PILLAR ORDER IMBALANCES FEED CLIENT SPECIFICATION

NYSE ORDER IMBALANCES FEED

NYSE AMERICAN ORDER IMBALANCES FEED

NYSE ARCA ORDER IMBALANCES FEED

Version
2.2j

Date
February 22, 2024

PREFACE

VERSION	DATE	CHANGE DESCRIPTION
2.2g	June 30, 2022	Added clarification on 'Reference Price' in msgtype 105.
2.2h	November 30, 2022	Updated Section 1.1 for clarifications on publication timings.
2.2j	February 22, 2024	Updated Section 1.2 Control Message Types to account for new feed start time of 2:00am EST

REFERENCE MATERIAL

The following lists the associated documents, which either should be read in conjunction with this document or which provide other relevant information for the user:

- Common Client Specification
- ICE Global Network
- NYSE Symbology
- IP Addresses

CONTACT INFORMATION

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FURTHER INFORMATION

For additional information about the product, visit the Order Imbalances Feed Product Page.

For updated capacity figures, visit the capacity stats page .

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1 Pillar Order Imbalances Datafeed

This real-time low latency product provides imbalance data published during auctions of all traded securities on the NYSE Group equity exchanges: NYSE, NYSE American and NYSE Arca. This data is intended for clients who require a direct standalone feed with timestamps provided directly from the Exchange matching engines.

1.1   IMBALANCE PUBLICATION TIMES

Scheduled trading session times on normal and early-close days for all NYSE markets can be found here.

Trading halts and re-opens can occur anytime during any session. Trading halts can last from one session into the next.

Regularly scheduled auctions occur at the following times.

All times are US Eastern Time

DESCRIPTION	MARKET	SECURITIES	NORMAL AUCTION PERIOD
Early Opening Auction	Arca	All auction eligible securities.	3:30am - 4:00am ET
	American	All primary listed securities.	6:30am - 7:00am ET
Core Opening Auction	Arca American	All primary listed securities.	8:00am - 9:30am ET
	NYSE	All primary listed securities.	8:00am - until the security opens
Closing Auction	Arca	All auction eligible securities.	3:00pm - 4:00pm ET
	American	All primary listed securities.	3:00pm - 4:00pm ET
	NYSE	All primary listed securities.	3:50pm - until the security closes

During auction periods, Imbalance messages are published every second if changed from the previous publication.

On early closing days, the Closing auction runs from 12:00pm to 1:00pm for ARCA and American. For NYSE, the closing auction runs from 12:50 until the security closes.

1.2   CONTROL MESSAGE TYPES

For all markets, the initial publication of Symbol Index Mapping messages occurs shortly after feed start time at 2:00am ET.

MSGTYPE	DESCRIPTION
1	Sequence Number Reset
3	Symbol Index Mapping
10	Retransmission Request Message
11	Request Response Message
12	Heartbeat Response Message
13	Symbol Index Mapping Request Message
15	Refresh Request Message
31	Message Unavailable
32	Symbol Clear
34	Security Status Message
35	Refresh Header Message

1.3   REFRESH MESSAGE TYPES

The following refresh message types are supported on this datafeed:

MSGTYPE	DESCRIPTION
35	Refresh Header Message
3	Symbol Index Mapping
105	Imbalance Message
34	Security Status Message

2 Information on Auctions

2.1 NYSE AUCTIONS

The NYSE market conducts auctions for NYSE-listed (Tape A) symbols only.

As a part of the auction process, Imbalance messages are published every second if there is any change from the previous second.

During an NYSE auction, in calculating the imbalance at a price point on the book, NYSE Pillar considers the following to be an imbalance:

AUCTION TYPE	DESCRIPTION
Opening Auction (M) **and** **Re-Opening Auction (H)**	**Interest Included** ▪ All electronic interest eligible to trade in the opening auction ▪ DMM interest as needed to offset the imbalance **Order Cancellation** ▪ Orders can be cancelled at any time up to the conclusion of the auction **Reference Price Calculation** The Reference Price is ▪ The consolidated last sale* if no Mandatory Indication has been published ▪ The consolidated last sale* if it is within the indication range ▪ The indication low price if it is higher than the consolidated last sale* ▪ The indication high price it is lower than the consolidated last sale* * If there's no consolidated last sale price, the previous close price is used

Closing Auction (C)	**Interest Included**
	
	 ▪ For Paired Quantity, Unpaired Quantity, and Total Imbalance Quantity:
	    o MOC and LOC orders
	    o Imbalance offset orders
	    o Closing D orders (five minutes before the scheduled closing time)
	 ▪ For Continuous Book Clearing Price:
	    o All electronic interest eligible to trade in the closing auction
	    o DMM interest as needed to offset the imbalance
	 ▪ For Auction Interest Clearing Price:
	    o MOC and LOC orders
	    o Imbalance offset orders
	
	 Order Cancellation
	
	 ▪ Orders can be cancelled any time during the auction period, except for MOC, LOC and Imbalance offset orders, which can be cancelled only up to 10 minutes before the scheduled closing time.
	
	 Reference Price Calculation

AUCTION TYPE	DESCRIPTION
	The Reference Price is ■ The NYSE last sale if it is at or within the NYSE best quote ■ The NYSE best bid if the NYSE best bid is higher than the NYSE last sale ■ The NYSE best offer if the NYSE best offer is lower than the NYSE last sale
Regulatory Closing Auction (R)	**Interest Included** ■ MOC and LOC orders **Reference Price Calculation** ■ The Reference Price is the NYSE last sale* * If there's no NYSE last sale price, the NYSE previous close price is used
Extreme Imbalance Closing Auction (P)	**Interest Included** ■ All electronic interest eligible to trade in the closing auction **Reference Price Calculation** ■ The Reference Price is the NYSE last sale* * If there's no NYSE last sale price, the NYSE previous close price is used

2.2 NYSE ARCA AND NYSE AMERICAN AUCTIONS

Three single-price auctions are conducted during the day: the Early Opening Auction, the Core Opening Auction and the Closing Auction. As a part of the auction process, Imbalance messages are published every second if there is any change from the previous second.

The NYSE American market conducts auctions for NYSE American primary securities only.

The NYSE Arca market conducts auctions on all securities.

This description covers normal cases. For complete detail on exception cases, see Rule 7.35.

2.2.1 Indicative Match Price

The Indicative Match Price is the price that maximizes executable volume of auction-eligible shares, subject to Auction Collars.

- It includes the non-displayed quantity of Reserve Orders.
- If two or more prices maximize executable volume equally, in an effort to maintain continuity, the Indicative Match Price is whichever price is closest to the Reference Price.
- The final auction execution price is the Indicative Match Price at auction time.

During an auction, in calculating the imbalance at a price point on the book, NYSE Arca and American consider the following to be an imbalance:

- Market orders
- Any interest whose price is at or better than the book price point

2.2.2 Imbalance Calculation

AUCTION TYPE	DESCRIPTION
Early Opening Auction (O)	**Interest Included** 1. Limit Orders designated for the Early Trading Session. 2. During the last minute before the Early Opening Auction time, the non-displayed quantity of Reserve Orders designated for the Early Open Auction is included in the Matched Volume and Total Imbalance Volume. **Order Cancellation** Orders can be cancelled at any time up to the conclusion of the auction. **Reference Price** - The Reference Price is normally the listing market's previous Official Closing Price. See Rule 7.35 for full detail. Unexecuted session 1 eligible orders become eligible for the Early Session immediately upon conclusion of the Early Opening Auction.

AUCTION TYPE	DESCRIPTION
Core Opening Auction (M) and **Re-Opening Auction (H)**	**Interest Included** 1. Limit, Market, MOO, LOO and Primary Peg orders 2. During the last 5 seconds before the Core Opening Auction time, the non-displayed quantity of Reserve Orders is included in the Matched Volume and Total Imbalance Volume. **Order Cancellation** Orders can be cancelled any time during the auction, except for MOO and LOO orders which can be cancelled only up to 1 minute before the conclusion of the auction. **Reference Price** The Reference Price is normally the midpoint of the NBBO. See Rule 7.35 for full detail.
Closing Auction (C)	**Interest Included** 1. Limit, Market, MOC, and LOC Orders 2. During the last minute before the Closing Auction time for Arca (last ten minutes before the Closing Auction time for American), the non-displayed quantity of Reserve Orders is included in the Matched Volume and Total Imbalance Volume. **Reference Price** • The Reference Price is normally the consolidated last sale. If the price closest to the Reference Price would trade through the exchange book, the indicative match price will be the best price available where no trade through occurs. See Rule 7.35 for full detail.

3 Imbalance Message – Msg Type 105

Imbalance messages are published once a second during auctions to update price and volume information. If there is no change to the calculated fields, no message will be generated. See Information on Auctions for details on the auction process in the NYSE, Arca and American markets.

See the Common Client Specification for details on Symbol Index Mapping messages and Price field format.

FIELD NAME	OFFSET	SIZE	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 73 bytes
Msg Type	2	2	Binary	This field identifies the type of message. • 105 – Imbalance Message
SourceTime	4	4	Binary	The time when this msg was generated in the order book, in secs since 1/1/1970 00:00:00 UTC.
SourceTimeNS	8	4	Binary	The nanosecond offset from the Source Time
SymbolIndex	12	4	Binary	The ID of the symbol in the Symbol Index msg
SymbolSeqNum	16	4	Binary	The sequence number of this message in the set of all messages for this symbol
ReferencePrice	20	4	Binary	See Information on Auctions in Section 2 for details.
PairedQty	24	4	Binary	For non-NYSE markets, the number of shares paired off at the Indicative Match Price. For NYSE, the number of shares paired off at the Reference Price.
TotalImbalanceQty	28	4	Binary	For non-NYSE markets, the total imbalance quantity at the Indicative Match Price. For NYSE, the total imbalance quantity at the Reference Price. When Auction Type=P (NYSE only), this field will be set to the Extreme Order Imbalance quantity.
MarketImbalanceQty	32	4	Binary	The total market order imbalance quantity at the Indicative Match Price. For NYSE, unused and defaulted to 0.

FIELD NAME	OFFSET	SIZE	FORMAT	DESCRIPTION
AuctionTime	36	2	Binary	Projected Auction Time (hhmm)
AuctionType	38	1	ASCII	Valid values: • 'O' – Early Opening Auction (non-NYSE only) • 'M' – Core Opening Auction • 'H' – Reopening Auction (Halt resume) • 'C' – Closing Auction • 'P' – Extreme Closing Imbalance (NYSE only) • 'R' – Regulatory Closing Imbalance (NYSE only)
ImbalanceSide	39	1	ASCII	The side of the Total Imbalance Quantity: • 'B' – Buy side • 'S' – Sell side • ' ' - space – No imbalance
ContinuousBook ClearingPrice	40	4	Binary	For non-NYSE markets, the price at which all interest on the book can trade, including auction and imbalance offset interest, and disregarding auction collars. For NYSE, the price closest to the reference price where the imbalance is 0. For regulatory imbalances, or if a continuous book clearing price is not reached, this field is defaulted to 0.
AuctionInterest ClearingPrice	44	4	Binary	For non-NYSE markets, the price at which all eligible auction-only interest would trade, subject to auction collars. For the NYSE closing auction only, the price closest to the reference price where the imbalance of closing-only interest is 0. If a closing-only clearing price is not reached, this field is defaulted to 0.
SSRFilingPrice	48	4	Binary	For non-NYSE markets, not supported and defaulted to 0. For NYSE non-Regulatory imbalances, if a Sell Short Restriction is in effect, the price at which Sell Short interest will be filed.

FIELD NAME	OFFSET	SIZE	FORMAT	DESCRIPTION
IndicativeMatchPrice	52	4	Binary	For non-NYSE markets, the price at which the highest number of shares would trade, subject to auction collars. It includes the non-displayed quantity of Reserve Orders. See Information on Auctions for details. For NYSE, set to 0.
UpperCollar	56	4	Binary	If the IndicativeMatchPrice is not strictly between the UpperCollar and the LowerCollar, special auction rules apply. See Rule 7.35 for details For NYSE, set to 0
LowerCollar	60	4	Binary	If the IndicativeMatchPrice is not strictly between the UpperCollar and the LowerCollar, special auction rules apply. See Rule 7.35 for details. For NYSE, set to 0
AuctionStatus	64	1	Binary	Indicates whether the auction will run: • 0 - Will run as always for Open and Close • 1 - Will run, interest exists inside or at the collars or is fully paired off • 2 – Will not run because there is an imbalance through the collars • 3 – Will not run, will transition to the Closing Auction instead
FreezeStatus	65	1	Binary	Freeze status is the Imbalance Freeze status - MOC/LOC orders are accepted on the side opposite to the Reg imbalance. • 0 - Imbalance freeze not in effect • 1 - Imbalance freeze is in effect NYSE market has an imbalance freeze for the closing. Arca market has imbalance freeze for opening and re-opening.
NumExtensions	66	1	Binary	Number of times the halt period has been extended For NYSE, set to 0

FIELD NAME	OFFSET	SIZE	FORMAT	DESCRIPTION
Unpaired Qty	67	4	Binary	For NYSE only, during the Closing Auction, the number of unpaired shares priced at or better than the Reference Price. For non-NYSE markets, 0.
Unpaired Side	71	1	ASCII	For NYSE only, the side of the Unpaired Qty • 'B' - buy side • 'S' - sell side • ' ' - space - not applicable
Significant Imbalance	72	1	ASCII	For Auction Types = C or P in NYSE-listed symbols. Using historical closing data for each symbol, NYSE will set this indicator if the Continuous Book Clearing Price is more than a 'significant' range away from the Reference Price. • ' ' - space - not significant, or not applicable (default till a future implementation date) • 'Y' - the current Imbalance is significant

4   Product IDs

EXCHANGE	PRODUCT ID	DESCRIPTION
NYSE	8	NYSE Order Imbalances Feed
NYSE American	58	NYSE American Order Imbalance Feed
NYSE Arca	158	NYSE Arca Order Imbalance Feed