *ExecIDs* will be represented on ODROP and FIXDROP ports as nine character, base 36 ASCII. Leading zeros should be added if the converted base 36 value is shorter than nine characters. Example conversion: **Table 49. Example Conversion** DECIMAL: 28294005440239 → BASE 36: A1234B567 DECIMAL: 76335905726621 → BASE 36: R248BC23H DECIMAL: 728557228187 → BASE 36: 09AP05V2Z
LastShares	46	4	Binary	Corresponds to *LastShares* (32) in Cboe FIX. Executed share quantity. Reports the amount of shares cancelled for Cboe Market Close restatements, which are sent at approximately 3:49 p.m. ET. Reports the size of Cboe Market Close fills, which are sent after the official closing price is received from the primary listing exchange .
LastPx	50	8	Binary Price	Corresponds to *LastPx* (31) in Cboe FIX. Price of this fill. Note the use of Binary Price type to represent positive and negative prices, which can occur with complex instruments.

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
				Reports the price of Cboe Market Close fills, which are sent after the official closing price is received from the primary listing exchange .
LeavesQty	58	4	Binary	Corresponds to *LeavesQty* (151) in Cboe FIX. Quantity still open for further execution. If zero, the order is complete.
BaseLiquidity Indicator	62	1	Alphanumeric	Indicates whether the trade added or removed liquidity. A = Added Liquidity C = Auction/Uncrossing R = Removed Liquidity W= Waiting for execution at pre-market time as defined by *TimeInForce* value and 'Hold Early to 7am' port setting. Only applied on the initial order acknowledgment. X = Routed to Another Market
SubLiquidityIndicator	63	1	Alphanumeric	**Cboe may add additional values without notice. Members must gracefully ignore unknown values.** ASCII NUL (0x00) = No additional information E = Trade added RPI liquidity (BYX Only) H = Trade added hidden liquidity I = Trade added hidden liquidity that was price improved J = Execution from first order to join the NBBO P = Periodic Auction (BYX Only) S = NBBO-Setter fee eliglble V = Visible liquidity add trade that was price improved m= Midpoint Peg Order s = Order set the NBBO but is not fee eligible
ContraBroker	64	4	Alphanumeric	Corresponds to *ContraBroker* (375) in Cboe FIX. All externally matched (routed) executions will identify the away exchange. AMEX= Routed to NYSE American ARCA= Routed to NYSE Arca BEX= Routed to Nasdaq BX CHX= Routed to NYSE Texas ICRS= Routed to Intelligent Cross *(pending approval)* IEX= Routed to Investors Exchange INET= Routed to Nasdaq LTSE= Routed to Long Term Stock Exchange MEMX= Routed to Members Exchange NYSE= Routed to NYSE PERL= Routed to MIAX PEARL Exchange PSX= Routed to Nasdaq PSX NSX= Routed to NYSE National DRT= Routed to DRT Pool TFXE= Routed to 24X National Exchange BATS= Routed to Cboe BZX Exchange* BYXX= Routed to Cboe BYX Exchange* EDGA= Routed to Cboe EDGA Exchange* EDGX= Routed to Cboe EDGX Exchange*

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
				* Internally matched if *ContraBroker* matches the identifier of the local trading platform's book.
ReservedInternal	68	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	69	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	70	1	Binary	Bitfield identifying fields to return.
…				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields…				

Table 50. *Order Execution Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes
MessageLength	53 00	83 bytes
MessageType	2C	**Order Execution**
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
ExecID	01 F0 B7 D9 71 21 00 00	D19800001 (base 36)
LastShares	64 00 00 00	100 shares
LastPx	08 E2 01 00 00 00 00 00	12.34
LeavesQty	14 00 00 00	20 contracts
BaseLiquidityIndicator	41	A=Added
SubLiquidityIndicator	00	(unset)
ContraBroker	42 41 54 53	BATS
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	03	3 bitfields to follow
ReturnBitfield$_1$	00	No bitfields from byte 1
ReturnBitfield$_2$	00	No bitfields from byte 2
ReturnBitfield$_3$	46	*ClearingFirm, ClearingAccount, OrderQty*
ClearingFirm	54 45 53 54	TEST
ClearingAccount	31 32 33 43	1234
OrderQty	78 00 00 00	120 shares

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Trade Cancel or Correct Message Fields

Used to relay a trade which has been cancelled (busted) or corrected (price change only). The *CorrectedPrice* field will be set to 0 for cancelled trades and to the new trade price for corrected trades. **`Trade Cancel or Correct`** messages **can be sent for same day as well as previous day trades.**

Permitted return bitfields are described in Trade Cancel or Correct on page 75.

Table 51. Trade Cancel or Correct Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x2D`
MatchingUnit	5	1	Binary	The matching unit which created this message. Matching units in BOE correspond to matching units on Multicast PITCH.
SequenceNumber	6	4	Binary	The sequence number for this message. Distinct per matching unit.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
ClOrdID	18	20	Text	*ClOrdID* of the order whose fill is being cancelled or corrected.
OrderID	38	8	Binary	Corresponds to *OrderID* (37) in Cboe FIX. Order whose fill is being cancelled or corrected.
ExecRefID	46	8	Binary	Corresponds to *ExecRefID* (19) in Cboe FIX. Refers to the *ExecID* of the fill being cancelled or corrected.
Side	54	1	Alphanumeric	Side of the order.
BaseLiquidity Indicator	55	1	Alphanumeric	Indicates whether the trade added or removed liquidity. A = Added Liquidity R = Removed Liquidity X = Routed to Another Market C = Auction/Uncrossing W= Waiting for execution at pre-market time as dictated by *TimeInForce* value and 'Hold Early to 7am' port setting. Only applied on the initial order acknowledgment.
ClearingFirm	56	4	Alpha	Echoed back from the original order.
ClearingAccount	60	4	Text	Echoed back from the original order.
LastShares	64	4	Binary	Number of shares of the trade being cancelled.
LastPx	68	8	Binary Price	Price of the trade being cancelled. Note the use of *Binary Price* type to represent positive and negative prices, which can occur with complex instruments.
CorrectedPrice	76	8	Binary Price	For trade corrections, this is the new trade price. For trade breaks, this is set to 0.
OrigTime	84	8	DateTime	Corresponds to *OrigTime* (42).

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FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
				The date and time of the original trade, in GMT.
ReservedInternal	92	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	93	1	Binary	Number of bitfields to follow.
ReturnBitfield[1]	94	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield[n]		1	Binary	Last bitfield.
Optional fields. . .				

Table 52. *Trade Cancel or Correct Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	BA BA	Start of message bytes.
MessageLength	66 00	102 bytes
MessageType	2D	**Trade Cancel or Correct**
MatchingUnit	03	Matching Unit 3
SequenceNumber	64 00 00 00	Sequence number 100
TransactionTime	E0 FA 20 F7 36 71 F8 11	1,294,909,373,757,324,000
ClOrdID	41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00	ABC123
OrderID	05 10 1E B7 5E 39 2F 02	171WC1000005 (base 36)
ExecRefID	01 F0 B7 D9 71 21 00 00	D19800001 (base 36)
Side	31	Buy
BaseLiquidity Indicator	41	A=Added
ClearingFirm	54 45 53 54	TEST
ClearingAccount	00 00 00 00	(empty)
LastShares	C4 09 00 00	2,500 shares
LastPx	5C 13 04 00 00 00 00 00	$26.71
CorrectedPrice	00 00 00 00 00 00 00 00	0 (cancelled)
OrigTime	E0 BA 75 95 15 4C EB 11	1,291,209,373,757,324,000
ReservedInternal	00	Ignore
NumberOfReturn Bitfields	02	2 bitfields to follow
ReturnBitfield$_1$	00	No fields from byte 1
ReturnBitfield$_2$	01	*Symbol*
Symbol	4D 53 46 54 00 00 00 00	MSFT

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Mass Cancel Acknowledgment Message Fields

A **`Mass Cancel Acknowledgment`** message is an unsequenced message sent when a **`Purge Orders`** message requesting a mass cancellation has completed canceling all individual orders. This message type only appears on dedicated BOE Purge Ports.

Table 53. Mass Cancel Acknowledgment Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA.`
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x36`
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application. Message Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
MassCancelID	18	20	Text	Copied from the *MassCancelID* passed on the original **`Purge Orders`** message. This field corresponds to *MassCancelID* (7695) in Cboe FIX.
CancelledOrderCount	38	4	Binary	Number of orders cancelled. This field corresponds to *CancelledOrderCount* (7696) in Cboe FIX.
ReservedInternal	42	1	Binary	Reserved for Cboe internal use.

Table 54. *Mass Cancel Acknowledgement Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA`	`Start of message bytes.`
MessageLength	`29 00`	`41 bytes`
MessageType	`36`	**`Mass Cancel Acknowledgment`**
MatchingUnit	`00`	`Unsequenced Message,` unit=0
SequenceNumber	`00 00 00 00`	`Unsequenced Message,` sequence=0
TransactionTime	`E0 FA 20 F7 36 71 F8 11`	`1,294,909,373,757,324,000`
MassCancelID	`41 42 43 31 32 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00`	`ABC123`
CancelledOrderCount	`63 00 00 00`	`99 orders were cancelled`
ReservedInternal	`00`	`Ignore`

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Purge Rejected

A **`Purge Rejected`** message is sent in response to a **`Purge Orders`** message to indicate that the mass cancellation cannot occur. **`Purge Rejected`** messages are unsequenced. This message type only appears on dedicated BOE Purge Ports.

Permitted return bitfields are described in Purge Rejected on page 76.

Table 55. Purge Rejected Message Fields

FIELD	OFFSET	LENGTH	DATA TYPE	DESCRIPTION
StartOfMessage	0	2	Binary	Must be `0xBA 0xBA`.
MessageLength	2	2	Binary	Number of bytes for the message, including this field but not including the two bytes for the *StartOfMessage* field.
MessageType	4	1	Binary	`0x48`
MatchingUnit	5	1	Binary	Unsequenced application message. Matching unit will be set to 0.
SequenceNumber	6	4	Binary	Unsequenced application message. Sequence number will be set to 0.
TransactionTime	10	8	DateTime	The time the event occurred in the Cboe Matching Engine (not the time the message was sent).
PurgeRejectReason	18	1	Text	Reason for a purge rejection. See Reason Codes on page 87 for a list of possible reasons.
Text	19	60	Text	Human readable text with more information about the reject reason.
ReservedInternal	79	1	Binary	Reserved for Cboe internal use.
NumberOfReturn Bitfields	80	1	Binary	Number of bitfields to follow.
ReturnBitfield$_1$	81	1	Binary	Bitfield identifying fields to return.
...				
ReturnBitfield$_n$		1	Binary	Last bitfield.
Optional fields. . .				

Table 56. *Purge Rejected Message Example*

FIELD NAME	HEXADECIMAL	NOTES
StartOfMessage	`BA BA`	`Start of message bytes.`
MessageLength	`72 00`	`114 bytes`
MessageType	`48`	**`Purge Rejected`**
MatchingUnit	`00`	`Unsequenced Message,` unit=0
SequenceNumber	`00 00 00 00`	`Unsequenced Message,` sequence=0
TransactionTime	`E0 FA 20 F7 36 71 F8 11`	`1,294,909,373,757,324,000`
PurgeRejectReason	`41`	`A`

Text	`41 44 4D 49 4E 00 00 00 00 00`
	`00 00 00 00 00 00 00 00 00 00`
	`00 00 00 00 00 00 00 00 00 00`
	`00 00 00 00 00 00 00 00 00 00`
	`00 00 00 00 00 00 00 00 00 00`
	`00 00 00 00 00 00 00 00 00 00`
		`ADMIN`

ReservedInternal	`00`	`Ignore`

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FIELD NAME	HEXADECIMAL	NOTES
NumberOfReturn Bitfields	0F	15 bitfields to follow
ReturnBitfield1	00	No fields from byte 1
ReturnBitfield2	00	No fields from byte 2
ReturnBitfield3	00	No fields from byte 3
ReturnBitfield4	00	No fields from byte 4
ReturnBitfield5	00	No fields from byte 5
ReturnBitfield6	00	No fields from byte 6
ReturnBitfield7	00	No fields from byte 7
ReturnBitfield8	00	No fields from byte 8
ReturnBitfield9	00	No fields from byte 9
ReturnBitfield10	00	No fields from byte 10
ReturnBitfield11	00	No fields from byte 11
ReturnBitfield12	00	No fields from byte 12
ReturnBitfield13	00	No fields from byte 13
ReturnBitfield14	00	No fields from byte 14
ReturnBitfield15	08	*MassCancelID*
MassCancelID	54 45 53 54 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	TEST

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Input Bitfields Per Message

Table 57. Bitfield Table Legend

ENTRY	DESCRIPTION
R	Indicates that the field must be specified for a message
O	Indicates that the field can be specified for a message
(Blank)	Indicates that the field is not used by Cboe Equities and cannot be specified for a message

Input messages containing invalid fields (i.e., Blank) will be rejected. In the case of rejected input messages, the associated Reject message sent back to the customer will contain a *RejectReason* code non-optional field (See Reason Codes on page 87) and a *Text* non-optional field containing descriptive text.

New Order

Table 58. New Order Input Bitfields

BYTE	BIT	FIELD	
1	1	*ClearingFirm*	O
	2	*ClearingAccount*	O
	4	*Price*	O
	8	*ExecInst*	O
	16	*OrdType*	O
	32	*TimeInForce*	O
	64	*MinQty*	O
	128	*MaxFloor*	O
2	1	*Symbol*	R
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	R
	128	*RoutingInst*	O
3	1	*Account*	O
	2	*DisplayIndicator*	O
	4	*(Reserved)*	
	8	*DiscretionAmount*	O
	16	*PegDifference*	O
	32	*PreventMatch*	O
	64	*LocateReqd*	O
	128	*ExpireTime*	O
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*RiskReset*	O
	16	*OpenClose*	
	32	*CMTANumber*	
	64	*TargetPartyID*	
	128	*(Reserved)*	
5	1	*SessionEligibility*	
	2	*AttributedQuote*	O
	4	*BookingType*	
	8	*ExtExecInst*	O
	16	*ClientID*	
	32	*InvestorID*	
	64	*ExecutorID*	
	128	*OrderOrigination*	

BYTE	BIT	FIELD	
6	1	*DisplayRange*	O
	2	*StopPx*	O
	4	*RoutStrategy*	O
	8	*RouteDeliveryMethod*	O
	16	*ExDestination*	O
	32	*EchoText*	O
	64	*AuctionId*	
	128	*RoutingFirmID*	
7	1	*AlgorithmicIndicator*	
	2	*RiskGroupID*	O
	4	*ClientQualifiedRole*	
	8	*InvestorQualifiedRole*	
	16	*ExecutorQualifiedRole*	
	32	*CtiCode*	
	64	*ManualOrderIndicator*	
	128	*OperatorId*	
8	1	*(Reserved)*	
	2	*(Reserved)*	
	4	*ClearingOptionalData*	
	8	*ClientIDAttr*	
	16	*FrequentTraderID*	
	32	*Compression*	
	64	*FloorDestination*	
	128	*FloorRoutingInst*	
9	1	*OrderOrigin*	
	2	*ORS*	
	4	*PriceType*	
	8	*(Reserved)*	
	16	*(Reserved)*	
	32	*(Reserved)*	
	64	*CrossTradeFlag*	O
	128	*(Reserved)*	
10	1	*Held*	
	2	*LocateBroker*	O
	4	*CmcSessions*	O
	8	*(Reserved)*	
	16	*(Reserved)*	
	32	*(Reserved)*	
	64	*(Reserved)*	
	128	*(Reserved)*	

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Cancel Order

Table 59. Cancel Order Input Bitfields

BYTE	BIT	FIELD	
1	1	*ClearingFirm*	0
	2	*MassCancelLockout*	
	4	*MassCancel*	
	8	*RiskRoot*	
	16	*MassCancelID*	
	32	*RoutingFirmID*	
	64	*ManualOrderIndicator*	
	128	*OperatorId*	
2	1	*MassCancelInst*	
	2	*Symbol*	
	4	*SymbolSfx*	
	8	*SendTime*	
	16	*(Reserved)*	
	32	*(Reserved)*	
	64	*(Reserved)*	
	128	*(Reserved)*	

ClearingFirm is required for service bureau ports.

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Modify Order

Table 60. Modify Order Input Bitfields

BYTE	BIT	FIELD	
1	1	*ClearingFirm*	O
	2	*(Reserved)*	
	4	*OrderQty*	R
	8	*Price*	R
	16	*OrdType*	O
	32	*CancelOrigOnReject*	O
	64	*ExecInst*	O
	128	*Side*	O
2	1	*MaxFloor*	O
	2	*StopPx*	O
	4	*RoutingFirmID*	
	8	*ManualOrderIndicator*	
	16	*OperatorId*	
	32	*FrequentTraderID*	
	64	*(Reserved)*	
	128	*LocateBroker*	O

The *OrderQty* and *Price* fields in the optional field block must be present on allModify Ordermessage requests. Messages sent without both fields will be rejected. *Price* is optional for market orders.

ClearingFirm is required for service bureau ports.

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Purge Orders

Table 61. Purge Order Input Bitfields

BYTE	BIT	FIELD	
1	1	*ClearingFirm*	O
	2	*MassCancelLockout*	
	4	*MassCancelInst*	R
	8	*RiskRoot*	
	16	*MassCancelID*	O
	32	*RoutingFirmID*	
	64	*ManualOrderIndicator*	
	128	*OperatorId*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*(Reserved)*	
	8	*(Reserved)*	
	16	*(Reserved)*	
	32	*(Reserved)*	
	64	*SendTime*	
	128	*MatchingUnit*	O

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Return Bitfields Per Message

Table 62. Bitfield Table Legend

ENTRY	DESCRIPTION
R	Indicates that the field must be specified for a message
O	Indicates that the field can be specified for a message
-	Indicates that the field cannot be specified for a message
(Blank)	Indicates that the field is not used by Cboe Equities and cannot be specified for a message

Input messages that containing invalid fields (i.e., Blank) will be rejected. In the case of rejected input messages, the associated Reject message sent back to the customer will contain a *RejectReason* code non-optional field (See Reason Codes on page 87) and a *Text* non-optional field containing descriptive text.

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Order Acknowledgment

Table 63. Order Acknowledgment Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	O
	2	*PegDifference*	O
	4	*Price*	O
	8	*ExecInst*	O
	16	*OrdType*	O
	32	*TimeInForce*	O
	64	*MinQty*	O
	128	*(Reserved)*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	O
	128	*ContraTrader*	
3	1	*Account*	O
	2	*ClearingFirm*	O
	4	*ClearingAccount*	O
	8	*DisplayIndicator*	O
	16	*MaxFloor*	O
	32	*DiscretionAmount*	O
	64	*OrderQty*	O
	128	*PreventMatch*	O
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	O
	2	*LeavesQty*	O
	4	*LastShares*	O
	8	*LastPx*	O
	16	*DisplayPrice*	O
	32	*WorkingPrice*	O
	64	*BaseLiquidityIndicator*	O
	128	*ExpireTime*	O
6	1	*SecondaryOrderID*	O
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	O
	16	*ExtExecInst*	O
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	
7	1	*SubLiquidityIndicator*	O
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	O
	4	*StopPx*	O
	8	*RoutingInst*	O
	16	*RoutStrategy*	O
	32	*RouteDeliveryMethod*	O
	64	*ExDestination*	O
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	O
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	O
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	O
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Order Rejected

Table 64. Order Rejected Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	O
	2	*PegDifference*	O
	4	*Price*	O
	8	*ExecInst*	O
	16	*OrdType*	O
	32	*TimeInForce*	O
	64	*MinQty*	O
	128	*(Reserved)*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	O
	128	*ContraTrader*	
3	1	*Account*	O
	2	*ClearingFirm*	O
	4	*ClearingAccount*	O
	8	*DisplayIndicator*	O
	16	*MaxFloor*	O
	32	*DiscretionAmount*	O
	64	*OrderQty*	O
	128	*PreventMatch*	O
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	-
	2	*LeavesQty*	-
	4	*LastShares*	-
	8	*LastPx*	-
	16	*DisplayPrice*	-
	32	*WorkingPrice*	-
	64	*BaseLiquidityIndicator*	-
	128	*ExpireTime*	-
6	1	*SecondaryOrderID*	O
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	O
	16	*ExtExecInst*	O
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	

BYTE	BIT	FIELD	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	O
	4	*StopPx*	O
	8	*RoutingInst*	O
	16	*RoutStrategy*	O
	32	*RouteDeliveryMethod*	O
	64	*ExDestination*	O
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	

BYTE	BIT	FIELD	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	-
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	-
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Order Modified

Table 65. Order Modified Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	O
	2	*PegDifference*	O
	4	*Price*	O
	8	*ExecInst*	O
	16	*OrdType*	O
	32	*TimeInForce*	O
	64	*MinQty*	O
	128	*(Reserved)*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	-
	128	*ContraTrader*	
3	1	*Account*	O
	2	*ClearingFirm*	O
	4	*ClearingAccount*	O
	8	*DisplayIndicator*	O
	16	*MaxFloor*	O
	32	*DiscretionAmount*	O
	64	*OrderQty*	O
	128	*PreventMatch*	O
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	O
	2	*LeavesQty*	O
	4	*LastShares*	O
	8	*LastPx*	O
	16	*DisplayPrice*	O
	32	*WorkingPrice*	O
	64	*BaseLiquidityIndicator*	O
	128	*ExpireTime*	O
6	1	*SecondaryOrderID*	O
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	O
	16	*ExtExecInst*	O
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	

BYTE	BIT	FIELD	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	O
	4	*StopPx*	O
	8	*RoutingInst*	O
	16	*RoutStrategy*	O
	32	*RouteDeliveryMethod*	O
	64	*ExDestination*	O
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	

BYTE	BIT	FIELD	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	O
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	O
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Order Restated

Table 66. Order Restated Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	O
	2	*PegDifference*	O
	4	*Price*	O
	8	*ExecInst*	O
	16	*OrdType*	O
	32	*TimeInForce*	O
	64	*MinQty*	O
	128	*(Reserved)*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	O
	128	*ContraTrader*	
3	1	*Account*	O
	2	*ClearingFirm*	O
	4	*ClearingAccount*	O
	8	*DisplayIndicator*	O
	16	*MaxFloor*	O
	32	*DiscretionAmount*	O
	64	*OrderQty*	O
	128	*PreventMatch*	O
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	O
	2	*LeavesQty*	O
	4	*LastShares*	O
	8	*LastPx*	O
	16	*DisplayPrice*	O
	32	*WorkingPrice*	O
	64	*BaseLiquidityIndicator*	O
	128	*ExpireTime*	O
6	1	*SecondaryOrderID*	O
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	O
	16	*ExtExecInst*	O
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	

BYTE	BIT	FIELD	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	O
	4	*StopPx*	O
	8	*RoutingInst*	O
	16	*RoutStrategy*	O
	32	*RouteDeliveryMethod*	O
	64	*ExDestination*	O
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	

BYTE	BIT	FIELD	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	-
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	-
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	O
	64	*Reserved*	
	128	*Reserved*	

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User Modify Rejected

Table 67. User Modify Rejected Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	-
	2	*PegDifference*	-
	4	*Price*	-
	8	*ExecInst*	-
	16	*OrdType*	-
	32	*TimeInForce*	-
	64	*MinQty*	-
	128	*(Reserved)*	
2	1	*Symbol*	-
	2	*SymbolSfx*	-
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	-
	128	*ContraTrader*	
3	1	*Account*	-
	2	*ClearingFirm*	-
	4	*ClearingAccount*	-
	8	*DisplayIndicator*	-
	16	*MaxFloor*	-
	32	*DiscretionAmount*	-
	64	*OrderQty*	-
	128	*PreventMatch*	-
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	-
	2	*LeavesQty*	-
	4	*LastShares*	-
	8	*LastPx*	-
	16	*DisplayPrice*	-
	32	*WorkingPrice*	-
	64	*BaseLiquidityIndicator*	-
	128	*ExpireTime*	-
6	1	*SecondaryOrderID*	-
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	-
	16	*ExtExecInst*	-
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	

BYTE	BIT	FIELD	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	-
	4	*StopPx*	-
	8	*RoutingInst*	-
	16	*RoutStrategy*	-
	32	*RouteDeliveryMethod*	-
	64	*ExDestination*	-
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	

BYTE	BIT	FIELD	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	-
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	-
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Order Cancelled

Table 68. Order Cancelled Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	0
	2	*PegDifference*	0
	4	*Price*	0
	8	*ExecInst*	0
	16	*OrdType*	0
	32	*TimeInForce*	0
	64	*MinQty*	0
	128	*(Reserved)*	
2	1	*Symbol*	0
	2	*SymbolSfx*	0
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	0
	128	*ContraTrader*	
3	1	*Account*	0
	2	*ClearingFirm*	0
	4	*ClearingAccount*	0
	8	*DisplayIndicator*	0
	16	*MaxFloor*	0
	32	*DiscretionAmount*	0
	64	*OrderQty*	0
	128	*PreventMatch*	0
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	0
	2	*LeavesQty*	0
	4	*LastShares*	0
	8	*LastPx*	0
	16	*DisplayPrice*	0
	32	*WorkingPrice*	0
	64	*BaseLiquidityIndicator*	0
	128	*ExpireTime*	0
6	1	*SecondaryOrderID*	0
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	0
	16	*ExtExecInst*	0
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	0
	4	*StopPx*	0
	8	*RoutingInst*	0
	16	*RoutStrategy*	0
	32	*RouteDeliveryMethod*	0
	64	*ExDestination*	0
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	0
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	-
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Cancel Rejected

Table 69. Cancel Rejected Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	O
	2	*PegDifference*	O
	4	*Price*	O
	8	*ExecInst*	O
	16	*OrdType*	O
	32	*TimeInForce*	O
	64	*MinQty*	O
	128	*(Reserved)*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	O
	128	*ContraTrader*	
3	1	*Account*	-
	2	*ClearingFirm*	-
	4	*ClearingAccount*	-
	8	*DisplayIndicator*	-
	16	*MaxFloor*	-
	32	*DiscretionAmount*	-
	64	*OrderQty*	-
	128	*PreventMatch*	-
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	-
	2	*LeavesQty*	-
	4	*LastShares*	-
	8	*LastPx*	-
	16	*DisplayPrice*	-
	32	*WorkingPrice*	-
	64	*BaseLiquidityIndicator*	-
	128	*ExpireTime*	-
6	1	*SecondaryOrderID*	-
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	-
	16	*ExtExecInst*	-
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	O
	4	*StopPx*	O
	8	*RoutingInst*	-
	16	*RoutStrategy*	-
	32	*RouteDeliveryMethod*	-
	64	*ExDestination*	-
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	-
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	-
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Order Execution

Table 70. Order Execution Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	O
	2	*PegDifference*	O
	4	*Price*	O
	8	*ExecInst*	O
	16	*OrdType*	O
	32	*TimeInForce*	O
	64	*MinQty*	O
	128	*(Reserved)*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	O
	128	*ContraTrader*	
3	1	*Account*	O
	2	*ClearingFirm*	O
	4	*ClearingAccount*	O
	8	*DisplayIndicator*	O
	16	*MaxFloor*	O
	32	*DiscretionAmount*	O
	64	*OrderQty*	O
	128	*PreventMatch*	O
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	-
	2	*LeavesQty*	-
	4	*LastShares*	-
	8	*LastPx*	-
	16	*DisplayPrice*	-
	32	*WorkingPrice*	-
	64	*BaseLiquidityIndicator*	-
	128	*ExpireTime*	-
6	1	*SecondaryOrderID*	-
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	O
	16	*ExtExecInst*	O
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	

BYTE	BIT	FIELD	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	O
	2	*EchoText*	O
	4	*StopPx*	O
	8	*RoutingInst*	O
	16	*RoutStrategy*	O
	32	*RouteDeliveryMethod*	O
	64	*ExDestination*	O
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	

BYTE	BIT	FIELD	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	O
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	O
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Trade Cancel or Correct

Table 71. Trade Cancel or Correct Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	-
	2	*PegDifference*	-
	4	*Price*	-
	8	*ExecInst*	-
	16	*OrdType*	-
	32	*TimeInForce*	-
	64	*MinQty*	-
	128	*(Reserved)*	
2	1	*Symbol*	O
	2	*SymbolSfx*	O
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	O
	128	*ContraTrader*	
3	1	*Account*	-
	2	*ClearingFirm*	-
	4	*ClearingAccount*	-
	8	*DisplayIndicator*	-
	16	*MaxFloor*	-
	32	*DiscretionAmount*	-
	64	*OrderQty*	-
	128	*PreventMatch*	-
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	-
	2	*LeavesQty*	-
	4	*LastShares*	-
	8	*LastPx*	-
	16	*DisplayPrice*	-
	32	*WorkingPrice*	-
	64	*BaseLiquidityIndicator*	-
	128	*ExpireTime*	-
6	1	*SecondaryOrderID*	-
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	-
	16	*ExtExecInst*	-
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	
7	1	*SubLiquidityIndicator*	O
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	-
	4	*StopPx*	-
	8	*RoutingInst*	-
	16	*RoutStrategy*	-
	32	*RouteDeliveryMethod*	-
	64	*ExDestination*	-
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	-
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	-
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	-
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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Purge Rejected

Table 72. Purge Rejected Return Bitfields

BYTE	BIT	FIELD	
1	1	*Side*	-
	2	*PegDifference*	-
	4	*Price*	-
	8	*ExecInst*	-
	16	*OrdType*	-
	32	*TimeInForce*	-
	64	*MinQty*	-
	128	*(Reserved)*	
2	1	*Symbol*	-
	2	*SymbolSfx*	-
	4	*Currency*	
	8	*IdSource*	
	16	*SecurityId*	
	32	*SecurityExchange*	
	64	*Capacity*	-
	128	*ContraTrader*	
3	1	*Account*	-
	2	*ClearingFirm*	-
	4	*ClearingAccount*	-
	8	*DisplayIndicator*	-
	16	*MaxFloor*	-
	32	*DiscretionAmount*	-
	64	*OrderQty*	-
	128	*PreventMatch*	-
4	1	*MaturityDate*	
	2	*StrikePrice*	
	4	*PutOrCall*	
	8	*OpenClose*	
	16	*ClOrdIdBatch*	
	32	*CorrectedSize*	
	64	*PartyID*	
	128	*AccessFee*	
5	1	*OrigClOrdID*	-
	2	*LeavesQty*	-
	4	*LastShares*	-
	8	*LastPx*	-
	16	*DisplayPrice*	-
	32	*WorkingPrice*	-
	64	*BaseLiquidityIndicator*	-
	128	*ExpireTime*	-
6	1	*SecondaryOrderID*	-
	2	*CCP*	
	4	*ContraCapacity*	
	8	*AttributedQuote*	-
	16	*ExtExecInst*	-
	32	*BulkOrderIds*	
	64	*BulkRejectReasons*	
	128	*PartyRole*	

BYTE	BIT	FIELD	
7	1	*SubLiquidityIndicator*	-
	2	*TradeReportTypeReturn*	
	4	*TradePublishIndReturn*	
	8	*Text*	
	16	*Bid*	
	32	*Offer*	
	64	*LargeSize*	
	128	*LastMkt*	
8	1	*FeeCode*	-
	2	*EchoText*	-
	4	*StopPx*	-
	8	*RoutingInst*	-
	16	*RoutStrategy*	-
	32	*RouteDeliveryMethod*	-
	64	*ExDestination*	-
	128	*TradeReportRefID*	
9	1	*MarketingFeeCode*	
	2	*TargetPartyID*	
	4	*AuctionId*	
	8	*OrderCategory*	
	16	*LiquidityProvision*	
	32	*CmtaNumber*	
	64	*CrossType*	
	128	*CrossPrioritization*	
10	1	*CrossId*	
	2	*AllocQty*	
	4	*GiveUpFirmID*	
	8	*RoutingFirmID*	
	16	*WaiverType*	
	32	*CrossExclusionIndicator*	
	64	*PriceFormation*	
	128	*ClientQualifiedRole*	
11	1	*ClientID*	
	2	*InvestorID*	
	4	*ExecutorID*	
	8	*OrderOrigination*	
	16	*Algo*	
	32	*DeferralReason*	
	64	*InvestorQualifiedRole*	
	128	*ExecutorQualifiedRole*	
12	1	*CtiCode*	
	2	*ManualOrderIndicator*	
	4	*OperatorId*	
	8	*TradeDate*	
	16	*ClearingPrice*	
	32	*ClearingSize*	
	64	*ClearingSymbol*	
	128	*ClearingOptionalData*	

BYTE	BIT	FIELD	
13	1	*CumQty*	
	2	*DayOrderQty*	
	4	*DayCumQty*	
	8	*AvgPx*	
	16	*DayAvgPx*	
	32	*PendingStatus*	
	64	*DrillThruProtection*	
	128	*MultilegReportingType*	
14	1	*LegCFICode*	
	2	*LegMaturityDate*	
	4	*LegStrikePrice*	
	8	*RoomId*	
	16	*SecondaryExecId*	
	32	*UserRequestID*	
	64	*SISUsername*	
	128	*UserStatus*	
15	1	*TradeReportingIndicator*	
	2	*EquityPartyId*	
	4	*EquityNBBOProtect*	
	8	*MassCancelId*	0
	16	*TradePublishInd*	
	32	*ReportTime*	
	64	*LegSymbolSfx*	
	128	*ClientIDAttr*	
16	1	*FrequentTraderID*	
	2	*SessionEligibility*	
	4	*ComboOrder*	
	8	*Compression*	
	16	*FloorDestination*	
	32	*FloorRoutingInst*	
	64	*MultiClassSprd*	
	128	*OrderOrigin*	
17	1	*PriceType*	
	2	*StrategyID*	
	4	*TradingSessionId*	
	8	*TradeThroughAlertType*	
	16	*SenderLocationID*	
	32	*FloorTraderAcronym*	
	64	*ExecLegCFICode*	
	128	*CustOrderHandlingInst*	
18	1	*(Reserved)*	
	2	*CrossInitiator*	
	4	*Subreason*	
	8	*CrossTradeFlag*	-
	16	*(Reserved)*	
	32	*Held*	
	64	*LocateBroker*	-
	128	*(Reserved)*	
19	1	*FloorTradeTime*	
	2	*EquityExDestination*	
	4	*CrossOnBehalfOfID*	
	8	*CmcSessions*	-
	16	*IntraFirmTradeInd*	
	32	*CmcMatchQty*	-
	64	*Reserved*	
	128	*Reserved*	

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List of Optional Fields

The following are descriptions of optional fields which may be sent or received.

Table 73. List of Optional Fields

FIELD	LENGTH	DATA TYPE	DESCRIPTION
Account	16	Text	Corresponds to *Account* (1) in Cboe FIX. Reflected back on execution reports associated with this order. May be made available in the Member's clearing file. Allowed characters are alphanumeric and colon.
AttributedQuote	1	Alphanumeric	Optional. Allows for an order to be attributed to a firm's MPID or optionally RTAL (for retail firms) in Cboe's market data feeds. The order may also be included in attributed summary information displays related to quote/trade information on the Cboe website. Must opt-in to support through the Cboe Trade Desk. N=Do not attribute firm MPID to this order Y=Attribute firm MPID to this order R=Attribute RTAL to this order
BaseLiquidityIndicator	1	Alphanumeric	Indicates whether the trade added or removed liquidity. A=Added Liquidity R=Removed Liquidity X=Routed to Another Market C=Auction/Uncrossing W=Waiting for execution at pre-market time as dictated by *TimeInForce* value and 'Hold Early to 7am' port setting. Only applied on the initial order acknowledgment.
CancelOrigOnReject	1	Alpha	Corresponds to *CancelOrigOnReject* (9619) in Cboe FIX. Indicates handling of original order on failure to modify. N=Leave original order alone Y=Cancel original order if modification fails
Capacity	1	Alpha	Corresponds to *OrderCapacity* (47) in Cboe FIX. A=Agency P=Principal R=Riskless Principal
ClearingAccount	4	Text	Corresponds to *OnBehalfOfSubID* (116) and *ClearingAccount* (440) in Cboe FIX. Supplemental identifier. Recorded and made available in execution reports. Available via Drop feeds.
ClearingFirm	4	Alpha	Corresponds to *OnBehalfOfCompID* (115) and *ClearingFirm* (439) Cboe FIX. MPID that will clear the trade. Must be an allowed NSCC MPID. **Port attribute value of 'Default EFID' is used if not provided.**
CmcMatchQty	4	Binary	Corresponds to *CmcMatchQty* (25023) in Cboe FIX. Matched size for CMC matching session.
CmcSessions	2	Text	2 character field. Specifies the range of CMC sessions the order is eligible to participate in. If not specified CMC orders will be eligible to participate in all CMC matching sessions. **1st Character:** First CMC session the order is eligible to participate in. If the second character is not provided the order will only participate in this session.

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
			2nd Character: If provided, specifies the final CMC session the order is eligible to participate in. A= 3:15 p.m. D = 3:30 p.m. L = 3:49 p.m. S = 3:54 p.m. (NASDAQ-listed only)
CrossTradeFlag (BYX Only)	1	Alphanumeric	Corresponds to *CrossTradeFlag* (9355) in Cboe FIX. Used to set eligibility for Periodic Auctions. Can be entered on individual orders or as a port setting. 0=None (to override port setting as necessary) 1=Periodic Auction Only 2=Periodic Auction Eligible
DiscretionAmount	2	Binary	Corresponds to DiscretionAmount (9622) in Cboe FIX. Two implied decimal places (e.g., 10=$0.10) Discretion is implicitly added to bid prices and subtracted from offer prices Order will be displayed at Price, but can be executed in the discretionary range. A discretionary order will use the minimum amount of discretion necessary to achieve execution. Maximum range is -9999 to 9999 (i.e., -99.99 to 99.99) May not be used with IOC orders. May not be used with Post Only orders.
DisplayIndicator	1	Alphanumeric	Corresponds to *DisplayIndicator* (9479) in Cboe FIX. **Re-pricing Options:** V=Default. As determined by port level setting (defaults to S) P=Price Adjust m=Multiple Price Adjust R=Cancel back the order if it cannot be booked and displayed without adjustment r=Hidden; cancel back the order if it cannot be booked without adjustment S=Display Price Sliding (this is to override an opt-out of Display Price Siding at the port level) L=Display Price Sliding, but cancel back if order crosses the NBBO on entry M=Multiple Display Price Sliding **Other Options:** v=Visible (for visible peg orders only; others will be rejected) I=Invisible (implied for Midpoint Peg orders) N=No Rescrape at Limit. Applicable only to fully routable, IOC orders (*RoutingInst* = R and *TimeInForce* = 3). After walking the price to the limit, there will be no final scrape at Cboe and the cancel reason code will state X (Expired) rather than N (No Liquidity).
DisplayPrice	8	Binary Price	Only present when order is fully or partially booked. If the order has to be displayed at a less aggressive price for some reason, then that price will be reported here, otherwise equals *Price*. Present for hidden orders, indicating the price the order would have been displayed at.

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
DisplayRange	4	Binary	Corresponds to *DisplayRange* (8020) in Cboe FIX. Used for random replenishment of reserve orders. Random replenishment establishes a range of possible values for the order quantity that is to be displayed. For example, if MaxFloor=2,000, and DisplayRange=200, the displayed quantity will be selected from one of the following values: 1,800, 1,900, 2,000, 2,100, or 2,200. Must be specified in round lots.
EchoText	64	Text	Corresponds to *Text* (58) in Cboe FIX. Free format text string. May be echoed back on Cboe to Member messages.
ExDestination	1	Text	Corresponds to *ExDestination* (100) in Cboe FIX. Used to specify the designated away venue for *RoutStrategy* = DIRC and for *RoutingInst* = A (Post to Away). A=NYSE American[1] B=NASDAQ BX[1] C=NYSE National G=24X National Exchange H=MIAX Pearl I=Investors Exchange J=EDGA[1] K=EDGX[1,2] L=Long Term Stock Exchange M =NYSE Texas[1] N=NYSE[1] P=NYSE Arca[1] Q=NASDAQ[1] T=Intelligent Cross *(pending approval)* U=MEMX X=NASDAQ PSX Y=BYX[1] Z=BZX[1] [1]Post to Away option available for ROUT and ROUX only. [2]Post to EDGX (for ROUT, ROUX, ROUZ, RDOT).
ExecInst	1	Text	Corresponds to *ExecInst* (18) in Cboe FIX. f=Intermarket Sweep (Directed or Book/Post only) P=Market Peg (peg Buy [Sell] to NBBO Offer [Bid]) Q=Market Maker Peg (see Market Maker Specification) R=Primary Peg (peg Buy [Sell] to NBB Bid [Offer]) U=Supplemental Peg Order M=Midpoint (peg to NBBO Midpoint) m=Midpoint (peg to NBBO Midpoint, but do not match when NBBO is locked) L=Alternate Midpoint (less aggressive of midpoint and 1 tick inside NBBO) **EDGA and EDGX:** d=Midpoint Discretionary Order e=Midpoint Discretionary Order with Quote Depletion Protection **BZX:**

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
			r=Late (for use with Auction Only orders); see the Cboe US Equities Auction Process **BZX and EDGX:** o=Listing Market Opening (for ROOC *RoutStrategy* only) c=Listing Market Close (for ROOC *RoutStrategy* only) a=Both Listing Market Open and Close (for ROOC *RoutStrategy* strategy only; also eligible for participation in halt auctions)
ExpireTime	8	DateTime	Corresponds to *ExpireTime* (126) in Cboe FIX. Required for *TimeInForce* = 6 orders, specifies the date-time (in UTC) that the order expires.
ExtExecInst	1	Text	Corresponds to *ExtendedExecInst* (9416) in Cboe FIX. N=None R=Retail Order, eligible for Retail rebate. **BYX:** P=Retail Order (Price Improvement Only) T=Retail Price Improving Order **EDGX:** X=Retail Priority Order ; eligible for Retail Priority and Retail rebate rate.
FeeCode	2	Alphanumeric	Corresponds to *FeeCode* (9882) in Cboe FIX. Indicates fee associated with an execution. Fee codes are published in the pricing schedule. New fee codes may be sent with little or no notice. Members are encouraged to code their systems to accept unknown fee codes.
LastPx	8	Binary Price	Corresponds to *LastPx* (31) in Cboe FIX. Price of this fill.
LastShares	4	Binary	Corresponds to *LastShares* (32) in Cboe FIX. Executed share quantity.
LeavesQty	4	Binary	Corresponds to *LeavesQty* (151) in Cboe FIX. Quantity still open for further execution. If zero, the order is complete.
LocateBroker	4	Alpha	Corresponds to *LocateBroker* (5700) in Cboe FIX. Used for short sale orders to identify the broker that the short seller has identified as the source from which they will borrow the securities they are selling short.
LocateReqd	1	Alpha	Corresponds to *LocateReqd* (114) in Cboe FIX. Optional, only processed for Sell Short and Sell Short Exempt orders. N=Client affirms ability to borrow (default) Y=Client does not affirm ability to borrow (results in reject)
MassCancelID	20	Text	Corresponds to *MassCancelID* (7695) in Cboe FIX. Copied from the *MassCancelID* passed on the original **`Purge Orders`** message.
MassCancelInst	16	Text	Corresponds to *MassCancelInst* (7700) in Cboe FIX. Used for specification of **`Purge Orders`** message functionality. At least one character must be provided (MPID Filter). Contiguous characters must be specified up to total length. Truncated/unspecified characters will default to values indicated (D) below. ***1st Character: MPID Filter*** A=No filtering by MPID is performed.

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
			F=All orders that were sent under the MPID specified in *ClearingFirm* optional field. If 'F' specified and *ClearingFirm* not provided, the Purge Orders message will be rejected. If 'F' specified and *ClearingFirm* is provided but is blank (NULL), the Mass Cancel or Purge Orders message will be treated like 'A', and no filtering by clearing firm relationship is performed. ***2nd Character: Acknowledgment Style*** M=(D) Order Cancelled messages are sent for each cancelled order. If "M" is set and the *MassCancelID* optional field is specified, the *MassCancelID* value is ignored. S=A single Mass Cancel Acknowledgment message is sent once all cancels have been processed. The *MassCancelID* optional field must be specified or the Mass Cancel or Purge Orders message will be rejected. B=Both individual Order Cancelled and Mass Cancel Acknowledgment messages will be sent. Also requires *MassCancelID* optional filed to be specified or the Mass Cancel or Purge Orders message will be rejected. ***3rd Character: Lockout Instruction*** N=(D) No lockout L=Lockout until corresponding *RiskReset* received. Lockout can be used only with MPID Filter set to 'F', otherwise the Purge Orders message will be rejected. Lockout will apply to all New Order and Modify Order messages for the *ClearingFirm* (and symbol or *RiskGroupIDs*, if specified). A self-imposed lockout can be released using the *RiskReset* optional field in a **`New Order`** message.
MatchingUnit	1	Binary	Corresponds to *MatchingUnit* (25017) in Cboe FIX. Matching unit number the **`Purge Orders`** message will be sent toward. If blank or 0, the **`Purge Orders`** message will be sent to all units. Incompatible with symbol-level purges, specifying both symbol and *MatchingUnit* will cause the **`Purge Orders`** message to be rejected. If both *MassCancelInst* lockout instruction = L and *MatchingUnit* are specified, a lockout will occur and will impact only the specified matching unit. Subsequent risk resets will clear risk locks on all units.
MaxFloor	4	Binary	Corresponds to *MaxFloor* (111) in Cboe FIX. Portion of *OrderQty* to display. The balance is reserve. 0 displays the entire quantity. The displayed quantity of each order at a price level is decremented first. When the displayed quantity is decremented below one round lot, it is is reloaded up to *MaxFloor* from reserve. Default=0
MinQty	4	Binary	Corresponds to *MinQty* (110) in Cboe FIX. Minimum fill quantity for non-routable hidden or non-routable IOC orders which only interact with liquidity on the target Cboe Exchange. **Ignored** if Enable True MinQty is set to 'No' and the order is a routable displayed or routable IOC. **Order is rejected** if Enable True MinQty is set to 'Yes' and the order is a routable displayed or routable IOC.

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
			Default is zero. Odd lot and mixed lot quantities allowed. When the remaining size on an order is less than the defined MinQty, then MinQty will be automatically set to the remaining size. When Enable True MinQty is set to 'No' the minimum total fill size may be made up of several consecutive smaller fills. Setting this port attribute to 'Yes' will require every fill to meet the defined MinQty. See US Equities BOE Port Attributes on page 90 for details. If Enable True MinQty is set to 'Yes', orders will be converted into standard MinQty during a Periodic Auction. Periodic Auction Eligible orders will remain as True MinQty in the continuous book (BYX Only).
OrderQty	4	Binary	Corresponds to *OrderQty* (38) in Cboe FIX. Order quantity. System limit is 999,999 shares. On **`Order Restated`** messages the *OrderQty* may be updated (for example, for SWP or CMC restatements).
OrdType	1	Alphanumeric	Corresponds to *OrdType* (40) in Cboe FIX. 1=Market 2=Limit (default) 3=Stop 4=Stop Limit P=Pegged Pegged requires *ExecInst* be set to 'L', 'M', 'm', 'P', 'Q', or 'R'. Market implies a *TimeInForce* of Day. Market day orders post in LULD straddle state or if a short sale during a Regulation SHO short sale circuit breaker. Pegged orders may not be routable except for midpoint pegs BYX where *RoutStrategy* = RMPT, RMPL, or DIRC.
OrigClOrdID	20	Text	Corresponds to *OrigClOrdID* (41) in Cboe FIX.
PegDifference	8	Signed Binary Price	Corresponds to *PegDifference* (211) in Cboe FIX. **Optional signed** value up to four decimal places*, when the peg difference is below $1.00, is **added** to the result of peg calculation. When the peg difference is above $1.00 a maximum of two decimal places can be specified. Previously was required to be only a non-aggressive offset. Must be zero for non-pegged orders. Default is zero for Midpoint Discretionary Orders with *ExecInst* = d. Default is $0.01 (-$0.01) for sell (buy) Midpoint Discretionary Orders with *ExecInst* (18) = e. Displayed Primary Peg orders with non-aggressive offset must have *TimeInForce* = R (Regular Hours Only) or 0 (Day). Day orders must be submitted after 9:30 a.m. ET. On **BYX**: If *ExtExecInst* = T (Retail Price Improving order): May be priced in $0.001 increments Must be ≥ 0 for Buy orders Must be ≤ 0 for Sell orders **PegDifference* is rounded (down for buy, up for sell) to fit the tick size. For Periodic Auction Only orders, aggressive offsets only for primary peg orders.

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
			No restrictions for Periodic Auction Eligible orders. Orders with passive offsets will be rejected.
PreventMatch	3	Alpha	Corresponds to *PreventMemberMatch* (7928) in Cboe FIX. Three characters: **1st character - MTP Modifier:** N=Cancel Newest O=Cancel Oldest B=Cancel Both S=Cancel Smallest D=Decrement larger / Cancel Smaller d=Same as D above, but only decrement LeavesQty. Do not restate OrderQty. **2nd character - Unique ID Level:** F=Prevent Match at Firm(Member) Level M=Prevent Match at MPID Level X=Prevent Match at the Affiliate (Exchange Member) or Sponsored Participant Level **3rd character - Trading Group ID (optional):** Member specified alphanumeric value 0-9, A-Z, or a-z. The Unique ID level (character 2) of both orders must match to prevent a trade. If specified on both orders, Trading Group ID (character 3) must match to prevent a trade. The MTP Modifier (character 1) of the inbound order will be honored, except that if the inbound order specifies Decrement and the resting order does not, and the resting order is larger, then both orders will be cancelled. This exception is to protect the order entry software for the resting order from receiving an unexpected restatement message. If order entry software is prepared to handle unexpected restatement messages, this exception may be overridden at the port level by requesting Allow MTP Decrement Override functionality. Uses of MTP Modifier D or d and users of Allow MTP Decrement Override functionality must be prepared to receive an **`Order Restated`** message that decrements *LeavesQty* (and, for method D, *OrderQty* as well). Match Trade Prevention will be supported for Periodic Auctions (BYX only).
Price	8	Binary Price	Corresponds to *Price* (44) in Cboe FIX. Limit price. Four implied decimal places. Required for limit orders (*OrdType* = 2). If specified on market order (*OrdType* = 1), the order will be rejected. This field is also used to specify an optional cap price for pegged orders.
RiskGroupID	2	Binary	Corresponds to *RiskGroupID* (7699) in Cboe FIX for **`New Order`** and **`Purge Orders`** messages. Used to group orders for use in **`Purge Orders`** messages where multiple orders can be cancelled by specifying a list of *RiskGroupIDs*.
RiskReset	8	Text	Corresponds to *RiskReset* (7692) in Cboe FIX.

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
			For use by customers to release MPID, symbol or *RiskGroupID* level lockout conditions resulting from self-imposed lockouts issued via **`Purge Orders`** messages. **Single Character Values:** S=Symbol level lockout reset F=MPID level lockout reset C=*RiskGroupID* lockout reset Values may be combined together to allow for resets of multiple self-imposed lockouts in a single message. For example, 'FS', 'SC', 'FC', and 'SFC' are all acceptable values. If orders have been locked out any level, inbound orders for the locked symbol, MPID, or *RiskGroupID* will be rejected until this field is filled with the appropriate value on a **`New Order`** message.
RouteDeliveryMethod	3	Text	Corresponds to *RouteDeliveryMethod* (9350) in Cboe FIX. RTI=Route to improve (default if not specified). Ability to receive price improvement will take priority over speed of execution. RTF=Route to Fill. Speed of execution will take priority over potential price improvement. Only applicable to *RoutStrategy* = ROUT, ROUX, and ROUE.
RoutingInst	4	Text	Corresponds to *RoutingInst* (9303) in Cboe FIX. **1st character:** B=Book Only (not routable, will remove from local book)[1] P=Post Only (not routable)[2] R=Routable S=Super Aggressive - Cross or Lock (order will be removed from the book and routed to any away quote that is locking or crossing the order). May remove liquidity after posting. X=Aggressive - Cross or Lock (order will be removed from the book and routed to any away quote that is locking or crossing the order) K=Super Aggressive When Odd Lot (routable order will be automatically assigned Super Aggressive status when it becomes an odd lot) A=Post to Away (a limit order that will post remainder to an away venue specified in *ExDestination* for applicable routing strategies) N=Non-Displayed Swap - Book only, Hidden order that may remove liquidity after posting. Requires *DisplayIndicator* = I **2nd character (for use with *RoutStrategy* = DIRC, TRIM, SLIM, SLIM+ only):** D=Eligible to route to DRT L=Route to displayed markets only
RoutStrategy	6	Text	Corresponds to *RoutStrategy* (9400) in Cboe FIX. **Please note:** DRT : Dark Routing Technique LCPMC : Low Cost Protected Market Centers **All exchanges:** ALLB=Book + IOC Other Cboe Exchanges RDOT=Book + DRT + IOC/Day NYSE ROUT=Book + DRT + Street (**default if not specified**) ROUX=Book + Street

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
			ROUZ=Book + DRT SWPA=ISO Sweep of All Protected Markets DIRC=Book + DRT + Directed IOC or Directed ISO if *ExecInst* = f. *ExDestination* must also be sent. **EDGA/EDGX:** ROUC=Book + DRT + LCPMC + All Other Protected Markets + Posts to EDGX(EDGX only)or EDGA(EDGA only) **BYX:** DIRC=Book + Midpoint IOC IEX (also requires *Ordtype* = P, *ExecInst* = M or m, and *ExDestination* = I) RMPT=Book + Midpoint IOC Select DRT/Lit Venues) + Post to Local Book if non-IOC (must be used in conjunction with Midpoint Peg order type) RMPL=Book + Midpoint IOC RMPT Venues + Midpoint IOC RMPL Venues + Post to Local Book if non-IOC (must be used in conjunction with Midpoint Peg order type) ROBB=Book + NYSE National + NASDAQ BX + NYSE American + BYX **BYX**: ROCO=Book + NYSE National + NASDAQ BX + NYSE American + (DRT) + BYX TRIM=Book + NYSE National + NASDAQ BX + (DRT) SLIM=Book + LCPMC + (DRT) + LCPMC + All other protected markets **BZX:** TRIM=Book + BYX + NYSE National + NASDAQ BX + NYSE American + (DRT) SLIM=Book + BYX + LCPMC + (DRT) + LCPMC + All other protected markets SLIM+ = BYX[1] + BZX + LCPMC + (DRT) + LCPMC + All other protected markets **BZX/EDGX:** ROOC=Listing Market Open + Book + DRT + Street + Listing Market Close[2] [1]Route to BYX prior to scraping BZX unless price improvement is available. [2]Can be used with *ExecInst* = a, c, or o to specify listing market opening/closing eligibility.
SecondaryOrderID	8	Binary	Corresponds to *SecondaryOrderID* (198) in Cboe FIX. Denotes an alternative *OrderID* which is present on Cboe market data feeds (for example, to hide that a reserve (iceberg) order has reloaded). Or, *OrderID* of the contra side of a prevented match.
Side	1	Alphanumeric	Corresponds to *Side* (54) in Cboe FIX. 1=Buy 2=Sell 5=Sell Short (client affirms ability to borrow) 6=Sell Short Exempt
StopPx	8	Binary Price	Corresponds to *StopPx* (99) in Cboe FIX. Stop price. Required if *OrdType* = 3 (Stop) or 4 (Stop Limit). Stop and Stop Limit orders will only be triggered off Last Sale Eligible trades.

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FIELD	LENGTH	DATA TYPE	DESCRIPTION
SubLiquidityIndicator	1	Alphanumeric	Additional information about an execution. **Cboe may add additional values without notice. Members must gracefully ignore unknown values.** ASCII NUL (0x00) = No Additional Information E=Trade added RPI liquidity (BYX only) H=Trade added hidden liquidity I=Trade added hidden liquidity that was price improved J=Execution from first order to join the NBBO P=Periodic Auction (BYX Only) S=NBBO-Setter fee eligible V=Visible liquidity add trade that was price improved m=Midpoint peg order s=Order set the NBBO but is not fee eligible
Symbol	8	Alphanumeric	Corresponds to *Symbol* (55) in Cboe FIX. Entire Cboe format symbol or symbol root if using CQS or CMS format.
SymbolSfx	8	Alphanumeric	Corresponds to *SymbolSfx* (65) in Cboe FIX. CMS or CQS suffix. **Do not send *SymbolSfx* if using Cboe format or if the symbol does not have a suffix.**
TimeInForce	1	Alphanumeric	Corresponds to *TimeInForce* (59) in Cboe FIX. 0=Day (Default) (Early Trading Session until end of Regular Session) 1=GTC (allowed, but treated as Day) 2=At the Open (BZX only and Cboe listed securities only) 3=IOC (Portion not filled immediately is cancelled) 4=FOK (an IOC where the entire size must be filled, else the order will be cancelled back) 5=GTX (Early Trading Session until end of Post-Market Session) 6=GTD (Early Trading Session; expires at earlier of *ExpireTime* or end of Post-Market Session) 7=At the Close (BZX only and applicable to Cboe Listed securities and Cboe Market Close symbols E=PRE (Pre-Market Trading Session until end of Regular Session) R=RHO (Regular Hours/Session Only) T=PTD (Pre-Market Trading Session; expires at earlier of specified *ExpireTime* or end of Post-Market Session) X=PTX (Pre-Market Trading Session until end of Post-Market Session)
WorkingPrice	8	Binary Price	Corresponds to *WorkingPrice* (9690) in Cboe FIX. If price had to be adjusted to a less aggressive value for some reason, then the adjusted price will be reported here, otherwise equals *Price*.

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Reason Codes

The following is a list of all reason codes used by Cboe. These reason codes are used in a variety of contexts (order cancellations and order rejections). All reasons are not valid in all contexts. The reason code will be followed by free-form text. The specific text the system delivers may vary from the test listed below, to provide clarification of the reject reason. Cboe may add additional reason codes without notice. Members must gracefully ignore unknown values.

Table 74. Reason Codes

CODE	DESCRIPTION
A	Admin
C	Capacity undefined
D	Duplicate identifier (e.g., ClOrdID)
E	Size reduction due to SWP restatement
F	Failed to quote
H	Halted
I	Incorrect data center
J	Too late to cancel
K	Order rate threshold exceeded
L	Order would lock or cross NBBO
M	Order size exceeded
N	Ran out of liquidity to execute against
O	*ClOrdID* doesn't match a known order
P	Can't modify an order that is pending fill
Q	Waiting for first trade
R	Routing Unavailable
S	Short sale price violation
T	Fill would trade through the NBBO
U	User requested
V	Would wash
W	Add liquidity only order would remove
X	Order expired
Y	Symbol not supported
Z	Unforeseen reason
f	Risk management MPID or *RiskGroupID* level
m	Market access risk limit exceeded
o	Max open orders count exceeded
r	Reserve reload
s	Risk management symbol level
u	Limit Up Limit Down (LULD)
w	Would remove on unslide
x	Crossed market
y	Order received by Cboe during replay

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List of Message Types

Member to Cboe

Table 75. Message Types - Member to Cboe

MESSAGE NAME	LEVEL	TYPE	SEQUENCED
Login Request	Session	`0x37`	No
Logout Request	Session	`0x02`	No
Client Heartbeat	Session	`0x03`	No
New Order	Application	`0x38`	Yes
Cancel Order	Application	`0x39`	Yes
Modify Order	Application	`0x3A`	Yes
Purge Orders	Application	`0x47`	Yes

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Cboe to Member

Table 76. Message Types - Cboe to Member

MESSAGE NAME	LEVEL	TYPE	SEQUENCED
Login Response	Session	0x24	No
Logout	Session	0x08	No
Server Heartbeat	Session	0x09	No
Replay Complete	Session	0x13	No
Order Acknowledgment	Application	0x25	Yes
Order Rejected	Application	0x26	No
Order Modified	Application	0x27	Yes
Order Restated	Application	0x28	Yes
User Modify Rejected	Application	0x29	No
Order Cancelled	Application	0x2A	Yes
Cancel Rejected	Application	0x2B	No
Order Execution	Application	0x2C	Yes
Trade Cancel or Correct	Application	0x2D	Yes
Mass Cancel Acknowledgment	Application	0x36	No
Purge Rejected	Application	0x48	No

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US Equities BOE Port Attributes

The table below lists BOE port attributes that are configurable on the port or firm level. Changes to these attributes can be made by contacting the Cboe Trade Desk.

Table 77. US Equities BOE Port Attributes

ATTRIBUTE	DEFAULT	DESCRIPTION
All Routable to Halt Auction (BZX and EDGX Only)	No	Send all routable orders to the halt auction on the primary listing exchange. This applies to all routing strategies.
Allow Directed ISO *	Yes	Allow or disallow ISO orders directed to other market centers.
Allow ISO *	Yes	Allow or disallow ISO orders.
Allow MTP Decrement Override *^	No	Overrides the exception that requires both the resting and inbound order to be marked as "Decrement".
Allow Post-Market	Yes	Allow orders to be entered after the Regular Session close.
Allow Pre-Market	Yes	Allow orders to be entered prior to Regular Session open.
Allow Sponsored Participant MTP Control *^	No	Allow Sponsored Participant to override port default for match trade prevention by using *PreventMatch* on the order level.
Allow Test Symbols Only	Disabled	Allow or disallow orders in non-test symbols.
Allowed Clearing MPIDs**	All MPIDs	MPID(s) allowed for trading on the port. If Sponsored Port attribute is enabled, only one Clearing MPID is allowed for trading on that port.
Cancel on Disconnect	Option 1	Cancels open orders upon order handler session disconnect; both graceful and ungraceful. If Cancel On Disconnect is set, open orders in Symbols that are not in Closed state at the time of the disconnect are cancelled. 1=Cancel continuous book orders only (default) 2=Cancel all open orders (continuous + auction*) 3=Do not cancel any open orders *If disconnect occurs during the cut-off period for an auction, On-Open, On-Close and Late orders that are to participate in the auction will not be cancelled.
Cancel on ME Disconnect	Yes	When set to 'No', this setting allows orders to remain open on a Matching Unit failover. When set to 'Yes', all open orders associated with a session are immediately cancelled in the event of loss of connectivity to a Matching Unit. In any event, if a failover takes longer than five minutes, all orders are cancelled unconditionally.
Cancel on Regulatory Halt	No	Cancels open orders upon receipt of a Regulatory Halt.
Cancel on Reject +	No	Cancels an order upon a modify reject.
Cancel Open Orders on DROP Port Disconnect *	None	Only applicable if Reject Orders on DROP Port Disconnect has been enabled. When the last Standard FIX DROP port associated with an order handler session has disconnected, open orders, associated with the session are cancelled. No=Disabled Yes=Cancel all open orders Note this parameter applies to Standard FIX DROP ports and not Order-By-Order DROP ports (ODROP).
Capacity Override	None	When set, the capacity of individual orders received on the port will default to the Member specified order capacity.

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ATTRIBUTE	DEFAULT	DESCRIPTION
		None=No override (Default) A=Agency P=Principal R=Riskless Principal
Crossed Market Cancel / Reject	No	Reject new orders when the NBBO in the security is crossed. Routable orders will have any remaining quantity cancelled back when the order returns to the book. Order modifications which cause a loss in priority will result in a cancel of the original order if the NBBO is crossed upon receipt of the modify request.
Default Attributed Quote *+	(see description)	Default value for *AttributedQuote* (9732). May override at order level. Yes=Attribute to MPID RTAL=Attribute as RTAL No=Don't Attribute (may override at order level) Never* = Never Attribute *May only change this setting to 'Yes' or 'No' after executing Attribution Addendum to Exchange User Agreement.
Default CrossTradeFlag (BYX Only)	0	Sets default *CrossTradeFlag* for inbound orders to designate Periodic Auction eligibility. 0=None (Default) 1=Periodic Auction Only 2=Periodic Auction Eligible 3=Midpoint Peg - Periodic Auction Only When set to '2', IOC, FOK, and displayed orders are not converted to a Periodic Auction Eligible order and are sent to the book as-is. When set to '2', *DisplayIndicator* (9479) will be ignored if *ExecInst* (18) = m or M. When set to '3', IOC, FOK, IOC/FOK orders with *ExecInst* (18) = M, and all other orders where *ExecInst* (18) does not = m will not be converted and will be sent to the book as-is. When set to '3', all non-IOC/FOK orders with *ExecInst* (18) = M will be converted to RHO Midpoint Peg - Periodic Auction Only order. Orders with the following RPI instructions will set this port attribute to '0': *ExtendedExecInst* (9416) = R or P, plus is an IOC, or *ExtendedExecInst* = T.
Default Exec Instruction +*	(None)	Default execution instruction for new orders. See *ExecInst* for details. If a port level setting is present, new orders sent with a value of NULL 0x00 will use the port level setting.
Default MPID	None	Default MPID to use if none is sent on a **`New Order`** message.
Default MTP Value *^+	None	Specifies default value for *PreventMatch*. When set to 'X', Affiliate Firm's or Sponsored Participant's match trade prevention will be used by default.
Default Price Sliding(Hidden Order Override) +	S	Default price sliding behavior for hidden orders. See *DisplayIndicator* for details.
Default Price Sliding +	S	Default price sliding behavior. See *DisplayIndicator* for details.
Default Routing Instruction (Hidden Order Override) +		Specifies a default value for *RoutingInst* that is applied to hidden orders only.

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ATTRIBUTE	DEFAULT	DESCRIPTION
Default Routing Instruction +		Specifies a default value for routing. Fields can be overridden at the order level. The defaults are *RoutingInst* = R, *RouteDeliveryMethod* = RTI, and *RoutStrategy* = ROUT
Default to Retail Order *^+	None	Default *ExtExecInst* = R or P.
Default True *MinQty*	No	Do not aggregate multiple contra orders to meet the *MinQty* specified on an order. If set to 'Yes', orders will be converted into standard MinQty during a Periodic Auction. Periodic Auction Eligible orders will remain as True MinQty in the continuous book (BYX Only).
Disallow Market Orders	Option 1	Controls the acceptance or rejection of inbound Market orders during continuous trading. Do not restrict Market orders. Reject Market orders during continuous trading, but allow Market orders during openings, re-openings, auctions, and auction routing (e.g. ROOC). Reject all Market orders except MOO and MOC orders (including CMC orders).
Duplicative Order Protection Action	Option 1	Action taken when Duplicative Order Protection criteria is met: 1 = Not enabled. 2 = Reject new offending orders 3 = Disable port for *ClearingFirm*. Must call Cboe Trade Desk to reenable.
Duplicative Order Protection Order Count Threshold	None	Number of consecutive orders with the same *ClearingFirm*, *Price*, *OrdQty*, and *Symbol* that must be seen to initiate Duplicative Order Protection Action.
Early Trading Session Opt-Out	No	Allows orders to be executable during the Early Trading Session on page 8. If set to Yes, the following *TimeInForce* values will be translated: 0 (DAY) → E (PRE) 5 (GTX) → X (PTX) 6 (GTD) → T (PTD)
Enforce Rate Limit via Pause	False	When set to False, the existing Port Order Rate Threshold, Sustained Port Order Rate Threshold, Symbol Order Rate Threshold, and Sustained Symbol Order Rate Threshold port attributes will be enforced by rejects (as described). When set to True, Port Order Rate Threshold, Sustained Port Order Rate Threshold, Symbol Order Rate Threshold, and Sustained Symbol Order Rate Threshold port attributes will be enforced by read pause instead of by rejects.
Fat Finger Protection *	None	Orders entered through the NBBO by a specified percentage or dollar based limit price tolerance will be rejected. Limits may be different for different price ranges and price ranges may vary across markets. Please see the Web Portal Port Controls Specification for complete details.
Force MDO with QDP (EDGA and EDGX Only)	n	When set, midpoint and standard MDO order types will default to MDO with QDP orders. n=Do nothing (default) b=Book only MDO with QDP p=Post only MDO with QDP

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ATTRIBUTE	DEFAULT	DESCRIPTION
Gross Daily Risk Limit Order Notional Cutoff *	None	Results in rejects for **limit** orders when **gross** exposure of limit orders exceeds this value for this port. Maximum whole dollar value of $1 billion/port.
Gross Daily Risk Market Order Notional Cutoff *	None	Results in rejects for **market** orders when **gross** exposure of limit orders exceeds this value for this port. Maximum whole dollar value of $1 billion/port.
Hold Early to 7am (BZX and EDGX Only)	False	Controls the executable time of orders submitted prior to 7:00 a.m. ET with a *TimeInForce* (59) that allows trading in the Early Trading Session. False=Orders may enter the book and trade as early as 4:00 a.m. ET. True=Orders will be queued until 7:00 a.m. ET.
Lock Auction Orders (BYX Only)	False	Disallow order cancellation during periodic auction. False=Allow cancellations True=Do not allow cancellations
Maximum Order Dollar Value *	Unlimited	Maximum dollar value per order.
Maximum Order Size *	25,000	Maximum order quantity
MPID Filter for Purge Ports	None	Specify up to ten MPIDs per purge port for which purges will be permitted. If a purge request specifies an MPID not included in the list of configured MPIDs, the purge request will be rejected. If a purge port is configured with multiple MPIDs and a purge request is sent without any MPIDs specified, the purge will be applied only to the list of configured MPIDs.
Net Daily Risk Limit Order Notional Cutoff *	None	Results in rejects for **limit** orders when **net** exposure of limit orders exceeds this value for this port. Maximum whole dollar value of $1 billion/port.
Net Daily Risk Market Order Notional Cutoff *	None	Results in rejects for **market** orders when **net**exposure of limit orders exceeds this value for this port. Maximum whole dollar value of $1 billion/port.
Notional Cutoff Aggregation Methods *	None	Gross exposure=CBB + CBO + CEB + CEO Net exposure=|(CEO + CBO) - (CEB + CBB)| On a given port, Cboe will calculate an track four values: CBB=Cumulative Notional Booked Bid Value. The sum of limit price x size for all booked sell limit orders. CBO=Cumulative Notional Booked Offer Value. The sum of limit price x size for all booked sell limit orders. CEB=Cumulative Notional Executed Bid Value. The sum of size x trade price for all executed buy orders. CEO=Cumulative Notional Executed Sell Value. The sum of size x trade price on all executed sell orders.
Port Order Rate Threshold	5,000 msgs/s Max allowed = 10,000 msgs/s (EDGX Only)	The maximum allowed message rate on the session. When the first non-session level message is received, a one second window begins. During the second no more than 4,999 additional non-session level messages will be allowed within that window. If the rate is exceeded, all new orders in the time window are rejected, modifies are treated as cancels, and cancels are processed. , If maximum rate limit of 10,000 is requested, no more than 9,999 additional non-administrative messages will be allowed within that one second window. The default value is 5,000 msgs/sec and the maximum value is 10,000 msgs/sec (if requested) EDGX only.

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ATTRIBUTE	DEFAULT	DESCRIPTION
		Note: Order handler burst rates towards each matching unit may be limited as described in Architecture and Message in Flight Settings on page 9.
Reject Market Orders Without NBBO	No	Reject Market Orders (including unpriced Peg Orders and Stop Orders) when there is no NBBO on the opposite side.
Reject Orders on DROP Port Disconnect *	No	If all associated Standard FIX DROP ports associated with an order entry session experience disconnection, new orders will be rejected until at least one Standard FIX DROP port session has been reestablished. Note this parameter does not apply to Order-By-Order drop ports (ODROP).
Reject Orders on DROP Port Timeout (seconds) *	30 seconds	Only applicable if Reject Orders on DROP Port Disconnect has been enabled. When the last Standard FIX DROP port associated with an order entry session has disconnected, begin rejecting orders on the order entry session if a Standard FIX DROP session has not been reestablished within this timeout. Minimum value allowed is 0 seconds.
Risk Group Id(s)	No	A comma separated list of values that, if configured, will cause orders without one of the listed *RiskGroupIDs* to be rejected.
Routing Retail Indicator (EDGX Only)	No	Mark orders as retail when routing to dark liquidity pools.
Send Peg Restatements	Option 1	Send restatements for Peg order movements. No Peg restatements (default). Market Maker Peg orders only. All Peg orders except Market Maker Peg orders. All Peg orders.
Send Trade Breaks ^	No	Enables sending of **`Trade Cancel or Correct`** messages.
Single Order ADV Check	None	Reject orders when order size exceeds a specified percentage of the 20-day ADV. Members may also specify a 20-day ADV amount below which the check will not be applied.
Sponsored Port	No	Designates that the session will carry Sponsored flow.
Sponsoree Firm ID	None	Only available when Sponsored Port is set to 'Yes'. Will be populated with the Sponsored Firm's Firm ID.
Sustained Port Order Rate Threshold (EDGX Only)	25,000 msgs/5 s	The maximum allowed message rate on the session. When the first non-session level message is received, a five second window begins. During the five seconds no more than 24,999 additional non-session level messages will be allowed within that window. If the rate is exceeded, all new orders in the time window are rejected, modifies are treated as cancels, and cancels are processed. Maximum value is 25,000 msgs/5 sec. Note: Order handler burst rates towards each matching unit may be limited as described in Architecture and Message in Flight Settings on page 9.
Sustained Symbol Order Rate Threshold (EDGX Only)	25,000 msgs/5 s	Functions the same as the Port Order Rate Threshold, but is calculated at the symbol level. It is capped by the Port Order Rate Threshold. Maximum value is 25,000 msgs/5 sec.

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ATTRIBUTE	DEFAULT	DESCRIPTION
		Note: Order handler burst rates towards each matching unit may be limited as described Architecture and Message in Flight Settings on page 9.
Symbol Order Rate Threshold	5,000 msgs/s Max allowed = 10000 msgs/s(EDGX Only)	Functions the same as the Port Order Rate Threshold, but is calculated at the symbol level. It is capped by the Port Order Rate Threshold. The default value is 5,000 msgs/sec and the maximum value is 10,000 msgs/sec (if requested) (EDGX Only). Note: Order handler burst rates towards each matching unit may be limited as described in Architecture and Message in Flight Settings on page 9.

* Sponsored Participants require written approval from Sponsors to update these settings on ports associated to a Sponsor's MPID.

† Port attribute can be overridden on an order by order basis.

^ Requires certification.

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Support

Please direct questions or comments regarding this specification to tradedesk@cboe.com.

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Revision History

DATE	DESCRIPTION
April 4, 2014	*Version 2.0.0* First Version 2 release.
May 1, 2014	*Version 2.0.1* Retail attribution value changed from RTL to RETL.
June 4, 2014	*Version 2.0.2* Removed references to CBSX and NSX. Retail attribute value changes from RETL to RTAL. Corrected length of *NumberOfParamGroups* to be one byte (not two bytes). Fixed naming inconsistency of *AttributedQuote* sometimes being called *AttributedOrder*. Added send peg restatements and retail order default port attributes. Noted that *StopPx* may be modified.
July 1, 2014	*Version 2.0.3* Corrected *ExecInst* to note that Midpoint Discretionary Order will only be available on EDGA. Corrected Cancel on Disconnect options
July 3, 2014	*Version 2.0.4* Added field descriptions for *FeeCode* and *EchoText*.
July 7, 2014	*Version 2.0.5* Removed all return bits from **`User Modify Rejected V2`** messages. No optional return fields are allowed. Corrected a number of optional return bits. Added *RoutingInst*, *RoutStrategy*, *RouteDeliveryMethod*, and *ExDestination* as optional return bits (byte 8).
July 9, 2014	*Version 2.0.6* Corrected instances where *ContraCapacity* and *CorrectedSize* may be requested as optional return fields.
August 12, 2014	*Version 2.0.7* Added *RestatementReason* value of S (size reduced due to SWP). The "Default Price Sliding" value incorrectly indicated H for EDGX instead of the correct value of P. Corrected description of Market Peg.
August 15, 2014	*Version 2.0.8* Removed text which indicated version 2 was not yet available as it is now live.
August 22, 2014	*Version 2.0.9* Removed *ContraCapacity* which is not available in US Equities. Added Super Aggressive When Odd Lot RoutingInst value.
August 26, 2014	*Version 2.0.10* Added Reason Code of w (Would Remove on Unslide).
August 27, 2014	*Version 2.0.11* Corrected stages of RMPT route strategy.
September 8, 2014	*Version 2.0.12* Corrections in allowed return bitfields. Updated Options-specific fields to match latest version of Options specification. Removed *ContraCapacity* from allowed return bitfields. Removed *ContraBroker* from List of Optional fields.
September 9, 2014	*Version 2.0.13* Removed *AccessFee* from `Order Execution V2` allowed return bitfields. Removed Options-specific **`Bulk Order Acknowledgment V2`** message fromSection 6.

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DATE	DESCRIPTION
September 11, 2014	*Version 2.0.14* Correction: *ExtExecInst* wasn't marked as allowed for US Equities `New Order V2`.
September 29, 2014	*Version 2.0.15* Corrections: ROUC routing strategy will only be supported on EDGA/EDGX. Modified description of ROLF strategy to be Book + IOC LavaFlow.
October 10, 2014	*Version 2.0.16* Clarified ability to reuse *ClOrdId* with `Modify Order`s when daily limit trading risk controls are enabled.
November 13, 2014	*Version 2.0.17* Updated for EDGX Options. Added new fields *TargetPartyID* and *MarketingFeeCode*. Updated descriptions to note which fields are BZX Options or EDGX Options specific.
November 17, 2014	*Version 2.0.18* No functional changes. Clarified that LavaFlow's representation in *ExDestination* is l which is a lowercase L.
December 2, 2014	*Version 2.0.19* *MaxRemovePct* will now be allowed on EDGA and EDGX, but must always be 0.
December 19, 2014	*Version 2.0.20* Correction for *DiscretionAmount*. The documentation incorrectly indicated this is a Signed Binary field when it is actually a Binary field.
January 8, 2015	*Version 2.0.21* Corrected `Order Execution V2` return bitfields to note that *SubLiquidityIndicator* is not allowed—it's already available in the message body. Minor correction of *PreventMatch* text (no functional change). On *DisplayIndicator*, noted that l is implied on Midpoint Peg orders only
January 29, 2015	*Version 2.0.22* Removed references to ROLF and LavaFlow.
March 25, 2015	*Version 2.0.23* Corrected TRIM *RoutStrategy* descriptions.
May 19, 2015	*Version 2.1.0* Functionality modifications to EDGX to align with the other Bats equity exchanges: (effective 7/6/2015) EDGX Midpoint Match translated to Midpoint Peg No Lock, EDGX Hide Not Slide translated to Display Price Sliding, and EDGX price sliding default changes to Display Price Sliding.
June 10, 2015	*Version 2.1.1* Adjusted wording for *ExecInst* value of o. Added Reason Code value of T. Corrected message length of example **`New Order V2`** message.
July 6, 2015	*Version 2.1.2* Adjustments now that EDGX functionality changes are live.
July 27, 2015	*Version 2.1.3* Noted that *RoutStrategy* value of ROOC will only be available on BZX and EDGX effective 8/10/2015. Noted that ROOC orders with *ExecInst* set to c can route to halt auctions.
July 27, 2015	*Version 2.1.4* Added values to *ExDestination* and *ContraBroker* in anticipation of NSX reactivation on 8/31/2015. Added Routing Retail Indicator port attribute (EDGX only). Effective 9/10/2015. Added Single Order ADV Check port attribute. Effective 8/14/2015.

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DATE	DESCRIPTION
	Updated description of Fat Finger Protection port attribute.
August 10, 2015	*Version 2.1.5* Added *EffectiveTime* (effective 9/28/2015). Added Duplicative Order Protection port attributes.
October 26, 2015	*Version 2.1.6* Added port attribute "All Routable to Halt Auction". Updated *RoutStrategy* description of ROCO and ROBB. Updated effective date for *EffectiveTime*.
November 23, 2015	*Version 2.1.7* Added ALLB value to *RoutStrategy*. Updated effective date for "All Routable to Halt Auction."
February 17, 2016	*Version 2.1.8* Updated for new branding.
February 25, 2016	*Version 2.1.9* Added new *RestatementReason* value of P.
March 23, 2016	*Version 2.1.10* Updated description of *RoutStrategy* to state that routable ISOs must be sent using DIRC. Updated the minimum value of "Reject Orders on DROP Port Timeout" to be 0 seconds.
April 12, 2016	*Version 2.1.11* Added three *TimeInForce* values to support addition of Early Trading Session. Added "Allow Early Trading Session" port attribute. Added Hours of Operation section. All effective 5/23/2016.
April 14, 2016	*Version 2.1.12* Removed some route strategies. Removal of IOCM and ICMT effective May 5, 2016 on BYX Exchange and May 6, 2016 on EDGA Exchange. Removal of TRIM3 and TRIM3- effective May 6, 2016 on BZX Exchange.
April 25, 2016	*Version 2.1.13* Clarified when "Fat Finger Protection" is applied. Clarified wording for "Early Trading Session Opt-Out."
July 13, 2016	*Version 2.1.14* Added new *ExecInst* value of y (Trade at ISO). Added new *ExDestination* value of I (IEX, effective 9/2/2016) and *ContraBroker* value of IEX (effective 8/1/2016).
August 8, 2016	*Version 2.1.15* Updated effective date for supporting *ExDestination* of IEX to 8/19/2016.
January 24, 2017	*Version 2.1.16* Added IEX Midpoint routing to RoutStrategy.
March 2, 2017	*Version 2.1.17* Add new field type *Date*.
March 14, 2017	*Version 2.1.18* Add descriptions of port attributes "Allow Test Symbols Only", "Port Order Rate Threshold", and "Symbol Order Rate Threshold"
March 23, 2017	*Version 2.1.19* Added RMPL Route Strategy to *RoutStrategy*.
May 17, 2017	*Version 2.1.20* Added description of port attribute "Cancel on ME Disconnect"
June 14, 2017	*Version 2.1.21* Added IEX to the TRIM, TRIM-, TRIM2 and TRIM2- *RoutStrategy* venues. Added

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DATE	DESCRIPTION
	new *RoutingInst* value of N (Non-Displayed Swap) (effective 7/21/2017).
August 10, 2017	*Version 2.1.22* Added description of port attribute "Default Routing Instruction (Hidden Order Override)"
October 17, 2017	*Version 2.1.23* Cboe rebranding/logo changes. Removed X=Locked in cross*RestatementReason* as this is specific to European markets and was previously deprecated.
October 25, 2017	*Version 2.1.24* Corrected various spelling errors, field name and case inconsistencies.
December 4, 2017	*Version 2.1.25* Updated *TimeInForce* requirements for Displayed Primary Peg with non-aggressive *PegDifference*. Effective 12/15/17.
January 24, 2018	*Version 2.1.26* Reworked the **`Modify Order`** message to clarify when an order loses time priority and to harmonize with FIX Post to Away orders must be limit orders.
February 2, 2018	*Version 2.1.27* Added port attribute "Reject Market Orders Without NBBO" (effective 2/16/18).
March 20, 2018	*Version 2.1.28* Updated the market centers that support Post to Away in *ExDestination.* Added port attribute "Default True MinQty" (effective 4/18/18).
March 27, 2018	*Version 2.2.0* Added Cboe Market Close (CMC) functionality (effective TBD). Clarified that a zero *MaxFloor* (111) on a **`Modify Order`** message will be ignored.
May 08, 2018	*Version 2.2.1* *LastShares* will be used to report the number of shares cancelled on Cboe Market Close restatements. *LeavesQty* will be used for matched shares on CMC restatements. Updated description of Aggressive and Super Aggressive *RoutingInst* values. Added 15th return byte to all messages from Cboe to Member.
May 11, 2018	*Version 2.2.2* Updated description on *MinQty* behavior and changes related to the release of Enable True *MinQty* port attribute.
June 08, 2018	*Version 2.2.3* Updated byte 15 Return Bitfields. None are applicable to US Equities. Defined Binary Signed Price data type, which is used for *PegDifference*. Added support for *RoutingInst*=N (NDS) on BYX, BZX, and EDGA (effective 6/14/18).
August 23, 2018	*Version 2.3.0* Added support for Equities Purge Ports (effective 10/1/18). Added **`Purge Orders`**, **`Mass CancelAcknowledgment`**, and **`PurgeRejected`** message types and associated optional bitfields. Added definitions for *MassCancelID, MassCancelInst, RiskGroupID, RiskGroupIDCnt,* and *RiskReset* fields. Updated Trading Sessions to reflect that BZX is open until 8:00 p.m. ET. Added MDO *ExecInst* to EDGX effective 10/3/18.
August 27, 2018	*Version 2.3.1* Defined *RiskGroupID* Optional Field (effective 10/1/18).
September 13, 2018	*Version 2.3.2* Added CLNK as new value for *RoutStrategy* and h=HRT Execution Services LLC as new value for *ExDestination* . Effective 9/24/18 for EDGA only.

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DATE	DESCRIPTION
October 2, 2018	*Version 2.3.3* Removed Trade At ISO order due to Tick Pilot Sunset.
March 4, 2019	*Version 2.3.4* Updated trading session information to reflect extension of BYX Post-Market Session hours to 8:00 p.m. ET. Regarding `Login Response`, clarified that while a subset of units can be provided in the `Login Request`, all units will be provided in the `Login Response`. Added I=Virtu VEQ Link and v=Virtu VEQ as new values for *ExDestination.* Effective 3/8/19 for EDGA only.
March 22, 2019	*Version 2.3.5* Updated ROBB and ROCO routing strategies on EDGA. Updated TRIM and TRIM- on BYX and BZX. RDeprecated TRIM2 and TRIM2- on BZX. Deprecated SWPB routing strategy for all exchanges (effective 05/01/19).
June 25, 2019	*Version 2.3.6* Added 'X' value to *ExtExecInst* optional field to support Retail Priority on EDGX (effective TBD).
August 7, 2019	*Version 2.3.7* Corrected *MessageType* hexadecimal value to 28 in **`Order Restated`** message example. Changed Return Bitfield *EquityNBBOProtect* to "Reserved".
August 23, 2019	*Version 2.3.8* Updated *Order Modified* Return Bitfield to indicate Symbol field on second byte can be specified for a message.
October 11, 2019	*Version 2.3.9* *Updated effective date for ExtExecInst* optional field value "X - Retail Priority Order". Effective on EDGX only 11/1/19.
November 7, 2019	*Version 2.3.10* Added note indicating that the 'at' symbol and double quote characters are not permitted in the *ClOrdID* field *(*effective 01/13/20).
January 14, 2020	*Version 2.3.11* Added reason code F=Failed to quote . Added note indicating the specific reason code text the system delivers may vary from the text listed, to provide clarification of the reject reason.
January 17, 2020	*Version 2.3.12* Added note indicating routing strategy CLC will be replaced with DRT. The system will convert any instances of ROUD or ROUQ values in the *RoutStrategy* (FIX Tag 9400) instruction to the ROUZ value and convert any instance of ROUE values to the ROUT value. Effective on EDGX 2/3/20.
January 30, 2020	*Version 2.3.13* Added effective date for Cboe Marke Close (CMC), effective on BZX 3/6/20. Added "L" *ExDestination* value and "LTSE" *ContraBroker* value for Long Term Stock Exchange.
February 6, 2020	*Version 2.3.14* Updated Return Bitfield tables with bytes 16 and 17. Removed *RoutingInst* (9303) = Q, post only at limit. Removed *MaxRemovePct* (9618). Partial post only orders are no longer supported on BYX and BZX.
February 14, 2020	*Version 2.3.15* Added note indicating the CLC routing strategy will be deprecated and replaced with DRT. The system will convert any instances of ROUD or ROUQ values in the *RoutStrategy* (FIX Tag 9400) instruction to the ROUZ value and convert any instance of ROUE values to the ROUT value. Effective on EDGA 3/2/20.
March 11, 2020	*Version 2.3.16*

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DATE	DESCRIPTION
	Added *ExDestination* and *ContraBroker* values for MEMX and MIAX Pearl Exchanges.
April 29, 2020	*Version 2.3.17* Renamed *CustomGroupID* to *RiskGroupID* Added Port Attribute "Risk Group Id(s)" (effective May 15)
May 15, 2020	*Version 2.3.18* Added Maximum Order Limit section. Corrected values for *ContraBroker* in Example Order Execution Message. Added 'e' - Midpoint Discretionary Order with Quote Depletion Protection to *ExecInst* (effective 6/10/20). Updated effective date for Port Attribute "Risk Group (id(s)" to 5/22/20.
November 5, 2020	*Version 2.3.19* Updated *DisplayIndicator (9479)* description. Corrected *RoutStrategy* ROBB and ROCO description for EDGA. Corrected *RoutStrategy* TRIM - for BZX. Updated description for "Cancel Open Orders on DROP Port Disconnect" port attribute. Removed footnote indicating the *ExDestination* value 'I=Investors Exchange' has the Post to Away option available for ROUT and ROUX. Updated Maximum Open Orders Limits to 300,000 for EDGX and BZX. Clarifications to usage of *PegDifference* when using Midpoint Discretionary Orders.
November 10, 2020	*Version 2.3.20* Added note indicating EDGX Early Trading Session starting time will change from 7:00 a.m. to 4:00 a.m. , Order Acceptance starting time will change from 6:00 a.m. to 3:30 a.m., Order Acceptance end time will change from 7:00 a.m. to 4:00 a.m. (EDGX Only).
December 4, 2020	*Version 2.3.21* Updated effective date to TBD for changes to EDGX Early Trading Session to 4:00 a.m. and Order Acceptance starting time to 3:30 a.m..
February 8, 2021	*Version 2.3.22* Added new port attribute 'Hold Early to 7am' (EDGX Only) (03/08/21). Corrected description of *BaseLiquidityIndicator* field to include W=Waiting value, as this value is already in use. Updated effective date for changes to EDGX Early Trading Session to 4:00 a.m. and Order Acceptance starting time to 3:30 a.m. (effective 03/08/21). Added 'Section 1.5.1 - Architecture' to provide high level overview of protocol architecture and source IP blocking feature. Added new 'Section - Stale NBBO' to describe system behavior when SIP NBBO is unavailable.
April 7, 2021	*Version 2.3.23* Removal of CLNK, INET, RDOX, AND TRIM- routing strategies (effective 04/21/21).
April 27, 2021	*Version 2.4.0* Added new section for Periodic Auctions, added *CrossTradeFlag* to the New Order and Order Acknowledgment bitfields, added new port attributes related to Periodic Auctions (BYX Only) (Effective 04/14/22 ~~Effective Q3 2021TBD~~).
July 19, 2021	*Version 2.4.1* Updated Periodic Auctions effective date to (04/14/22 T~~BD~~).
August 26, 2021	*Version 2.4.2* Updated EDGX Order Acceptance starting time to 2:30 a.m. (effective 09/07/21).
September 27, 2021	*Version 2.4.3* Added a new Port Attribute "Capacity Override" (effective 10/12/21).
October 6, 2021	*Version 2.4.4* Added a new Port Attribute "Force MDO with QDP" (EDGA and EDGX Only) (effective 10/28/21).

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DATE	DESCRIPTION
November 4, 2021	*Version 2.4.5* Duplicative Order Protection Time Threshold to be sunset (effective 12/07/21). Duplicative Order Protection Order Count will look at consecutive orders (effective 12/07/21).
December 2, 2021	*Version 2.4.6* Updated "Port Order Rate Threshold" and "Symbol Order Rate Threshold" Port Attributes to allow a maximum of 10000 msgs/sec (EDGX Only) (effective 12/14/21). Added new Port Attributes "Sustained Port Order Rate Threshold" and "Sustained Symbol Order Rate Threshold" (EDGX Only) (effective 12/14/21).
December 17, 2021	*Version 2.4.7* Updated Duplicative Order Protection Action description. Noted IOC Periodic Auction orders will not be accepted (BYX Only) (Effective 04/14/22 TBD).
January 13, 2022	*Version 2.4.8* Added a new *MatchingUnit* field to Optional Fields and Purge Order Bitfield (Effective 02/11/22 for EDGA and 02/14/22 for BYX, BZX, and EDGX). Updated the Purge Orders section indiciating that RiskGroupID or MPID purges with no Symbol may be directed to a specific matching unit using the MatchingUnit optional field (Effective 02/11/22 for EDGA and 02/14/22 for BYX, BZX, and EDGX).
March 7, 2022	*Version 2.4.9* *MaxRemovePct* field to be sunset (effective 05/08/22).
March 25, 2022	*Version 2.4.10* Updated Periodic Auctions effective date to 04/14/22 (BYX Only).
April 8, 2022	*Version 2.4.11* Updated Execution Report with correct *SubLiquidityIndicator* value for Periodic Auctions (Effective 04/14/22) (BYX Only).
May 9, 2022	*Version 2.4.12* Added new *SubLiquidityIndicator* value 's' (effective 06/01/22).
May 25, 2022	*Version 2.4.13* Updated *DiscretionAmount* description in section 7.
June 15, 2022	*Version 2.4.14* Updated *CrossTradeFlag* return bitfields.
July 15, 2022	*Version 2.4.15* When Default CrossTradeFlag = 2, IOC, FOK, and displayed orders will not be converted to a Periodic Auction Eligible order and will be sent to the book as-is (BYX Only) (effective 07/29/22).
August 19, 2022	*Version 2.4.16* Added *LocateBroker* to New Order and Order Acknowledgment bitfields (effective 10/14/22). *MaxRemovePct* field to be sunset (effective 01/20/23 ~~effective 10/26/22~~).
August 31, 2022	*Version 2.4.17* Updated *LocateBroker* bitfield location (effective 10/14/22).
October 25, 2022	*Version 2.4.18* Updated effective date for *MaxRemovePct* field to be sunset (effective 01/20/23).
November 21, 2022	*Version 2.4.19* Clarified that the length of the *LoginResponse* will vary depending on acceptance or rejection of the *LoginRequest*. Added *PreventMatch* = X indicating prevent match at the affiliate (Exchange Member) level (effective 12/15/22). When Default MTP Value port attribute is set to 'X', affiliate match trade prevention will be used by default (effective 12/15/22).
December 6, 2022	*Version 2.4.20*

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DATE	DESCRIPTION
	Updated *RestatementReason* = W to indicate Wash or MTP Decrement.
January 26, 2023	*Version 2.4.21* *SymbolSfx* is an optional field on return order modified messages.
February 16, 2023	*Version 2.4.22* The CMC restatement will be sent at approximately 3:49 p.m. ET (effective 03/10/23).
March 10, 2023	*Version 2.4.23* *ExecInst* = m (Midpoint Peg- No Trade in a Locked Market) will be allowed for PAE orders (*CrossTradeFlag* = 2) (BYX Only) (effective 3/29/23). Added *ExDestination* = T*(pending approval).*
March 13, 2023	*Version 2.4.24* Added new "Sponsored Port" and "Sponsoree Firm ID" Port Attributes.
June 22, 2023	*Version 2.4.25* Added ContraBroker='ICRS' indicating routed to intelligent cross (*pending approval).*
July 14, 2023	*Version 2.4.26* Updated "Allowed Clearing MPID(s)" Port Attribute to indicate only one Clearing MPID is allowed for trading on a port if "Sponsored Port" attribute is enabled.
July 28, 2023	*Version 2.4.27* Clarified that *Price* is optional on `Modify Order` requests for market orders.
August 22, 2023	*Version 2.4.28* *TransactionTime* in **`Mass Cancel Acknowledgement`** messages will indicate the time the event occurred in the Cboe Matching Engine (effective 08/31/23).
September 13, 2023	*Version 2.4.29* Added new Disallow Market Orders port attribute (effective 10/13/23).
September 15, 2023	*Version 2.4.30* Updated *PreventMatch* = X indicating prevent match at the affiliate (Exchange Member) or Sponsored Participant level. When "Default MTP Value" Port Attribute is set to 'X', C Firm's or Sponsored Participant's match trade prevention will be used by default.
September 22, 2023	*Version 2.4.31* Added new "MPID Filter for Purge Ports" Port Attribute (effective 10/06/23). When *MassCancelInst* = F, if *ClearingFirm* is provided but is blank (NULL), the `Mass Cancel` or `Purge Orders` will be treated like 'A'.
October 30, 2023	*Version 2.4.32* Updated the identical Purge message definition to include *MatchingUnit* (effective 11/10/23).
November 17, 2023	*Version 2.4.33* Added new value of '3=Midpoint Peg - Periodic Auction Only' to Default CrossTradeFlag port attribute (effective 12/15/23).
December 1, 2023	*Version 2.4.34* Added new Architecture and Message in Flight section (effective 01/19/24 on EDGA, and 02/09/24 on BYX, BZX, and EDGX).
February 2, 2024	*Version 2.4.35* Updated section 1.5 to include latency expectations as well as Members/TPH's responsibility to monitor the status of the messages they send to the exchange.
April 23, 2024	*Version 2.4.36* Noted a maximum of 1,295 **`Modify Order`** requests may be made to a single order each trading day. Clarified that for *MaxFloor* the displayed quantity is decremented below one round lot, it is is reloaded up to *MaxFloor* from reserve.

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DATE	DESCRIPTION
July 31, 2024	*Version 2.4.37* Added new Section 1.2 - Certification Requirement.
October 1, 2024	*Version 2.4.38* Effective 11/01/24, *RoutStrategy* = ROUC, DIRC, RMPT, RMPL, ROBB, ROCO, and TRIM will be removed or updated for EDGA, and *RoutingInst* = P will be supported for all applicable order types (EDGA Only).
November 13, 2024	*Version 2.4.39* Added *CmcSessions* to Cboe Market Close section, to new Order byte 10, bit 4, new Order Acknowledgement byte 19, bit 8, to Order Restated byte 19, bit 8, and to List of Optional Fields (Effective 01/31/25). Added *CmcMatchQty* to Cboe Market Close section, to Order Restated byte 19, bit 8 and to List of Option Fields (Effective 01/31/25). Updated *LeavesQty* in CMC section to indicate that *LeavesQty* is the quantity of unexecuted shares. When Default CrossTradeFlag = '2' IOC, FOK, and displayed orders are not converted to a Periodic Auction Eligible order and are sent to the book as-is.
November 27, 2024	*Version 2.4.40* Effective 12/13/24, when the Default CrossTradeFlag port attribute set to 2, *DisplayIndicator* (9479) will be ignored if *ExecInst* (18) = m or M. Additionally, orders with RPI instructions will set this port attribute to 0(BYX only).
January 15, 2025	*Version 2.4.41* Updated with Cboe Titanium branding.
January 27, 2025	*Version 2.4.42* Updated *CmcSessions* description in the Cboe Market Close section and List of Option Fields section to clarify that S = 3:54 p.m. (NASDAQ-listed only) (effective 01/31/25).
March 31, 2025	*Version 2.4.43* Added updated BZX times in trading session on page 8 and added BZX to Hold Early to 7am Port Attribute (effective 05/01/25).
May 30, 2025	*Version 2.4.44* Added *LocateBroker* to Modify Order Input Bitfields on page 64. Added new "Enforce Rate Limit via Pause" Port Attribute on page 90 (effective 06/27/25).
June 13, 2025	*Version 2.4.45* Updated *ContraBroker* to indicate that CHX =Routed to NYSE Texas Updated *ExDestination* to indicate that M= NYSE Texas.
July 15, 2025	*Version 2.4.46* Effective 08/15/25, Match Trade Prevention will be supported for Periodic Auctions (BYX only)
July 22, 2025	*Version 2.4.47* Added G=24Xto *ExDestination* in List of Optional Fields on page 77. Added TFXE=Routed to 24X to *ContraBroker* in Order Execution Message Fields on page 54.
August 19, 2025	*Version 2.4.48* Updated *ExDestination* in List of Optional Fields on page 77 to indicate that G= 24X National Exchange Updated *ContraBroker* in Order Execution Message Fields on page 54 to indicate that TFXE= Routed to 24X National Exchange

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