



Nasdaq Nordic – FIX Order Entry

INET Nordic

Nordic Equities Market



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Approved

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Document History

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1 Overview

This document contains the FIX 5.0 SP2 protocols used by Nasdaq Nordic and Nasdaq Baltic¹, the functionality of FIX, for entering orders.

This document does not consider messages transmitted via other entry points into Nasdaq Nordic.

Users should be familiar with the FIX 5.0 SP2 EP228 specifications, as this document supplements those specifications.

1.1 Related Documentation

Specification documents can be located at:

<https://www.nasdaq.com/solutions/european-trading-services>

It is assumed that the user of this manual is familiar with FIX 5.0 SP2 standard, which may be found at <http://www.fixtradingcommunity.org/>.

Session level considerations and messages are found in the Nasdaq Nordic FIXT 1.1 Transport Layer protocol specification.

¹ Nasdaq Copenhagen, Nasdaq Helsinki, Nasdaq Iceland, Nasdaq Riga, Nasdaq Stockholm, Nasdaq Tallinn and Nasdaq Vilnius are respectively brand names for Nasdaq Copenhagen A/S, Nasdaq Helsinki Ltd, Nasdaq Iceland hf., Nasdaq Riga AS, Nasdaq Stockholm AB, Nasdaq Tallinn AS and AB Nasdaq Vilnius. Nasdaq Nordic represents the common offering by Nasdaq Copenhagen, Nasdaq Helsinki, Nasdaq Iceland and Nasdaq Stockholm. Nasdaq Baltic represents the common offering by Nasdaq Tallinn, Nasdaq Riga and Nasdaq Vilnius.

2 Session Overview

Please refer to the **Nasdaq Nordic FIXT 1.1 Transport Layer** specification for Session level considerations and messages. Note that the BeginString [8] = “FIXT.1.1” is expected for this protocol.

2.1 Connectivity

You need to have a separate connection to send Nasdaq FIX order messages and Nasdaq FIX trade reporting messages.

FIX Order Entry messages are sent with:

- TargetCompID [56] = INORD
- TargetSubID [57]= S

Nasdaq outbound messages will relay SenderSubID [50] = S.

2.2 Cancel on Disconnect/Suspend on Disconnect

With INET Nordic, you can have your resting orders cancelled upon disconnect by contacting Nasdaq and we will configure your ports for this. Nasdaq does not support “suspend on disconnect” on an order-by-order basis.

If you have requested this configuration, we will cancel all resting orders that are open on the book, based on port configuration, in the event that your port is disconnected. In the event of a severe failure on the Host side COD will also be applied.

When COD occurs, Nasdaq will send unsolicited cancel accept confirmations to you when you log back on to the port. These messages will come with the client-generated ClOrdID value in tag 11. Tag 41 will also contain the original client order id entered by the customer for the order.

3 Order Entry Overview

3.1 Fields

3.1.1 Date and Time fields

All date and time fields for Nasdaq Nordic with the exception of tags 75 and 20108 are to be sent in UTC (Universal Timestamp Coordinated) physical format expressed as GMT.

Tag 75 and 20108 format is YYYYMMDD.

UTC Format is:

- YYYYMMDD-HH:MM:SS (whole seconds) format, colons, dash, and period required;

or

- YYYYMMDD-HH:MM:SS.ssssssss (subseconds down to nanoseconds) format, colons, dash, and period required. Although you may send subseconds, this is optional.

3.1.2 Price fields

All price fields will be returned with four places after the decimal.

3.1.3 Quantity Fields

Our FIX implementation varies from the FIX 5.0 standard in that we expect all quantity fields to be submitted with whole numbers. Decimals are not allowed and will reject.

3.1.4 A Note about Special Characters

Special characters (non-alphanumeric characters) should not be used in any fields (with the exception of the decimal point, in price fields). If special characters are used, Nasdaq reserves the right to replace these characters with a space. As a result, your outbound messages might contain values other than what you sent in. To avoid this occurrence, customers are advised to refrain from using any non-alphanumeric characters.

3.2 Symbologies

Users have the option of sending either the OrderBookID or the ISIN to identify the instrument they wish to trade. They cannot enter both, and any attempts to provide both will be rejected by the system.

If users wish to provide the ISIN, they should put the ISIN value into the SecurityID (48) field, 4 (ISIN) into the IDSource [22], use the Currency field (15) to identify the currency being traded in, and use the SubMkt (5815) field to identify the market segment being traded on. Set Symbol (55) = [N/A].

If users wish to provide the OrderBookID, they should put the OrderBookID into the Symbol field (55). They do not need to enter currency or submarket.

3.3 Order Functionality

3.3.1 Order Routing

Orders may be designated as eligible for routing or not eligible for routing.

If an order is not attributed as eligible for order routing (tag 76 = “BOOK”) it shall participate in the normal One-by-One matching. The order is matched starting at the most generous price level and attempts to execute each order in its priority sequence.

An order is flagged as being eligible for order routing by indicating the routing strategy via ExecBroker field, tag 76. Routing strategies are characterized by both the markets accessed and a routing type (directed, passive and reactive).

- A directed strategy bypasses Nasdaq’s book and routes directly to an away market.
- A passive strategy first attempt to execute against orders in the Nasdaq book at a price equal to or better than the relevant BBO, and then routes to other markets. If shares remain unexecuted after routing, they are posted on the Nasdaq book, and will be subject to no further routing.
- A reactive strategy behaves similarly to a passive strategy, save that it may reroute after posting if the relevant BBO locks/crosses the order.

The table below lists supported strategies.

| ExecBroker | Type | Markets | Comments |
|------------|----------|----------------------------------------------------------------------|----------|
| BOOK | [N/A] | Only Nasdaq | |
| SCAN | Passive | All Markets | |
| DCAN | Passive | All markets, including dark pools | |
| DMID | - | Nordic@Mid order routed to lit Nordic book at closing auction | |
| DIVE | Passive | Non-displayed midpoint pegged LIS orders to interact with Nordic@Mid | |
| NMID | Passive | Try to execute against Nordic@Mid, post remainder in lit book | |
| STGY | Reactive | All Markets | |
| DNGY | Reactive | All markets, including dark pools | |
| QTSS | Passive | Time spray strategy to all markets, including dark pools. | |
| QTSP | Passive | Time spray price to all markets, including dark pools. | |
| DLTS | Passive | Time spray dark-lit sweep to all markets | |

When adding support for utilizing Nasdaq’s routing services, please be advised that the above list should not be considered static; rather, strategies may be added or removed as the business environment evolves.

If tag 76 is not sent, the default is BOOK.

3.3.2 Execution Algorithms

Refer to section 7.

3.3.3 Reserve Orders

In a Reserve order, a certain portion of the total volume of an order is not displayed in the Order Book. The non-displayed volume will be displayed in the Order Book in the aggregate volumes during a call interaction.

To enter a reserve order:

| Tag | Field Name | Description |
|------|--------------|-------------------------------------------------------------------------------------------------------------|
| 9140 | DisplayInst | Y = Displayed |
| 38 | OrderQty | The total order quantity |
| 111 | MaxFloor | Displayed quantity, if the desire is to display only a portion of the order and not the full order quantity |
| 6227 | DisplayRange | Optional. The displayed quantity can be randomized by specifying a display range |

When a Reserve Order Displayed Quantity is updated, an Order Restatement Execution Report message is sent with:

| Tag | Field Name | Description |
|------|-----------------------|--------------------------------------------------------------|
| 150 | ExecType | D =Restated |
| 378 | ExecRestatementReason | 8 = Market option |
| 1138 | DisplayQty | The current displayed quantity on the restated reserve order |
| 198 | SecondaryOrderID | Relays the ITCH order reference number |

3.3.4 Hidden Orders

The following table describes how to send in a hidden order, not displayed on the book.

| Tag | Field Name | Description |
|-----|------------|-------------|
|-----|------------|-------------|

| | | |
|------|-------------|----------------------------|
| 9140 | DisplayInst | N = Non-Displayed (Hidden) |
|------|-------------|----------------------------|

3.3.5 Nordic@Mid Orders

The following table describes how to send in a Nordic@Mid order:

| Tag | Field Name | Description |
|------|---------------|---------------------------------------------------------------|
| 18 | ExecInst | M = Midpoint Peg. |
| 211 | PegDifference | Leave this field blank, no peg offset supported. |
| 40 | OrdType | P = Pegged |
| 9140 | DisplayInst | M = Nordic@Mid. |
| 44 | Price | Optional. Limit price act as a cap/floor for trade execution. |
| 110 | MinQ | Optional. Defines the smallest trade size that is acceptable. |

3.3.6 Auction On Demand (AOD) Book Orders

The following table describes how to send a AOD order:

| Tag | Field | Description |
|------|---------------|-----------------------------------------------------------------------------|
| 18 | ExecInst | M = Midpoint peg P = Market R = Primary N = No Peg (default) |
| 211 | PegDifference | Leave this field blank, no peg offset supported |
| 40 | OrdType | P = Pegged 1 = Market 2 = Limit |
| 9140 | DisplayInst | A = AOD |
| 44 | Price | Optional. Limit price act as a cap/floor for trade executions |
| 110 | MinQty | Optional. In the AOD book, interpreted as the minimum executable size (MES) |
| 59 | TimeInForce | 0 = DAY or; 3 = IOC or; |

| Tag | Field | Description |
|-----|-------|------------------------|
| | | 6 = GTT or; B = GFA |

3.3.7 Market Price Orders

During continuous trading, market price orders are sent as market pegged order with:

| Tag | Field | Description |
|-----|---------------|-------------------------|
| 40 | OrdType | 1 = Market |
| 18 | ExecInst | P = Market (Market Peg) |
| 211 | PegDifference | 0 |
| 59 | TimeInForce | 3 = IOC |

A market price order target to participate in an auction is sent in with Cross Type (pegging not allowed):

| Tag | Field | Description |
|------|----------------|--------------------------------------------------------|
| 40 | OrdType | 1 = Market |
| 9355 | CrossTradeFlag | O = Opening I = Intraday C = Closing H = Halt |
| 59 | TimeInForce | 3 = IOC |

A market priced order to trade regardless of which trading state the orderbook currently is in, is sent as described below. With this, the market order will be converted to participate either as a Market Pegged order during continuous trading or a Market Cross order during an auction:

| Tag | Field | Description |
|-----|---------|-------------|
| 40 | OrdType | 1 = Market |

| Tag | Field | Description |
|------|-------------|-------------|
| 59 | TimeInForce | 3 = IOC |
| 9140 | DisplayInst | Y = Display |

Note! FIX Tags ExecInst – [18] and CrossTradeFlag [9355] cannot be populated for the order to be converted.

3.3.8 Smart IOC Algo Orders

By applying the SmartIOC algo-strategy (SMRT) on a regular IOC order, the order will try multiple times to fill the order within 300 micro seconds, in case the order cannot be fully filled at the first try. A regular IOC order only tries one time.

The benefit of the SmartIOC strategy is to capture possible refills in the order book, and hence the SmartIOC is expected to increase the expected fill rate compared to sending a regular non-algo IOC order.

The following fields are required to send a SmartIOC order:

| Tag | Field | Description |
|-----|-------------|-------------|
| 59 | TimeInForce | 3 = IOC |
| 76 | ExecBroker | SMRT |

3.3.9 Pegged Orders in Lit Book

The following table describes how a pegged order is entered into the lit book:

| Tag | Field | Description |
|------|---------------|-----------------------------------------------|
| 40 | OrdType | P = Pegged |
| 18 | ExecInst | M = Midpoint peg P = Market R = Primary |
| 211 | PegDifference | Optional |
| 9140 | DisplayInst | Y = Display N = Non-Display (Hidden) |

| Tag | Field | Description |
|------|----------------|------------------------------------------------------------|
| 9355 | CrossTradeFlag | Cannot be used for pegged orders |
| 44 | Price | Optional. Limit price act as a cap/floor for pegged price. |
| 59 | TimeInForce | All except GTC and GFA |

3.3.10 Dark Lit Sweep

The Dark Lit SWEEP order tries to match at the midpoint of Nordic@Mid, before executing as IOC in the Lit book.

The following table describes how a dark lit sweep order is entered:

| Tag | Field | Description |
|-------|----------------|---------------------------------------------------------------|
| 40 | OrdType | 2 = Limit |
| 20109 | OrderCondition | Q = Dark-lit Sweep |
| 59 | TimeInForce | 3 = IOC |
| 9140 | DisplayInst | Y = Display |
| 44 | Price | Limit price act as a cap/floor for trade execution. |
| 110 | MinQty | Optional. Defines the smallest trade size that is acceptable. |

4 Application Messages

4.1 Inbound to Nasdaq

Note: An invalid FIX tag on an inbound message will result in no response.

4.1.1 New Order – Single

You use this message to send orders to Nasdaq Nordic. Orders can be submitted with special handling instructions and execution instructions.

Handling instructions refer to how Nasdaq Nordic should handle the order. The HandInst field is required and it should always be set to 1, which indicates automated execution order, private, no Broker intervention.

New Order messages received with a duplicate ClOrdID will be rejected, regardless if the PossResend flag is set. The New Order – Single Message is described in the following table:

| Tag | Field | Reqd | Comments |
|-----|-----------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | StandardHeader | Y | MsgType = D |
| 11 | ClOrdID | Y | Unique identifier of the order as assigned by institution. Must be 14 characters or less. ClOrdID must be unique per connector per day. GTC Carryover orders retain their ClOrdID. Therefore, keep in mind when entering orders that you will not be able to enter an order with the same ClOrdID as a pre-existing GTC Carryover order. |
| 15 | Currency | N | Conditionally required if you are sending ISIN (SecurityID [48]) instead of OrderBookID (Symbol [55]). |
| 18 | ExecInst | N | Valid values: M = Midpoint Peg N = No Peg (default) P = Market Peg R = Primary Peg |
| 21 | HandInst | Y | This is required by FIX. Valid values: 1 = Automated execution order, private, no Broker intervention |
| 22 | IDSource | N | Identifies class of alternative SecurityID. Must be provided when SecurityID [48] is specified. Valid values: 4 = ISIN |

| Tag | Field | Reqd | Comments |
|-----|--------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38 | OrderQty | Y | This value represents the total Order Quantity. |
| 40 | OrdType | Y | Valid values: 1 = Market 2 = Limit P = Pegged |
| 44 | Price | N | Price field is required for Limit Orders. |
| 48 | SecurityID | N | ISIN code |
| 54 | Side | Y | Side of order. Valid values: 1 = Buy 2 = Sell |
| 55 | Symbol | Y | OrderBookID or [N/A]. |
| 59 | TimeInForce | N | Orders with OrdType [40] = 1 (Market) must have TIF = 3. Valid values: 0 = Day (default) 1 = GTC (Good Until Cancelled) 3 = IOC (Immediate or cancel)/FAK (Fill and Kill). Partial executions are allowed. 4 = FOK (Fill or Kill) Partial executions are not allowed unless they add up to a full execution. 6 = GTT (time is specified in tag 126 ExpireTime) B = GFA (Good for Auction). Valid for Auction on Demand. |
| 60 | TransactTime | Y | The time that you released this request. |

| Tag | Field | Reqd | Comments |
|-----|------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 76 | ExecBroker | N | <p>Routing Strategy. See section Order routing for more details.</p> <p>Valid values:</p> <ul style="list-style-type: none"> BOOK = order is not eligible for routing. (default) CLOS = Algo strategy, Close DCAN = all markets plus dark pools DIVE = route to dark pools only DMID = Nordic@Mid routed to lit book at close auction DNGY = reactive version of DCAN IMSH = Algo strategy, Implementation Shortfall NMID = Try Nordic@Mid then post in lit book PNPR = Algo strategy, Performance Neutral Pair PVOL = Algo strategy, Percentage of Volume SCAN = route to all accessible markets, then post to the Nordic book STGY = reactive version of SCAN SUPR = Algo strategy, Setup Pair TWAP = Algo strategy, Time Weighted Average Price VWAP = Algo strategy, Volume Weighted Average Price QTSS = Time spray strategy to all markets, including dark pools SMRT = Algo strategy, Smart IOC QTSP = Time spray price to all markets, including dark pools. DLTS = Time spray dark-lit sweep to all markets |
| 110 | MinQty | N | <p>MinQty is currently supported for orders with a TimeInForce [59] = 3, 4 and B or for hidden orders with TimeIn Force [59] = 0, 1, or 6. Minimum Quantity orders may be entered during the auctions; however, the minimum quantity feature will only be enforced during the continuous market and in the Auction On Demand (AOD) book. MinQty must be a round lot.</p> |
| 111 | MaxFloor | N | <p>Displayed quantity, if the desire is to display only a portion of the order and not the full order quantity.</p> |

| Tag | Field | Reqd | Comments |
|-----|-------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 126 | ExpireTime | N | Required for GTT (GoodTillTime) orders, this is the time the order should be canceled at (current day). Format is UTC. The date portion must specify the current date. |
| 211 | PegDifference | N | Integer representing the number of tick increments. User has two options on entry – If you enter “+” followed by the Peg difference, the result will be that the peg difference is a positive peg difference. If you enter “-” followed by the Peg difference, the result will be that the peg difference is a negative peg difference. If you do not provide the “+” or “-” sign, the system will enter your peg difference as a positive peg difference. For example: Entering “211=+1” will result in a peg difference of one positive tick increment. |
| 439 | ClearingFirm | N | User supplied Clearing Firm. Pass-through field. (Note that the field is not forwarded to the CCP). Maximum 4 char. |
| 440 | ClearingAccount | N | Supplemental accounting information that is forwarded to the CCP. Field will only be used by the CCP if there is a bilateral agreement in place. Maximum 12 char. |
| 528 | OrderCapacity | N | (See [529] for additional designations.) Valid values: A = Agent (default) (maps to AOTC) P = Principal (maps to DEAL) R = Riskless (maps to MTCH) |
| 529 | OrderRestrictions | N | The following designations may be used in conjunction with [528] if applicable. Valid values: 5 = Acting as Market Maker or Specialist in the security (528=P) B = Issuer Holding (528=A or P) C = Issue Price Stabilization (528=A or P) |

| Tag | Field | Reqd | Comments |
|------|---------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1816 | ClearingAccountType | N | Designates the account type to be used for the order when submitted to clearing. Valid values: 1 = Customer (Client) - default 2 = Firm (House) |
| 5815 | SubMktID | N | Submarket ID/Market Segment. Numeric code for the desired submarket or Market Segment. Conditionally required if you are sending ISIN (SecurityID [48]) instead of OrderBookID (Symbol [55]). |
| 6209 | ClRefID | N | User-supplied client reference to be returned unchanged in the private order/trade messages. Maximum 15 characters. |
| 6227 | DisplayRange | N | Only applicable for reserve orders (MaxFloor [111] specified). Values > 1. Amount used to determine the random reserve range. If 200 is specified in this field, and the MaxFloor is set to 1000, the displayed amount will randomly shift between 800 and 1200. |
| 9140 | DisplayInst | N | May be used to specify different display options. The default for this tag is dependent upon the value sent in [111]. If 111=0, then the default for 9140 = N. Otherwise, the default is Y. Valid values: M = Nordic@Mid dark book N = Non-Display Y = Display (Anonymous as per market rules) A = Auction On Demand book |
| 9355 | CrossTradeFlag | N | This specifies the cross in which the order goes live. Valid values: C = Closing Cross H = Halt Cross I = Scheduled Intraday Cross O = Opening Cross |

| Tag | Field | Reqd | Comments |
|-------|--------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9861 | BrSeqNbr | N | User-supplied order reference to be returned unchanged in the private order/trade messages. Maximum 10 characters. |
| 168 | EffectiveTime | N | Honored for execution algo orders only. The time at which the strategy should kick off. Format is UTC. The date portion will be ignored but should always contain the current date. Valid values: 9:00-17:30 = Default = a.s.a.p. |
| 20001 | Target%Volume | N | Conditionally required for the POV strategy (client must enter this field or Max % of Volume). Defines the level of market impact by maintaining a certain level of market participation. Valid values: 0.01-99.99 = Default = Null |
| 849 | Maximum%Volume | N | Conditionally required for the POV strategy (client must enter this field or Target % of Volume) Complements Target % of Volume were market participation moves between the max and min values. Valid values: 0.01-99.99 = Default = Null |
| 20003 | Minimum%Volume | N | Honored for execution algo orders only. Alternative to Target % of Volume were market participation moves between the max and min values. Valid values: 0.01-99.99 = Default = Null |
| 20002 | Aggression | N | Honored for execution algo orders only. Allowed values limited to 1-3 for the PNPR strategy. Valid values: 1-5 = Default: 1 |
| 20030 | MinChildOrderValue | N | Honored for execution algo orders only. Attempts to reduce the number of trades by defining a minimum child order value. |

| Tag | Field | Reqd | Comments |
|-------|----------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20020 | SpreadLimit | N | Conditionally required for the PNPAIR strategy. Basis point spread over or under the cash neutral price (or better) at which to trade. Can be negative. |
| 20021 | RefPriceBidLeg | N | Conditionally required for the PNPAIR strategy. Defines the base relationship between the leg symbols. |
| 20022 | RefPriceAskLeg | N | Conditionally required for the PNPAIR strategy. Defines the base relationship between the leg symbols. |
| 20023 | LagBidLeg | N | Honored for execution algo orders only. Defines how much the buy leg can execute behind the sell leg. Expressed as quantity. Valid values: > 0 |
| 20024 | LagAskLeg | N | Honored for execution algo orders only. Defines how much the sell leg can execute behind the buy leg. Expressed as quantity. Valid values: > 0 |
| 20025 | LeadBidLeg | N | Honored for execution algo orders only. Defines how much the buy leg can execute ahead of the sell leg. Expressed as quantity. Valid values: > 0 |
| 20026 | LeadAskLeg | N | Honored for execution algo orders only. Defines how much the sell leg can execute ahead of the buy leg. Expressed as quantity. Valid values: > 0 |
| 20027 | StopLossBidLeg | N | Honored for execution algo orders only. To protect against the market prices moving away when the leg lags. If current market prices are above this limit, take the loss and execute the remainder. |

| Tag | Field | Reqd | Comments |
|-------|----------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | Valid values: > 0 |
| 20028 | StopLossAskLeg | N | Honored for execution algo orders only. To protect against the market prices moving away when the leg lags. If current market prices is below this limit, take the loss and execute the remainder. Valid values: > 0 |
| 20029 | BasketID | N | Conditionally required for the PNPAIR (PNPR) and SETUP PAIR (SUPR) strategies. Unique per order pair by client and day. Identifies the pair of orders (the same value for both legs). |
| 20031 | Ratio | N | Honored for execution algo orders only. Conditionally required for the SUPR strategy. Ratio aspect of the deal involved. Valid values: > 0 |
| 20006 | IWouldPrice | N | Honored for execution algo orders only. Defines a price at which the trader wants to deviate from the strategy and finish the trade. When the market reaches this price, the strategy will take out all available liquidity at this price or better. |
| 20007 | IWouldType | N | Honored for execution algo orders only. Required if IWouldPrice [20006] is specified. Valid values: 1 = Number of units 2 = Percentage (%) |
| 20005 | IWouldQty | N | Honored for execution algo orders only. Required if IWouldPrice [20006] is specified. Absolute quantity or percentage that limits the quantity to sweep. Valid values: 1 - 1 000 000 |

| Tag | Field | Reqd | Comments |
|-------|-------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20012 | CleanUpType | N | <p>Honored for execution algo orders only. Cleanup leaves quantity style.</p> <p>Valid values: 1 = Market (at market). Default 2 = Contra Size (if leaves quantity <= contra size) 3 = Average Price (if market price is at or better than average price)</p> |
| 20013 | CleanUpQty | N | <p>Honored for execution algo orders only. Leaves quantity to activate cleanup.</p> <p>Valid values: > 0 = Default = 0</p> |
| 20004 | BlockFilter | N | <p>Honored for execution algo orders only. Threshold quantity for filtering out trades. Used to cause the algorithm to filter out any trade that is larger than this threshold. POV strategies could potentially trade inefficiently in attempting to chase the volume in a spike.</p> <p>Valid values: > 0 - 1 000 000 = Default = Null</p> |
| 20010 | OnOpenType | N | <p>Honored for execution algo orders only. If not specified, the algo does not participate in the opening.</p> <p>Valid values: -1 = Algo to decide 1 = Number of units 2 = Percentage (%)</p> |
| 20008 | OnOpenQty | N | <p>Honored for execution algo orders only. Required if OnOpenType [20010] = 1 or 2. Defines the quantity (units or %) that should be executed in the opening.</p> <p>Valid values: 1 - 1 000 000</p> |

| Tag | Field | Reqd | Comments |
|-------|------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20011 | OnCloseType | N | <p>Honored for execution algo orders only. If not specified, the algo does not participate in the close.</p> <p>Valid values: -1 = Algo to decide 1 = Number of units 2 = Percentage (%)</p> |
| 20009 | OnCloseQty | N | <p>Honored for execution algo orders only. Required if OnCloseType [20011] = 1 or 2. Defines the quantity (units or %) that should be executed in the closing.</p> <p>Valid values: 1 - 1 000 000</p> |
| 20014 | DynamicBenchmark | N | <p>Honored for execution algo orders only. Benchmark for dynamic behavior. Defines price sensitivity to an index. Based on the In Money and Out Money parameters, the strategy can accommodate the client's belief that prices will experience trending or mean-reverting behavior. The strategy will dynamically react to those situations by adjusting its trading rate.</p> <p>Valid values: 1 = Arrival. The mid-quote price for the symbol when the order arrives 2 = Price. As per the DynamicPrice [20015]</p> |
| 20015 | DynamicPrice | N | <p>Honored for execution algo orders only. Strike price for dynamic benchmark calculations. Required if DynamicBenchmark [20014]= 2 - Price</p> |
| 20016 | InMoneyStyle | N | <p>Honored for execution algo orders only. Dynamic behavior in the money</p> <p>Valid values: 1 = Off. Default 2 = Passive 3 = Passive High 4 = Aggressive 5 = Aggressive High</p> |

| Tag | Field | Reqd | Comments |
|--------------------------------------------------------------------------------------------------------|--------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20018 | OutMoneyStyle | N | Honored for execution algo orders only. Dynamic behavior out of the money Valid values: 1 = Off. Default 2 = Passive 3 = Passive High 4 = Aggressive 5 = Aggressive High |
| 20101 | STPLevel | N | Defines that the order is eligible for self-trade prevention and the scope of prevention. Valid values: 1 = MPID + Trader 2 = MPID 3 = Specified Trader Group (requires the STPTraderGroup [20103] to be specified) |
| 20102 | STPAction | N | The parameter is ignored if the STP Level is not specified. Valid values: 1 = Cancel passive order (default) 2 = Cancel aggressive order 3 = Cancel both orders 4 = Create a transfer transaction |
| 20103 | STPTraderGroup | N | Defines the trader group. Client defined values. Conditionally required for STP Level = 3, otherwise ignored. |
| 2593 | NoOrderAttributes | N | Indicates the number of instances of the repeating group OrderAttributeGrp to follow. Defaults to zero. |
| Repeating Group OrderAttributeGrp must occur the number of times specified in NoOrderAttributes (2593) | | | |
| 2594 | OrderAttributeType | Y | Required if NoOrderAttributes [2593] >0 2 = Liquidity provision activity. This flag is used to indicate whether the order is related to any sort of liquidity provision activity, as defined under MiFID II. Flag is required for the order to be considered to |

| Tag | Field | Reqd | Comments |
|-------------------------------------------------------------------------------------------------------|---------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | <p>count towards meeting any obligation pursuant to the Nasdaq Liquidity Provider.</p> <p>4 = Algorithmic order. Indicates that the order was placed as a result of an investment firm engaging in algorithmic trading.</p> <p>Corresponds to MMT Level 3.9 – Transaction Type: Algorithmic Indicator</p> |
| 2595 | OrderAttributeValue | Y | <p>Required if NoOrderAttributes [2593] >0</p> <p>Y = Yes</p> |
| 453 | NoPartyIDs | Y | <p>Indicates the number of instances of the repeating group NewOrderPtyRptGrp to follow</p> |
| <p>Repeating Group NewOrderPtyRptGrp must occur the number of times specified in NoPartyIDs (453)</p> | | | |
| 448 | PartyID | Y | <p>The short code representing the client or decision maker represented by this block. Unsigned numerical only. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. For clients, the following values are reserved for applicable use:</p> <p>Applicable to PartyRole value 3:</p> <p>0 = NONE (No Client for this order) 1 = AGGR (An aggregation of multiple client orders) 2 = PNAL (Clients are pending allocation)</p> <p>Applicable to PartyRole value 12:</p> <p>3 = NORE (Time and venue of the order instructed by the client of the Participant or by another person from outside the Investment Firm.)</p> |
| 447 | PartyIDSource | Y | <p>Must always be P (Short code identifier)</p> |

| Tag | Field | Reqd | Comments |
|-------|------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 452 | PartyRole | Y | Specifies the role of the party to the trade. At this time, only the following values are valid: 3 = Client ID 12 = Executing Trader (the Executing Decision Maker) 122 = Investor ID (the Investment Decision Maker) |
| 2376 | PartyRoleQualifier | Y | Provides further qualification of the PartyRole value. Valid values are: 0 = NONE (Only valid for reserved short codes) 22 = Algorithm [applicable to PartyRole values 12 or 122] 23 = Firm or legal entity (LEI) (applicable to PartyRole value 3) 24 = Natural person (applicable to PartyRole values 3, 12 and 122) |
| 1724 | OrderOrigination | N | Used to track order origination. Will use configured default if not provided. Valid values: 1 = Order received from a customer 2 = Order received from within the firm 3 = Order received from another broker-dealer 4 = Order received from a customer or originated with the firm 5 = Order received from a direct access or sponsored access customer |
| 20301 | TradingAtClosingPrice | N | “Y” = Participate in Trading at Closing Price “N” = Do not participate in Trading at Closing Price If not included, pre-defined configuration will be used. |
| 20109 | OrderCondition | N | Condition that in some way change the behavior of the order. “Q” = Dark-lit Sweep |
| 582 | CustOrderCapacity | N | “5” = Order sent in by Retail customer, defined as order originating from clients who are not considered to be “professional clients” according to MiFID or equivalent definition. |
| | StandardTrailer | Y | |

4.1.2 Order Cancel Request

The Order Cancel Request Message requests the cancellation of all of the remaining quantity of an existing order. The request will only be accepted if the order can successfully be pulled back from the exchange floor without executing.

Note that the Order Cancel/Replace Request should be used to partially cancel (reduce) an order.

A cancel request is assigned a ClOrdID and is treated as a separate entity. If rejected, the ClOrdID of the cancel request will be sent in the Cancel Reject message, as well as the ClOrdID of the actual order in the OrigClOrdID field. The ClOrdID assigned to the cancel request must be unique amongst the ClOrdID assigned to regular orders and replacement orders.

The format of the cancel request message is shown in the following table:

| Tag | Field | Reqd | Comments |
|-----|-----------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | StandardHeader | Y | MsgType = F |
| 11 | ClOrdID | Y | Unique ID of cancel request as assigned by the institution. Must be 14 characters or less. |
| 15 | Currency | N | Conditionally required if you are sending ISIN (SecurityID [48]) instead of OrderBookID (Symbol [55]). |
| 22 | IDSource | N | Identifies class of alternative SecurityID. Must be provided when SecurityID [48] is specified. Valid values: 4 = ISIN |
| 37 | OrderID | N | Unique identifier of most recent order (from order acknowledgement). [37] is required if you are cancelling an order from one FIX connector and the order was not originally entered on that connector (cancel over any). |
| 41 | OrigClOrdID | Y | ClOrdID of the previous order (NOT the initial order of the day) when canceling or replacing an order. |
| 48 | SecurityID | N | ISIN code |
| 54 | Side | Y | Side of order Valid values: 1 = Buy 2 = Sell |
| 55 | Symbol | Y | OrderBookID or [N/A]. |

| Tag | Field | Reqd | Comments |
|------|------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 60 | TransactTime | Y | The time that you released this request. |
| 5815 | SubMktID | N | Submarket ID/Market Segment. Numeric code for the desired submarket or Market Segment. Conditionally required if you are sending ISIN (SecurityID [48]) instead of OrderBookID (Symbol [55]). |
| | StandardTrailer | Y | |

4.1.3 Order Cancel/Replace Request (a.k.a. Order Modification Request)

The Order Modification Request is used to change the parameters of an existing order.

Do not use this message to cancel the remaining quantity of an outstanding order, use the Cancel Request message for this purpose.

Note that while it is necessary for the ClOrdID to change and be unique, the OrderID field does not necessarily have to change as a result of the Order Modification request.

Only Price, OrderQty, MinQty, MaxFloor, DisplayRange, ClRefId, ExpireTime, ClearingFirm, ClearingAccount, ClearingAccountType, BrSeqNbr, TimeInForce, CrossTradeFlag and applicable algo-parameters (refer to section 7.3) can be changed via the cancel/replace request message. If these fields were populated on the new order single, then you must submit all of these fields on the cancel/replace request so that the host knows whether your intention is to change them or not. All other fields should be retransmitted as sent in the original order.

Time priority is retained only if the sole modification to the order is a decrease in size.

The Order Modification Request Message is described in the following table:

| Tag | Field | Reqd | Comments |
|-----|-----------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | StandardHeader | Y | MsgType = G |
| 11 | ClOrdID | Y | Unique identifier of replacement order as assigned by institution. Note that this identifier will be used in ClOrdID field of the Cancel Reject message if the replacement request is rejected. |
| 15 | Currency | N | Conditionally required if you are sending ISIN (SecurityID [48]) instead of OrderBookID (Symbol [55]). |
| 21 | HandInst | Y | This is required by FIX. Valid values: 1 = Automated execution order, private, no Broker intervention |

| Tag | Field | Reqd | Comments |
|-----|--------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | IDSource | N | Identifies class of alternative SecurityID. Must be provided when SecurityID [48] is specified. Valid values: 4 = ISIN |
| 37 | OrderID | N | Unique identifier of most recent order (from order acknowledgement). [37] is required if you are replacing an order from one FIX connector and the order was not originally entered on that connector. Will result in a cancelation of the order. (cancel over any). |
| 38 | OrderQty | Y | Required. May be updated with the Cancel/Replace request. |
| 40 | OrdType | Y | From the original order, may not be modified. Valid values: 1 = Market 2 = Limit P = Pegged |
| 41 | OrigCLOrdID | Y | CLOrdID of the previous order (NOT the initial order of the day) when canceling or replacing an order. |
| 44 | Price | N | Price is required for Limit orders. This field may be modified on cancel/replace. |
| 48 | SecurityID | N | ISIN code, this field may not be modified on a cancel/replace. |
| 54 | Side | Y | Side of order. May not be modified on cancel/replace. Valid values: 1 = Buy 2 = Sell |
| 55 | Symbol | Y | OrderBookID or [N/A]. May not be modified on a cancel/replace. |
| 59 | TimeInForce | N | The time in force of the order. May be modified in cancel/replace. |
| 60 | TransactTime | Y | The time that you released this request. |

| Tag | Field | Reqd | Comments |
|-------|---------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 110 | MinQty | N | This field may be modified on cancel/replace, only on AOD orders. |
| 126 | ExpireTime | N | ExpireTime. May be modified on a cancel/replace unless the order is for an algo strategy. |
| 439 | ClearingFirm | N | User supplied Clearing Firm. Pass-through field. (Note that the field is not forwarded to the CCP). |
| 440 | ClearingAccount | N | Supplemental accounting information forwarded to clearing house/firm. May be modified on a cancel/replace. |
| 1816 | ClearingAccountType | N | Designates the account type to be used for the order when submitted to clearing. Valid values: 1 = Customer (Client) - default 2 = Firm (House) |
| 5815 | SubMktID | N | Submarket ID/Market Segment. Numeric code for the desired submarket or Market Segment. Conditionally required if you are sending ISIN (SecurityID [48]) instead of OrderBookID (Symbol [55]). |
| 9355 | CrossTradeFlag | N | As per the order. May be modified on a cancel/replace. |
| 9861 | BrSeqNbr | N | User-supplied order reference. |
| 6209 | ClRefID | N | User-supplied client reference. |
| 6227 | DisplayRange | N | |
| 168 | EffectiveTime | N | |
| 20001 | Target%Volume | N | |
| 849 | Maximum%Volume | N | |
| 20003 | Minimum%Volume | N | |
| 20002 | Aggression | N | |
| 20030 | MinChildOrderValue | N | |
| 20020 | SpreadLimit | N | |
| 20021 | RefPriceBidLeg | N | |
| 20022 | RefPriceAskLeg | N | |

| Tag | Field | Reqd | Comments |
|-------|------------------------|------|-----------------------------------------------|
| 20023 | LagBidLeg | N | |
| 20024 | LagAskLeg | N | |
| 20025 | LeadBidLeg | N | |
| 20026 | LeadAskLeg | N | |
| 20027 | StopLossBidLeg | N | |
| 20028 | StopLossAskLeg | N | |
| 20029 | BasketID | N | From the original order, may not be modified. |
| 20031 | Ratio | N | |
| 20006 | IWouldPrice | N | |
| 20007 | IWouldType | N | |
| 20005 | IWouldQty | N | |
| 20012 | CleanUpType | N | |
| 20013 | CleanUpQty | N | |
| 20004 | BlockFilter | N | |
| 20010 | OnOpenType | N | |
| 20008 | OnOpenQty | N | |
| 20011 | OnCloseType | N | |
| 20009 | OnCloseQty | N | |
| 20014 | DynamicBenchmark | N | |
| 20015 | DynamicPrice | N | |
| 20016 | InMoneyStyle | N | |
| 20018 | OutMoneyStyle | N | |
| | StandardTrailer | Y | |

4.2 Outbound from Nasdaq

4.2.1 Execution Report

You will receive this message:

- When Nasdaq FIX receives a New Order Single, and its destination system has accepted that order.
- When your order has been executed or if an execution is cancelled.
- By default, we will send Execution Restatements to every customer for GTC Carryover orders (see “Note” below). All other Execution Restatements will be suppressed by default. Customers who wish to see Execution Restatements other than for GTC Carryovers must specifically request them by contacting Nasdaq.

Some orders will have its OrderID displayed on ITCH but for other orders that is not the case, reserve, peg ,and routed are prime examples of orders where the OrderID will not be used on ITCH. For these orders we send Execution Restatements to relay which IDs on ITCH that is connected to this order. This reference number is not sent on the order acknowledgement but will be in Tag 198, SecondaryOrderID on Execution Restatements. Algo orders will also get restatements when the order is accepted by the algo provider but due to the way algos work there will not be a SecondaryOrderID for algo orders.

Note:

Execution restatement messages are sent out whenever an order is refreshed on the host. This includes:

- When an order is entered and is given an ITCH order reference number.
- When a displayed pegged order is re-pegged to a new price (not hidden orders).
- Iceberg orders (with Max floor) – if the visible quantity is refreshed. The current displayed quantity will be available in FIX Tag [1138] - DisplayQty.
- When an algo order is accepted by the algo provider.
- When a routed order has done its routing and has posted the order on the market.

GTC carryover orders- GTC orders are given new OrderIDs (tag 37) and new ITCH reference numbers (tag 198) each day. We will send out an execution restatement message each morning for each GTC carryover order.

- In response to a Cancel Request. The purpose of this message is to let the user know that the Cancel Request was received by the FIX engine and passed along to the back-end host. This message is followed by either an Accepted Cancel or a Rejected Cancel after the request has been acted upon. Although there is no guarantee of sequencing, the intent is to return the Pending Cancel before the Cancel Acknowledgement. It is, therefore, incumbent upon you to have cancel processing logic that anticipates this possibility.
- In response to a Cancel Request, unless that request is rejected. The accepted cancel conveys that the remaining quantity or a portion thereof has been cancelled. Nasdaq presumes that a cancel request is for all remaining shares. Nasdaq may cancel part of the remaining quantity. This message is usually preceded by a Pending Cancel, although sequencing is not guaranteed.
- On unsolicited cancels for expired orders.
- In response to a Cancel/Replace Request, unless that request is rejected.
- In the case an order routed out is rejected. Nasdaq will pass those rejects back to the client. A reject implies that the order is terminated.
- In response to cancelling an order from one FIX connector and the order was not originally entered on that connector the Execution Report will only contain order identifying tags.

| Tag | Field | Reqd | Comments |
|-----|-----------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | StandardHeader | Y | MsgType = 8 |
| 6 | AvgPx | Y | Used for ExecType [150]= F (Trade). "0.0" is sent in all other cases. |
| 11 | ClOrdID | Y | As per the order |
| 14 | CumQty | Y | Currently executed shares for chain of orders. Zero for ExecType [150] = 8 (Rejects) |
| 15 | Currency | N | As per the order |
| 17 | ExecID | Y | Unique identifier of execution message as assigned by Nasdaq. Will be zero (0) for restatements. |
| 18 | ExecInst | N | As per the order |
| 19 | ExecRefID | N | Reference ID for trade breaks (ExecType [150] = H (Trade Cancel)). |
| 22 | IDSource | N | Valid values: 4 = ISIN |
| 30 | LastMkt | N | In the case of restatement messages (ExecType [150]= D (Restated) for away market posted order, indicates the market (MIC code) where the order was routed. In the case of fills and partial fills (ExecType [150] = F (Trade)), indicates the execution venue. Note that separate MIC codes are used for Nordic@Mid dark book trades and AOD order book trades. |
| 31 | LastPx | N | Price of this (last) fill. Required for fills and trade breaks (ExecType [150] = F (Trade) and H (Trade Cancel)). |
| 32 | LastQty | N | Quantity of shares bought/sold on this (last) fill. Required for fills (ExecType [150] = F (Trade)). |

| Tag | Field | Reqd | Comments |
|-----|--------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | OrderID | Y | The Nasdaq assigned Order Reference number. Unique for each order. "0" for ExecType [150] = 8 (Reject) |
| 38 | OrderQty | N | The order's total quantity. |
| 39 | OrdStatus | Y | Valid values: 0 = New 1 = Partial Fill 2 = Filled 4 = Canceled 6 = Pending Cancel 8 = Rejected E = Pending Replace |
| 40 | OrdType | N | As per the order |
| 41 | OrigClOrdID | N | Returns the ClOrdID of the order to be cancelled or modified. Will be set for unsolicited cancels, including cancel-on-disconnect, as well. |
| 44 | Price | N | As per the order |
| 48 | SecurityID | N | ISIN code |
| 54 | Side | Y | As per the order |
| 55 | Symbol | Y | OrderBookID |
| 58 | Text | N | For ExecType [150] = 8 (reject), where possible, a message to explain reason for rejection. A message may also be provided for ExecType = 4 (Cancel) and 5 (Replace). |
| 59 | TimInForce | N | As per the order |
| 60 | TransactTime | N | Transaction time. |
| 75 | TradeDate | N | YYYYMMDD |
| 76 | ExecBroker | N | As per the order |

| Tag | Field | Reqd | Comments |
|-----|--------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 103 | OrdRejReason | N | Code to identify reason for order rejection. Valid values: 0 = Broker option 1 = Unknown symbol 2 = Exchange closed 3 = Order exceeds limit 4 = Too late to enter 5 = Unknown Order 6 = Duplicate Order 7 = Duplicate of a verbally communicated order 8 = Stale Order |
| 109 | ClientID | Y | MPID of the intended recipient of this message. |
| 110 | MinQty | N | As per the order |
| 111 | MaxFloor | N | As per the order |
| 126 | ExpireTime | N | As per the order |
| 150 | ExecType | Y | Describes the specific Execution Report. Valid values: 0 = New 4 = Canceled 5 = Replaced 6 = Pending Cancel 8 = Rejected D = Restated E = Pending Replace F = Trade (partial fill or fill) H = Trade Cancel |
| 151 | LeavesQty | Y | Amount of shares open for further execution. If the order is no longer active then LeavesQty = "0", otherwise LeavesQty = OrderQty [38] - CumQty [14]. |

| Tag | Field | Reqd | Comments |
|-----|-----------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 198 | SecondaryOrderID | N | Relays the ITCH order reference number for ExecType [150] = D (restatements) only. Same as OrderID [37]. In the case of orders routed out, when possible, returns the OrderID [37] used by the introducing broker. For execution algos, returns the child OrderID [37]. |
| 211 | PegDifference | N | As per the order |
| 382 | NoContraBrokers | N | Number of Contra Brokers. Will always = 1 unless this is for an execution cancel. |
| 375 | ContraBroker | N | MPID of the contra party on the execution. Required for fills (ExecType [150] = F (Trade)). Otherwise optional. For execution algos, returns the child contra. |
| 378 | ExecRestatementReason | N | Required for ExecType [150] = D (Restated). Valid values: 1 = GT Renewal (This will identify the Execution Restatements that are sent each morning for GTC Carryovers) 8 = Market (Exchange) option (This should be the value for all Execution Restatements other than the GTC Carryovers) |
| 439 | ClearingFirm | N | As per the order |
| 440 | ClearingAccount | N | As per the order |
| 528 | OrderCapacity | N | As per the order |
| 529 | OrderRestrictions | N | As per the order |

| Tag | Field | Reqd | Comments |
|------|---------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1003 | TradeID | N | Unique trade identity over order books for both auto matched and manual reported trades during one trading day. For Execution messages, if the execution occurred on INET, the value will be a nine digit numeric only field, left padded with zeros. If the execution occurred externally, the value will begin with "F" followed by a nine digit numeric only field, left padded with zeros. For execution algos, returns the child TradeID [1003]. |
| 1138 | DisplayQty | N | The currently displayed quantity on reserve order restatements. |
| 1816 | ClearingAccountType | N | As per the order |
| 5815 | SubMktID | N | Numeric code for the desired Market Segment. |
| 6209 | CIRefID | N | As per the order |
| 6227 | DisplayRange | N | As per the order |
| 9140 | DisplayInst | N | <p>May be used to specify different display options. The default for this tag is dependent upon the value sent in [111]. If 111=0, then the default for 9140 = N. Otherwise, the default is Y.</p> <p>Valid values: M = Nordic@Mid dark book N = Non-Display Y = Display (Anonymous as per market rules) A = Auction On Demand book</p> |
| 9355 | CrossTradeFlag | N | <p>This specifies the cross in which the order goes live.</p> <p>Valid values: C = Closing Cross H = Halt Cross I = Scheduled Intraday Cross O = Opening Cross A = Auction On Demand</p> |

| Tag | Field | Reqd | Comments |
|-------|--------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9861 | BrSeqNbr | N | As per the order |
| 9882 | LiquidityFlag | N | <p>Returned on ExecType [150] = F (Trade messages).</p> <p>Valid values:</p> <ul style="list-style-type: none"> 7 = Away Market Trade A = Continuous Market Trade C = Auction trade M = Nordic@Mid trade P = Auction On Demand (AOD) trade G = Trading at Closing Price <p>Returned on ExecType [150] = H (Trade cancel)</p> <p>Valid value:</p> <ul style="list-style-type: none"> E = Trade cancel <p>For execution algos, returns the child LiquidityFlag [9882].</p> |
| 168 | EffectiveTime | N | As per the order |
| 20001 | Target%Volume | N | As per the order |
| 849 | Maximum%Volume | N | As per the order |
| 20003 | Minimum%Volume | N | As per the order |
| 20002 | Aggression | N | As per the order |
| 20030 | MinChildOrderValue | N | As per the order |
| 20020 | SpreadLimit | N | As per the order |
| 20021 | RefPriceBidLeg | N | As per the order |
| 20022 | RefPriceAskLeg | N | As per the order |
| 20023 | LagBidLeg | N | As per the order |
| 20024 | LagAskLeg | N | As per the order |
| 20025 | LeadBidLeg | N | As per the order |
| 20026 | LeadAskLeg | N | As per the order |
| 20027 | StopLossBidLeg | N | As per the order |
| 20028 | StopLossAskLeg | N | As per the order |
| 20029 | BasketID | N | As per the order |
| 20031 | Ratio | N | As per the order |
| 20006 | IWouldPrice | N | As per the order |

| Tag | Field | Reqd | Comments |
|-------|------------------|------|----------------------------------------------------------------------------------------------------------------------------------|
| 20007 | IWouldType | N | As per the order |
| 20005 | IWouldQty | N | As per the order |
| 20012 | CleanUpType | N | As per the order |
| 20013 | CleanUpQty | N | As per the order |
| 20004 | BlockFilter | N | As per the order |
| 20010 | OnOpenType | N | As per the order |
| 20008 | OnOpenQty | N | As per the order |
| 20011 | OnCloseType | N | As per the order |
| 20009 | OnCloseQty | N | As per the order |
| 20014 | DynamicBenchmark | N | As per the order |
| 20015 | DynamicPrice | N | As per the order |
| 20016 | InMoneyStyle | N | As per the order |
| 20018 | OutMoneyStyle | N | As per the order |
| 20101 | STPLLevel | N | As per the order |
| 20102 | STPAction | N | As per the order |
| 20103 | STPTraderGroup | N | As per the order |
| 20104 | LastExecFlagINT | N | Defines if the execution (or trade) is internalized. Valid values: 1 = Internalized |
| 20106 | LastExecFlagSTP | N | Defines if the execution (or trade) is self trade. Valid values: 1 = Self-Trade (no clear, no publish) |
| 851 | LastLiquidityInd | N | Liquidity indicator. Valid values: 1 = Added Liquidity 2 = Removed Liquidity 3 = Liquidity Routed Out 4 = Auction |

| Tag | Field | Reqd | Comments |
|--------------------------------------------------------------------------------------------------------|-----------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2593 | NoOrderAttributes | N | Indicates the number of instances of the repeating group OrderAttributeGrp to follow. Defaults to zero. |
| Repeating Group OrderAttributeGrp must occur the number of times specified in NoOrderAttributes (2593) | | | |
| 2594 | OrderAttributeType | Y | <p>Required if NoOrderAttributes [2593] >0</p> <p>2 = Liquidity provision activity. This flag is used to indicate whether the order is related to any sort of liquidity provision activity, as defined under MiFID II. Flag is required for the order to be considered to count towards meeting any obligation pursuant to the Nasdaq Liquidity Provider.</p> <p>4 = Algorithmic order. Indicates that the order was placed as a result of an investment firm engaging in algorithmic trading.</p> <p>Corresponds to MMT Level 3.9 – Transaction Type: Algorithmic Indicator</p> |
| 2595 | OrderAttributeValue | Y | <p>Required if NoOrderAttributes [2593] >0</p> <p>Y = Yes</p> |
| 487 | <u>TradeReportTransType</u> | N | <p>Identifies Trade Report message transaction type.</p> <p>Corresponds to MMT Flag 3.4 - Transaction Type: Modification Indicator</p> <p>Valid values: 0 = New 1 = Cancel</p> |

| Tag | Field | Reqd | Comments |
|------|---------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2667 | AlgoIndicator | N | <p>Returned on fills and partial fills (ExecType [150] = F), where the execution was the result of an investment firm engaging in algorithmic trading. Corresponds to MMT Level 3.9 – Transaction Type: Algorithmic Indicator</p> <p>0 = No algorithm was involved (the default). 1 = Algorithmic.</p> |
| 453 | NoPartyIDs | Y | Indicates the number of instances of the repeating group NewOrderPtyRptGrp to follow |

| Tag | Field | Reqd | Comments |
|------------------------------------------------------------------------------------------------|--------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Repeating Group NewOrderPtyRptGrp must occur the number of times specified in NoPartyIDs (453) | | | |
| 448 | PartyID | Y | <p>The short code representing the client or decision maker represented by this block. Unsigned numerical only. Data corresponding to this short code must have been previously supplied, or will be supplied by the end of the calendar day, per our Rules. For clients, the following values are reserved for applicable use:</p> <p>Applicable to PartyRole value 3: 0 = NONE (No Client for this order) 1 = AGGR (An aggregation of multiple client orders) 2 = PNAL (Clients are pending allocation)</p> <p>Applicable to PartyRole value 12: 3 = NORE (Time and venue of the order instructed by the client of the Participant or by another person from outside the Investment Firm.)</p> |
| 447 | PartyIDSource | Y | Must always be P (Short code identifier) |
| 452 | PartyRole | Y | <p>Specifies the role of the party to the trade. At this time, only the following values are valid:</p> <p>3 = Client ID 12 = Executing Trader (the Executing Decision Maker) 122 = Investor ID (the Investment Decision Maker)</p> |
| 2376 | PartyRoleQualifier | Y | As per the order. |

| Tag | Field | Reqd | Comments |
|------|---------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1430 | VenueType | N | <p>Returned on ExecType [150] = F (Trade) messages.</p> <p>Corresponds to MMT Level 1 – Market Mechanism.</p> <p>B = Central Limit Order Book D = Dark Order Book O = Off Book (Away market trades) A = Periodic Auction</p> |
| 625 | TradingSessionSubID | N | <p>Returned on ExecType [150] = F (Trade) messages.</p> <p>Corresponds to MMT Level 2 – Trading Mode (Session).</p> <p>2 = Scheduled Opening Auction 3 = Continuous Trading 4 = Scheduled Closing Auction 5 = Post-Trading 6 = Scheduled Intraday Auction 9 = Unscheduled Auction P = On Demand Auction (AOD)</p> |
| 574 | MatchType | N | <p>Returned on ExecType [150] = F (Trade) messages.</p> <p>Corresponds to MMT Level 2 – Trading Mode (Trade Reporting).</p> <p>3 = Confirmed Trade Report (away market trades)</p> |
| 828 | TrdType | N | <p>Returned on ExecType [150] = F (Trade) messages.</p> <p>Corresponds to MMT Level 3.1 – Transaction Type: Transaction Category</p> <p>62 = Dark Trade 0 = Regular Trade</p> |

| Tag | Field | Reqd | Comments |
|--------------------------------------------------------------------------------------------------------------|-----------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1115 | OrderCategory | N | Returned on ExecType [150] = F (Trade) messages. Corresponds to MMT Level 3.2 – Transaction Type: Negotiation Indicator 3 = Privately Negotiated Trade - = No Negotiated Trade |
| 1724 | OrderOrigination | N | This flag is used to indicate whether DEA activity (as defined under MiFID II) is involved in the order. Returned on ExecType [150] = 0 (New), F (Trade) messages. As per the order. Will only be provided if provided on the inbound order message or if the default is DEA. |
| 2668 | NoTrdRegPublications | N | Indicates the number of instances of the repeating group TrdRegPublicationGrp to follow. Defaults to zero. |
| Repeating Group TrdRegPublicationGrp must occur the number of times specified in NoTrdRegPublications (2668) | | | |
| 2669 | TrdRegPublicationType | N | 0 = PreTradeTransparencyWaiver |
| 2670 | TrdRegPublReason | N | 2 = No preceding order in book as transaction price is subject to conditions other than current market price (Corresponds to MMT Level 3.2 – Transaction Type = PRIC). 3 = No public price for preceding order as public reference price was used for matching orders (Corresponds to MMT Level 3.5 – Benchmark or Reference Price Indicator = RFPT flag) 9 = No public price and/or size quoted as transaction is "large in scale" |

| Tag | Field | Reqd | Comments |
|-------|------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20301 | TradingAtClosingPrice | N | Indicates if the order should participate in trading at closing price. “Y” = Participate in Trading at Closing Price “N” = Do not participate in Trading at Closing Price (default) |
| 20107 | OriginalOrderReferenceNumber | N | Original Order Reference Number for a restated GoodTilCancel order. Note: Updated when order is replaced. |
| 20108 | OriginalOrderEntryDate | N | YYYYMMDD - Original Order Entry Date for a restated GoodTilCancel order. Note: Updated when order is replaced. |
| 20109 | OrderCondition | N | Condition that in some way change the behavior of the order. “Q” = Dark-lit Sweep |
| 582 | CustOrderCapacity | N | “5” = Order sent in by Retail customer, defined as order originating from clients who are not considered to be “professional clients” according to MiFID or equivalent definition. |
| | StandardTrailer | Y | |

4.2.2 Rejected Cancel

The order cancel reject message is issued by Nasdaq upon receipt of a Cancel Request or a Cancel/Replace Request that cannot be honored

Nasdaq will include tag 102. Specific causes will be detailed in tag 58.

The format of the Order Cancel Reject Message is as follows:

| Tag | Field | Reqd | Comments |
|-----|-----------------------|------|-----------------------------------------|
| | StandardHeader | Y | MsgType = 9 |
| 11 | ClOrdID | Y | As per cancel or cancel/replace request |

| Tag | Field | Reqd | Comments |
|-----|------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | OrderID | Y | If the cancel reject is for an unknown order this field will contain the text "NONE". Otherwise, it will contain the OrderID of the last order in the chain of orders. |
| 39 | OrdStatus | Y | Will contain the most recent status of the order or 8 = Rejected. |
| 41 | OrigClOrdID | Y | As per cancel or cancel/replace request |
| 58 | Text | N | Where possible, message to explain reason for rejection. |
| 60 | TransactTime | N | Transaction time. |
| 102 | CxlRejReason | N | Code to identify reason for cancel rejection. Valid values: 0 = Too late to cancel (Order already cancelled) 1 = Unknown order (Original order unacknowledged) 2 = Broker Option - used for the following reasons: Market Closed; Unknown MPID; Duplicate ClOrdId; Routing Not Allowed; Qty greater than account limit or less than 0; Replace qty to less than exhausted; Invalid price; Order should be tick adj but tick adj rejects are active; Replace changes nothing; New order not allowed per market conditions; Poss dup order when poss dup is not allowed 3 = Order already in Pending Cancel or Pending Replace status |
| 109 | ClientID | Y | The MPID of the intended recipient of this message. |
| 434 | CxlRejResponseTo | Y | Identifies the type of request that a Cancel Reject is in response to. Valid values: 1 = Order Cancel Request 2 = Order Cancel/Replace Request |
| | StandardTrailer | Y | |

4.2.3 Order Reject Text & Cancel and Cancel/Replace Reasons

The FIX Text field, tag 58, will be returned within all reject messages and in most cases, will contain a description of the reject or cancel.

5 Appendix A - Max Lengths

| Tag | Max Length |
|-------|------------|
| 11 | 14 |
| 37 | 32 |
| 41 | 14 |
| 55 | 6 |
| 440 | 12 |
| 439 | 4 |
| 571 | 20 |
| 582 | 1 |
| 851 | 1 |
| 880 | 10 |
| 5149 | 10 |
| 5815 | 3 |
| 6204 | 20 |
| 6205 | 20 |
| 6209 | 15 |
| 9292 | 4 |
| 9861 | 10 |
| 20029 | 15 |
| 20101 | 1 |
| 20102 | 1 |
| 20103 | 2 |
| 20104 | 1 |
| 20106 | 1 |

| | |
|-------|----|
| 20107 | 32 |
| 20108 | 8 |
| 20109 | 1 |
| 20301 | 1 |

6 Appendix B - Data Types

| Tag | Field | Data Type |
|-------|-------------------|-----------|
| 851 | LastLiquidityInd | Char |
| 5815 | SubMktID | String |
| 6209 | CIRefID | String |
| 9140 | DisplayInst | Char |
| 9355 | CrossTradeFlag | Char |
| 9861 | BrSeqNbr | String |
| 9882 | LiquidityFlag | Char |
| 20001 | Target%Volume | float |
| 20002 | Aggression | int |
| 20003 | Minimum%Volume | float |
| 20004 | BlockFilter | Qty |
| 20005 | IWouldQty | Qty |
| 20006 | IWouldPrice | Price |
| 20007 | IWouldType | int |
| 20008 | OnOpenQty | float |
| 20009 | OnCloseQty | float |
| 20012 | CleanUpType | int |
| 20013 | CleanUpQty | Qty |
| 20014 | DynamicBenchmark | int |
| 20015 | DynamicPrice | Price |
| 20016 | InMoneyStyle | int |
| 20017 | InMoneyAggression | int |
| 20018 | OutMoneyStyle | int |

| | | |
|-------|------------------------------|----------|
| 20019 | OutMoneyAggression | int |
| 20020 | SpreadLimit | float |
| 20021 | RefPriceBidLeg | Price |
| 20022 | RefPriceAskLeg | Price |
| 20023 | LagBidLeg | Qty |
| 20024 | LagAskLeg | Qty |
| 20025 | LeadBidLeg | Qty |
| 20026 | LeadAskLeg | Qty |
| 20027 | StopLossBidLeg | Price |
| 20028 | StopLossAskLeg | Price |
| 20029 | BasketID | String |
| 20030 | MinChildOrderValue | Int |
| 20031 | Ratio | float |
| 20101 | STPLevel | Char |
| 20102 | STPAction | Char |
| 20103 | STPTraderGroup | String |
| 20104 | LastExecFlagINT | Char |
| 20106 | LastExecFlagSTP | Char |
| 20107 | OriginalOrderReferenceNumber | Int |
| 20108 | OriginalOrderEntryDate | YYYYMMDD |
| 20109 | OrderCondition | Char |
| 20301 | TradingAtClosingPrice | Char |

7 Appendix C – Execution Algorithms

7.1 Message Flow

Execution algo orders are entered over the FIX Order Entry connection. INET passes those “parent” orders into the algo engine. The algo engine sends “child” orders back into INET for execution. Clients receive parent order execution reports back when executions happen. The below diagram depicts the message flow.

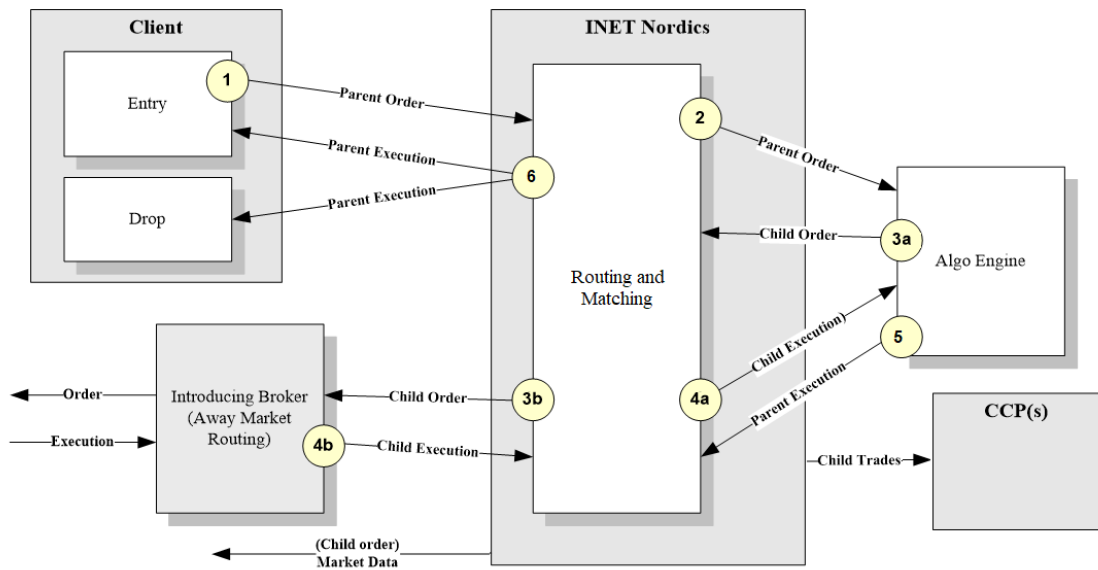


Figure 1. Algo Order Message Flow

Explanation of the numbers in the figure:

1. Algo “parent” orders are entered over the FIX Order Entry connection (or via Nordic Workstation) by the client and sent to INET (ODIN). Parent orders provide the mechanism that allows client to request Algos and for INET to report executions back to the client. The Parent is not a “real” order to the market.
2. INET passes those “parent” orders into the Algo engine.
3. The Algo engine sends “child” orders back to INET Router. INET Router sends based on instruction from Algo engine child orders to:
 - a. INET Matcher or
 - b. after being Smart Order Routed to Away markets for execution. Although child orders are in the name of the client, they are not exposed to the member by INET.
4. Child executions are gathered by INET. Child orders are the ones that technically trade, clear and settle and that are published in the market data feed. The child executions are sent to Algo engine and to CCP for clearing. Child executions are not relayed as such to clients.
5. Algo Engine sends Parent execution to INET.
6. INET sends parent executions back to the client. Separate FIX drop for Child orders and linkage to Parent order is available.

Child orders are the ones that technically trade, clear and settle. Parent orders provide the mechanism that allows client to request them and INET to report executions back to the client. Every child execution will be reported back to the client as an individual parent execution.

Although child orders are in the name of the client, they are not exposed to the client over the order entry lines. Child orders and executions are however exposed over public lines as ITCH and to the CCP. In order to enable clients to map parent orders and executions to downstream child ones, the following execution related identifiers of the child order are passed on parent executions:

- SecondaryOrderID [198] relays the child OrderID [37]
- TradeID [1003] from the child order
- ContraBroker [375] from the child order
- LiquidityFlag [9882] from the child order

Child orders include the following parent order instructions.

- ClearingFirm [439]
- ClearingAccount [440]
- OrderCapacity [528]
- OrderRestrictions [529]
- ClRefID [6209]
- BrSeqNbr [9861]

Child order restatements will not be forwarded as parent order restatements.

Users should be aware that the INET router does not support Order Cancel Replace (order modification) internally. When a client sends an Order Cancel Replace, INET converts it into a cancel of the old order and a new order.

7.2 Entry of an Algo Order

The requested strategy is defined in the ExecBroker [76] field. The following strategies can be used:

- TWAP (Time weighted average price)
- VWAP (Volume weighted average price)
- PVOL (Percentage on volume)
- IMSH (Implementation shortfall)
- CLOS (Close)
- PNPR (Performance Neutral Pair)
- SUPR (Setup Pair)

Further algorithmic parameters are listed in the following section.

Execution algo orders limitations:

- OrdType [40] = 2 – Limit
- TimeInForce [59] = 0 – Day or; 6 – Good-Till-Time
- CrossTradeFlag [9355], MaxFloor [111] and MinQty [110] are not allowed
- DisplayInst [9140] = Y (but note that publication applies only to child orders)

The PNPR and SUPR strategies do not support Order Cancel Replace. The user must cancel the current orders and enter new ones with a new BasketID [20029].

7.3 FIX Algorithmic Parameter Fields

The below table shows the parameters that can be used for the various algo strategies. All parameters are optional unless explicitly mentioned as required.

| Parameter | POV | VWAP | TWAP | IS | CLOSE | PNPAIR | SUPR | Modifiable | FIX Field | Algo specific Field |
|------------------------------|-----|------|------|----|-------|--------|------|------------|----------------------------|---------------------|
| 7.3.1 Base Parameters | | | | | | | | | | |
| Limit Price | X | X | X | X | X | X | X | Y | Price [44] | N |
| Start Time | X | X | X | X | X | X | X | Y | EffectiveTime [168] | Y |
| End Time | X | X | X | X | X | X | X | Y | ExpireTime [126] | N |
| Target % of Volume | X | | | | | | | Y | Target%Volume [20001] | Y |
| Max % of Volume | X | X | X | X | X | X | X | Y | Maximum%Volume [849] | Y |
| Min % of Volume | X | X | X | X | X | | | Y | Minimum%Volume [20003] | Y |
| Aggression | | | | X | X | X | X | Y | Aggression [20002] | Y |
| Minimum Child Order Value | X | X | X | X | X | X | X | Y | MinChildOrderValue [20030] | Y |
| Spread Limit | | | | | | X | X | Y | SpreadLimit [20020] | Y |
| Reference Price Bid Leg | | | | | | X | | Y | RefPriceBidLeg [20021] | Y |
| Reference Price Ask Leg | | | | | | X | | Y | RefPriceAskLeg [20022] | Y |
| Lag Bid Leg | | | | | | X | X | Y | LagBidLeg [20023] | Y |
| Lag Ask Leg | | | | | | X | X | Y | LagAskLeg [20024] | Y |
| Lead Bid Leg | | | | | | X | X | Y | LeadBidLeg [20025] | Y |
| Lead Ask Leg | | | | | | X | X | Y | LeadAskLeg [20026] | Y |

| Parameter | POV | VWAP | TWAP | IS | CLOSE | PNPAIR | SUPR | Modifiable | FIX Field | Algo specific Field |
|-------------------------------------------------------------|-----|------|------|----|-------|--------|------|------------|------------------------|---------------------|
| Stop Loss Bid Leg | | | | | | X | X | Y | StopLossBidLeg [20027] | Y |
| Stop Loss Ask Leg | | | | | | X | X | Y | StopLossAskLeg [20028] | Y |
| Basket ID | | | | | | X | X | N | BasketID [20029] | Y |
| Ratio | | | | | | | X | Y | Ratio [20031] | Y |
| 7.3.2 Enriched Parameters – Finish the Trade | | | | | | | | | | |
| I Would Price | X | X | X | X | X | | | Y | IWouldPrice [20006] | Y |
| I Would Type | X | X | X | X | X | | | Y | IWouldType [20007] | Y |
| I Would Qty | X | X | X | X | X | | | Y | IWouldQty [20005] | Y |
| Clean Up Type | X | X | X | X | X | | | Y | CleanUpType [20012] | Y |
| Clean Up Qty | X | X | X | X | X | | | Y | CleanUpQty [20013] | Y |
| Block Filter | X | X | X | X | X | X | X | Y | BlockFilter [20004] | Y |
| 7.3.3 Enriched Parameters – On Open / Close Quantity | | | | | | | | | | |
| On OpenType | | X | X | X | | | | Y | OnOpenType [20010] | Y |
| On Open Qty | | X | X | X | | | | Y | OnOpenQty [20008] | Y |
| On CloseType | | X | X | | X | | | Y | OnCloseType [20011] | Y |
| On Close Qty | | X | X | | X | | | Y | OnCloseQty [20009] | Y |

| Parameter | POV | VWAP | TWAP | IS | CLOSE | PNPAIR | SUPR | Modifiable | FIX Field | Algo specific Field |
|-----------------------------------------------------|-----|------|------|----|-------|--------|------|------------|--------------------------|---------------------|
| 7.3.4 Enriched Parameters – Dynamic Behavior | | | | | | | | | | |
| Dynamic Benchmark | X | X | X | X | X | | | N | DynamicBenchmark [20014] | Y |
| Dynamic Price | X | X | X | X | X | | | Y | DynamicPrice [20015] | Y |
| In Money (Style) | X | X | X | X | X | | | Y | InMoneyStyle [20016] | Y |
| Out Money (Style) | X | X | X | X | X | | | Y | OutMoneyStyle [20018] | Y |