



MATCH NowTM

FIX Specification
& Developer's Guide
Version 1.11

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Revision History

Date	Version	Author	Description
2009/08/25	1.11	Heather Killian	Addition of user configuration to opt out of trading in locked markets. Update to 5 second call market in liquidity environment
2009/03/09	1.10	Barbara Howard	Updated re new tags in Execution Reports and rejection of orders with Bypass Marker
2009/01/27	1.9	Barbara Howard	Updated re LIP feed availability
2008/06/26	1.8	Heather Killian	Addition of Principal / Wash trade markers
2008/04/07	1.7	Heather Killian	Clarified behavior of FIXNOW filter utility responses when no liquidity
2007/09/07	1.6	Bill Hollings	Clarified behaviour of GTC/GTD/GTX responses when no liquidity.
2007/09/06	1.5	Bill Hollings	Clarified behaviour of AON and Minimum Fill Volume constraints.
2007/06/29	1.4	Bill Hollings	Corrected format of ExpireTime tag (126).
2007/05/16	1.3	Bill Hollings	Clarified role of SymbolSfx tag (65). Changed Rule80A tag (47) to mandatory on New Order – Single and New Order – List messages.
2007/05/01	1.2	Bill Hollings	Removed restriction against increasing OrderQty in a Cancel/Replace Request.
2007/04/25	1.1	Bill Hollings	Reworked document layout. Added and clarified New Order fields: Jitney, ProgramTrade and TCM Constraints. Removed MaxFloor field since it is ignored. Updated TimeInForce behaviour. Clarified which fields within an Order may be changed via a Order Cancel/Replace Request message. Note that most TCM-specific fields may not be changed. Added further description of order handling.
2006/09/21	1.0	Heather Killian	Initial version.

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Chapter One: Overview

This Document

The purpose of this developer's guide is to provide the information necessary to interface with the TriAct Canada Marketplace MATCH Now system using the FIX 4.0 message standards. This document is not intended to replace the FIX protocol manuals.

For complete versions of any of the FIX Protocol Specification manuals, please visit the Specifications page of the FIX web site (<http://www.fixprotocol.org>).

What's New in Version 1.11

Tag 6005 – User configuration to trade or not in locked markets (single order trading)

Tag 69 – Same as above but for list trading

Update 30 second matching in the liquidity environment to matching every 5 seconds

What's New in Version 1.10

Tag 132 – NBBO bid now returned in FIX execution reports

Tag 133 – NBBO offer now returned in FIX execution reports

Tag 9100 – Contrabroker now returned in FIX execution reports

Tag 6791 – Orders with bypass marker set will be rejected

What's New in Version 1.9

Updated to reflect current policy regarding LIP feed distribution.

What's New in Version 1.8

Tag 6776 – PrincipalTrade will now be returned on all applicable FIX execution reports.

Tag 6777 – WashTrade will now be returned on all applicable FIX execution reports.

What's New in Version 1.3

Tag 47 – Rule80A is now Mandatory on the *New Order – Single* and *New Order – List* messages.

The use of tag 65 – SymbolSfx in combination with tag 55 – Symbol has been clarified. Symbols such as ABC.PR.A can be split in any of the three combinations:

- ABC.PR.A in tag 55
- ABC.PR in tag 55 and A in tag 65
- ABC in tag 55 and PR.A in 65

What's New in Version 1.2

When changing order quantities via tag **38 – OrderQty** on the *Order Cancel/Replace Request* message, the quantity may be either increased or decreased. Previous version of this specification incorrectly indicated that the order quantity could only be decreased.

What's New in Version 1.1

The focus of changes in Version 1.1 of the MATCH Now FIX interface has been to tighten up the enforcement of field values on incoming orders, and to specifically reject or ignore order parameters that are not supported by TriAct Canada Marketplace.

The following changes in behaviour are reflected in Version 1.1 of the TCM FIX interface:

- Tag **7003 – ProgramTrade** is now supported on all orders submitted to both the MATCH Now – Liquidity and MATCH Now-Market Flow destinations. This allows dealers to indicate that an order is part of a program trade. MATCH Now does not use this value internally, but does report it on the regulatory and TCM data feeds.
- For orders submitted to the MATCH Now-Market Flow destination, values in the tag **6005 – TCM Constraints**, (specifically the values *Midpoint Eligible* and *Internalize* in this field) will be ignored. Previously, the MATCH Now-Market Flow destination erroneously supported the *Internalize* indication. Allowing MATCH Now-Market Flow orders to only trade if internalized was a violation of best-execution regulations, and has been corrected.
- MATCH Now only supports Market and Limit orders. In tag **40 – OrdType** for all orders submitted to both the MATCH Now-Liquidity and MATCH Now-Market Flow destinations, any values other than *Market (1)* or *Limit (2)* will now be rejected. Previously, order types such as *Stop (3)* or *Stop Limit (4)* were accepted but actually traded as *Market* or *Limit* orders, ignoring the Stop price.
- In tag **59 – TimelnForce**, acceptable values have been tightened up to better reflect MATCH Now trading behaviour. Previously, other values were accepted and simply ignored, resulting in the possibility of trades executing that may not have been intended by the dealer if the order was submitted to MATCH Now by mistake or en-route to another trading venue (in the case of orders to the MATCH Now-Market Flow destination). The following TimelnForce values are acceptable for each destination, and all others will be rejected:
 - MATCH Now-Liquidity: *Day (0)*
 - MATCH Now-Market Flow: *Day (0), GTC (1), IOC (3), FOK (4), GTX (5) & GTD (6)*

In addition to describing functional changes to the MATCH Now FIX interface, version 1.1 of this specification also corrects some errors and omissions in previous versions, including the following:

- Tag **7008 – Jitney** allows executing brokers to identify a different originating broker for any order to either the MATCH Now-Liquidity or MATCH Now-Market Flow destinations. The Jitney broker ID is forwarded by MATCH Now for regulatory reporting. MATCH Now uses the executing broker as the identifier when internalizing order execution.

- The section on *Order Cancel/Replace Request* messages has been updated to clarify the parameters that can be changed on an order within the MATCH Now-Liquidity destination.

General Information on FIX 4.0 connections to MATCH Now

The MATCH Now FIX engine adheres strictly to the FIX standard. Reductions or extensions to the FIX protocol are not permitted.

The client may connect and disconnect any number of times during the trading day. At 23:00 EST/EDT time each night, the cache files holding the FIX messages are cleaned up by MATCH Now. Clients may connect the following day anytime after 05:00.

MATCH Now supports FIX 4.0 over TCP/IP protocol. The internet is available for Direct Connect testing.

Recovery

During initialization, or in the middle of a FIX session, message gaps may occur. It is the responsibility of the receiving application to monitor incoming sequence numbers to detect gaps. This information may then be used to respond with Resend Request messages.

MATCH Now will maintain a list of sent messages, each with a unique sequence number. MATCH Now's FIX engine automatically stores all outbound messages for all connections onto disk. This disk file remains in place even if the FIX engine is stopped and restarted.

Certain administrative messages (which do not increment the sequence number) will not be present in the retransmission of messages in response to a Resend Request from a client.

Chapter Two: MATCH Now

Sending Orders to MATCH Now

MATCH Now has two distinct trading destinations: MATCH Now-Liquidity and MATCH Now-Market Flow. Each destination is served by a separate FIX connection from the client. A client wishing to submit orders to both destinations must maintain a separate FIX connection to each destination.

MATCH Now-Liquidity Destination

- Orders sent to the MATCH Now-Liquidity destination will sit in MATCH Now's liquidity pool, which is a confidential order book that is not exposed publicly.
- Every 5 seconds, MATCH Now executes a call-market match between orders in the liquidity pool and trades are generated as a result. Each order in MATCH Now's liquidity pool may participate in more than one match until it has been completely filled.
- In addition, liquidity orders are eligible to be matched against orders that arrive at the MATCH Now-Market Flow destination. This match occurs immediately upon receipt of an order to the MATCH Now-Market Flow destination, and does not wait for the next 5 second call.
- Orders may be submitted to the MATCH Now-Liquidity destination as single orders via the FIX *New Order-Single* message, or as part of a wave or list via the FIX *New Order-List* message. Only one of these types may be submitted via each FIX connection, so a client who wishes to submit both single orders and list orders must maintain two separate FIX connections for this purpose.
- Certain constraints may be specified on either a single order or a list of orders submitted to the MATCH Now-Liquidity destination. These constraints are explained in the section below called **Setting Constraints on Orders**.
- Orders submitted to the MATCH Now-Liquidity destination may be cancelled or corrected via the FIX *Order Cancel* and *Order Cancel/Replace Request* messages. Once an order has been completely filled, it may no longer be cancelled or modified.

MATCH Now-Market Flow Destination

- Orders sent to the MATCH Now-Market Flow destination will attempt to match immediately against orders sitting in the MATCH Now liquidity pool, and trades are generated as a result.
- Orders submitted to the MATCH Now-Market Flow destination must be single orders submitted via the FIX *New Order-Single* message. The MATCH Now-Market Flow destination does not support waves or lists of orders.
- All orders submitted to the MATCH Now-Market Flow destination are treated as *Immediate or Cancel* orders (also sometimes called *Fill or Kill* orders), and are executed immediately, with the result being a Complete Fill, Partial Fill, Reject or Done for day response. Orders submitted to the MATCH Now-Market Flow destination do not sit open on a book. As such, MATCH Now ignores most TimeInForce settings on orders submitted to the MATCH Now-Market Flow destination.
- The MATCH Now-Market Flow destination has two levels of filtering based on the underlying orders in the Liquidity environment. If an order routes to MATCH Now but there is no chance of a fill due to constraints on the Liquidity order, MATCH Now sends back a Reject message
- If an order routed to the MATCH Now-Market Flow destination passes through the first filter above and receives either a Partial Fill or Nothing-Done, MATCH Now sends back a Done for day message
- Other than a minimum fill quantity, the MATCH Now-Market Flow destination does not support constraints on orders.
- All orders to the MATCH Now-Market Flow destination are eligible for partial fills unless minimum fill quantity is set equal to order quantity. MATCH Now rejects AON orders, and will treat FOK orders as IOC (eligible for partial fill).
- Orders submitted to the MATCH Now-Market Flow destination may *not* be cancelled or corrected.
- MATCH Now uses FIX Email messages to transmit information regarding liquidity in the MATCH Now liquidity pool. This assists the order-routing algorithms of these access vendors, by providing the state of the liquidity pool before orders are routed to the MATCH Now-Market Flow destination. These FIX Email messages are transmitted on the MATCH Now-Market Flow FIX channel. The content of these messages is described below in the section **MATCH Now Liquidity Information Email**.

Setting Constraints on Orders

Order-based Constraints

Certain constraints may be specified on each order submitted. These constraints apply to the specific order either as a single stand-alone order or as part of a list of orders (in the case of the MATCH Now-Liquidity destination). Constraints applied to a particular order take precedence over constraints specified at the list, user default, or system default levels.

Orders submitted to the MATCH Now-Market Flow destination may specify a minimum fill quantity via the MinQty (110) field in the FIX *New Order-Single* message.

Orders submitted to the MATCH Now-Liquidity destination may specify the following constraints as part of the FIX *New Order-Single* or *New Order-List* messages:

- A minimum fill quantity may be specified via the MinQty (110) field.
- An expiration time for the order may be specified via the ExpireTime (126) field.
- Using the TCM Constraints (6005) field, additional MATCH Now-specific constraints may be specified via a string containing sub-fields of the form *tag=value*, where each sub-field within the

string is separated by the ASCII *STX* character (^B or 0x02). An example of the use of this field would be: ...<SOH>6005=TM=1<STX>TI=0<SOH>....

- The following additional constraints may be specified in the TCM Constraints (6005) field:

Tag	Tag_name	Values	Description
TM	MIDPOINT_ELIGIBLE	0 or 1	If true (1), Liquidity orders will be allowed to match against other Liquidity orders. If false (0), Liquidity orders will only match against Market Flow orders only. Default: true (1)
TI	INTERNALIZE	0 or 1	If true (1), orders will match only against other orders from the same broker number. Default: false (0)
TLM	TRADE_LOCKED_MKTS	0 or 1	If true (1), orders will trade when bid=ask If false (0), orders will not trade when bid=ask Default: true (1)

List-based Constraints

Certain constraints may be specified for a complete list of orders submitted to the MATCH Now-Liquidity destination. These constraints apply to all orders with the list and take precedent over constraints specified at the user default, or system default levels.

List constraints are specified in the ListExecInst (69) field of the FIX *New Order-List* message. The constraints are specified via a string containing sub-fields of the form *tag value* (separated by a space), where each sub-field within the string is separated by the ASCII *LF* character (^J, \n or 0x0A). An example of the use of this field would be:

```
...<SOH>69=4 1500<LF>8 2000<LF>50 0<LF>55 1<LF>6 20000<LF>7 30000<LF>52 Passive-2<LF><SOH>....
```

The following list constraints may be specified in the ListExecInst (69) field:

Tag	Tag_name	Values	Description
4	CANCEL_TIME	HHMM	Time at which order will be done for the day Default: market close
6	BUY_IMB	999999999	Cash Buy Imbalance. Dollar amount that buys may exceed sells. Up to 9 chars Default: no limit

Tag	Tag_name	Values	Description
7	SELL_IMB	999999999	Cash Sell Imbalance. Dollar amount that sells may exceed buys. Up to 9 chars Default: no limit
8	MIN_SHARES	999999	Minimum Shares per Fill Up to 6 chars Default: zero (no minimum fill)
50	MIDPOINT_ELIGIBLE	0 or 1	If true (1), Liquidity orders will be allowed to match against other Liquidity orders. If false, Liquidity orders will only match against Market Flow orders only. Default: true (1)
52	HORIZON_PROFILE	Profile name	One of Ten named maximum fill size profiles. See the chart below. Default: Unlimited
55	INTERNALIZE	0 or 1	If true (1), orders will match only against other orders from the same broker number. Default: false (0)
60	TRADE_LOCKED_MKTS	0 or 1	If true (1), orders will trade when bid=ask If false (0), orders will not trade when bid=ask Default: true (1)

Sample HORIZON_PROFILE:

Profile Name	1 min	5 min	15 min
Inactive	0%	0%	0%
Passive-1	10%	30%	40%
Passive-2	10%	30%	40%
Neutral-1	30%	50%	75%
Neutral-2	30%	50%	75%
Aggressive-1	75%	75%	100%
Aggressive-2	75%	75%	100%
Very Aggressive-1	100%	100%	100%
Very Aggressive-2	100%	100%	100%
Unlimited	100%	100%	100%

Chapter Three: FIX 4.0 Messages

MATCH Now-Supported Messages

MATCH Now supports the following FIX 4.0 messages:

0	Heartbeat
1	Test Request
2	Resend Request
3	Reject
4	Sequence Reset
5	Logout
8	Execution Report
9	Order Cancel Reject
A	Logon
C	Email
D	New Order – Single
E	New Order – List
F	Order Cancel Request
G	Cancel/Replace Request
H	Order Status Request
L	List Execute

MATCH Now Implementation of FIX 4.0 Messages

MATCH Now fully supports all FIX Administrative Messages as defined by the FIX 4.0 protocol and these are not described in this document.

MATCH Now's implementations of the supported FIX 4.0 Application Messages are described in the following sections.

Orders

As mentioned above, there are two distinct destinations within MATCH Now: *MATCH Now-Liquidity* and *MATCH Now-Market Flow*, and each handles orders differently from the other. In addition, the MATCH Now-Liquidity destination accepts orders in two forms: single orders and list orders.

The following table summarizes the behaviour of orders submitted to these destinations and indicates the acceptable values for many of the FIX fields. Further information can be found in the specifications of the *New Order – Single* and *New Order – List* messages in the sections that follow this one.

In this table, the behaviour is indicated by:

- **support** : these values are used by the MATCH Now destination to affect matching functionality
- **reject** : these values are not supported by the destination, and orders containing them will be rejected by the destination or returned unfilled and done for the day
- **report** : these values are accepted and will be reported on the MATCH Now Market Data Feed and as required by regulators, but are not explicitly used by the MATCH Now destination
- **(---)** : these values are not used by the MATCH Now destination and will be ignored if submitted

Order Attribute	FIX Tag	Values	Market Flow Orders	Liquidity Single Orders	Liquidity List Orders
Side	54	buy / sell / short / short-exempt	support	support	support
		all others	reject	reject	reject
Order Type	40	market / limit	support	support	support
		all others	reject	reject	reject
Acct Type (Rule 80A)	47	IN / NC / CL / ST	report	report	report
		all others	reject	reject	reject
Price (for Limit orders)	44	numeric	support	support	support
Time in Force	59	DAY	support	support	support
		IOC / FOK	support	reject	reject
		GTC/GTD/GTX ¹	support	reject	reject
		OPG	reject	reject	reject
Expire Time	126	FIX time format	support	support	support
Handling Instructions	21	all values	---	---	---
Special Terms	18	AON ²	reject	reject	reject
		all others	---	---	---
	63	all values	---	---	---
Max Floor (Iceberg)	111	integer	---	---	---
Minimum Fill Volume ³	110	numeric	support	support	support
Bypass Marker	6791	non-blank	reject	reject	reject
Anonymous	7012	Y/N	support	support	support
Program Trade	7003	Y/N	report	report	report
Jitney #	7008	3-digit broker number	report	report	report
Regulation ID	7013	SS / IA	report	report	report

Order Attribute	FIX Tag	Values	Market Flow Orders	Liquidity Single Orders	Liquidity List Orders
Midpoint Eligible	6005	TM=1 / TM=0	---	support	support
Internalize	6005	TI=1 / TI=0	---	support	support
Trade in Locked Markets	6005	TLM=1 / TLM=0	---	support	support
Buy/Sell Imbalance	69	numeric	---	---	support
Horizon Profile	69	profile name	---	---	support
Expire Time ⁴	69	HHMM	---	---	support
Minimum Fill Volume ^{3,4}	69	numeric	---	---	support
Midpoint Eligible ⁴	69	50 1 / 50 0	---	---	support
Internalize ⁴	69	55 1 / 55 0	---	---	support
Trade in Locked Markets ⁴	69	60 1 / 60 0	---	---	support

¹ Good-Till type Market Flow orders receive Cancelled responses (OrdStatus(39) = 4) when no further liquidity is available. This is different than Day orders, which receive Done-for-Day responses (OrdStatus(39) = 3). If this variance in response is a concern, all Market Flow orders should be submitted as Day orders, since all Market Flow orders are either filled immediately or returned, regardless of the TimeInForce value.

² Although the AON special terms type is not supported, an effective all-or-none order can be accomplished by setting the MinQty (110) field to the same value as the OrderQty (38) field.

³ The Minimum Fill Volume constraint applies to *each* fill executed on an order. For an order that executes over multiple fills, the volume of each fill will be at least this value.

⁴ When included in tag 69 of the first *New Order - List* message in a list of orders, these values apply to all orders in the list. These list-level values may then be overridden in the individual orders with tags 110, 126 and 6005.

New Order – Single

New Order – Single messages may be used for submitting orders to both the MATCH Now-Liquidity destination and the MATCH Now-Market Flow destination. There are some differences in message content between the two destinations. These differences are explained in the table below and the associated tables covering MATCH Now supported tag values above.

With the exception of MinQty (tag 110), MATCH Now does not support special terms, settlement terms, handling instructions, or execution instructions, and these will be ignored if set.

Any FIX tags that do not appear in the table below will be ignored.

Tag	Field Name	Req'd	Comments
	Standard Header	Y	MsgType = D
50	SenderSubID	Y	Must contain "BrokerNumber:TSXTraderID"
11	ClOrdID	Y	Up to 25 characters
1	Account	N	Stored in the MATCH Now database, and returned in Execution Reports, but NOT used for allocations.

Tag	Field Name	Req'd	Comments
18	ExecInst	N	Not supported. A value of G (All or None) will be explicitly rejected, and all other values will be ignored.
110	MinQty	N	Minimum shares per fill. The volume of <i>each</i> fill will be at least this value.
55	Symbol	Y	Can have up to 8 characters in Symbol.SymbolSfx
65	SymbolSfx	N	Optional - up to 8 characters in Symbol.SymbolSfx. Compound symbols such as ABC.PR.A can be split in any of three ways between tag 55 & 65: <ul style="list-style-type: none"> • ABC.PR.A in tag 55 • ABC.PR in tag 55 and A in tag 65 • ABC in tag 55 and PR.A in tag 65
54	Side	Y	Refer to MATCH Now-Supported Order Sides (54) Values. Other values are rejected.
60	TransactTime	N	Time this order request was initiated/released by the trader or trading system.
38	OrderQty	Y	The number of shares to be traded. Must be an Integer.
40	OrdType	Y	Refer to MATCH Now-Supported Order Types (40) Values. Other values are rejected.
44	Price	N	Limit price if a Limit order.
21	HandlInst	Y	Ignored. All orders are treated as automated.
15	Currency	N	Currently ignored
59	TimeInForce	N	Refer to MATCH Now-Supported TimeInForce (59) Values. Other values are rejected.
126	ExpireTime	N	Order expiration time in FIX time format.
47	Rule80A	Y	Refer to MATCH Now-Supported Rule 80A (47) Values. Other values are rejected.
6005	TCM Constraints	N	TM (Midpoint eligible); TI (Internalize) and TLM (Trade in locked mkts). Refer to the discussion of Order-based Constraints above. Applies to liquidity orders. Ignored on marketflow orders.
7003	Program Trade	N	Contains a Y/N indication of whether or not this order is part of a program trade. Default is 'N' if not included.
7008	Jitney	N	Broker on whose behalf this order is being submitted if different than the executing broker.
7012	Anonymous	N	Contains a Y/N indication of whether or not the broker wishes to remain anonymous when trades associated with this order are reported. Default is 'N' if not included.
7013	RegulationID	N	Does not affect order handling, but is reported to feeds.
	<i>Standard Trailer</i>	Y	

New Order – List

New Order – List messages may be used for submitting orders to the MATCH Now-Liquidity destination. The MATCH Now-Market Flow destination does not support *New Order – List* messages.

As defined by the FIX 4.0 specification, *New Order – List* messages are similar in content to *New Order – Single* messages described above, and add the capability to group orders into lists to be executed in concert.

Of particular interest is tag 69 of the *New Order – List* message, which specifies constraints on a list of orders, as described in the List-based Constraints section above.

The submission of orders via *New Order – List* messages does not activate the orders for execution until a subsequent *List Execute* message (described below) is received.

Any FIX tags that do not appear in the table below or in the table above covering the *New Order – Single* tags will be ignored.

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = E
50	SenderSubID	Y	Must contain "BrokerNumber:TSXTraderID"
66	ListID	Y	Must be unique, by customer, for the day
105	WaveNo	N	Ignored.
67	ListSeqNo	Y	Order number in the list of orders. No checking on ordering. (E.g., Order 3 may come after Order 4.)
68	ListNoOrds	Y	Total number of orders in the list.
69	ListExeclnst	N	Refer to the discussion of List-based Constraints above. This tag should only appear in the first order message for a list (where ListSeqNo = 1).
xyz	Other Tags	Y/N	See Tag listing for <i>New Order – Single</i> messages above
	<i>Standard Trailer</i>	Y	

List Execute

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = L
66	ListID	Y	Must be unique, by customer, for the day
105	WaveNo	N	Ignored.
58	Text	N	Ignored.
	<i>Standard Trailer</i>	Y	

Execution Report

Below is the list of the FIX tags that MATCH Now sends in a FIX 4.0 Execution Report.

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = 8
57	TargetSubID	Y	As submitted in the SenderSubID (50) field of the order.
37	OrderID	Y	MATCH Now-assigned order ID.
11	ClOrdID	N	As submitted in the order.
17	ExecID	Y	MATCH Now-assigned order for this execution report.
20	ExecTransType	Y	Refer to MATCH Now-Supported ExecTransType (20) Values
19	ExecRefID	N	Original execution report for Cancels or Corrects.
39	OrdStatus	Y	Refer to MATCH Now-Supported OrderStatus (39) Values
103	OrdRejReason	N	Refer to MATCH Now-Supported Order Reject Reason (103) Values
1	Account	N	As submitted in the order.
55	Symbol	Y	As submitted in the order.
65	SymbolSfx	N	As submitted in the order.
54	Side	Y	As submitted in the order.
38	OrderQty	Y	As submitted in the order.
40	OrdType	N	As submitted in the order.
44	Price	N	As submitted in the order.
59	TimeInForce	N	As submitted in the order.
126	ExpireTime	N	As submitted in the order.
47	Rule80A	N	As submitted in the order.
32	LastShares	Y	Number of shares executed in this execution
31	LastPx	Y	Execution price of this execution
14	CumQty	Y	Total number of shares executed so far for the order.
6	AvgPx	Y	Average price across executions so far for the order
60	TransactTime	N	Time of execution (GMT)
58	Text	N	Text of rejection reason when OrdStatus = 8 (rejected)
6776	PrincipalTrade	N	Indicates a transaction where the dealer, as principal, sells securities to or buys securities from its own customer Valid Values: Y = Yes N = No

Tag	Field Name	Req'd	Comments
6777	WashTrade	N	Indicates a trade that has occurred between proprietary accounts of the same dealer firm Valid Values: Y = Yes N = No
7003	Program Trade	N	As submitted in the order.
7008	Jitney	N	As submitted in the order.
7012	Anonymous	N	As submitted in the order.
7013	RegulationID	N	As submitted in the order.
132	BidPx	Y	NBO bid at time of execution
133	OfferPx	Y	NBBO offer at time of execution
9100	Contrabroker	Y	Contrabroker – 001 if anonymous
	<i>Standard Trailer</i>	Y	

Order Cancel/Replace Request

Order Cancel/Replace Request messages may be used for changing existing orders in the MATCH Now-Liquidity destination. The MATCH Now-Market Flow destination does not support changing orders.

An *Order Cancel/Replace Request* message will be rejected if any of the fields marked “Must match original order” below contains a value different than in the original order.

To change order parameters whose field values are ignored or rejected below, the order should be fully cancelled and a new order issued.

Any FIX tags that do not appear in the table below will be ignored, and will not reflect a change in the Order.

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = G
41	OrigClOrdID	Y	Unique identifier of <i>original</i> order as assigned by client.
11	ClOrdID	Y	Unique identifier of <i>replacement</i> order as assigned by client.
66	ListID	N	Must match original order.
1	Account	N	Ignored.
18	ExecInst	N	Not supported. A value of G (All or None) will be explicitly rejected, and all other values will be ignored.
110	MinQty	N	Minimum shares. May be changed up or down.
50	SenderSubID	Y	Must match original order.
55	Symbol	Y	Must match original order.
65	SymbolSfx	N	Must match original order.
54	Side	Y	Must match original order.
38	OrderQty	Y	May be increased or decreased.
40	OrdType	Y	May be changed. Refer to MATCH Now-Supported Order Types (40) Values.

Tag	Field Name	Req'd	Comments
44	Price	N	May be changed if changed order is a Limit order.
59	TimeInForce	N	Must match original order.
126	ExpireTime	N	May be changed.
47	Rule80A	N	Ignored.
6005	TCM Constraints	N	Ignored.
7003	Program Trade	N	Not supported. Message will be rejected if included.
7008	Jitney	N	Not supported. Message will be rejected if included.
7012	Anonymous	N	May be changed.
7013	RegulationID	N	Not supported. Message will be rejected if included.
	<i>Standard Trailer</i>	Y	

Examples – Order Cancel/Replace

Below is the sequence of events involving Correction (Cancel/Replace) on existing Orders.

		ClordID	OrigClordID
Client	New Order	15	-
MATCH Now	Ack report	15	-
Client	Correction1	16	15
MATCH Now	Pending Replace (OrdStatus = 6)	16	-
MATCH Now	Replaced Report (OrdStatus = 5)	15	-
Client	Correction2	17	16
MATCH Now	Pending Replace Report	17	-
MATCH Now	Replaced Report	16	-

Order Cancel Request

Order Cancel Request messages may be used for cancelling existing orders in the MATCH Now-Liquidity destination. The MATCH Now-Market Flow destination does not support cancelling orders.

Any FIX tags that do not appear in the table below will be ignored.

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = F
41	OrigClOrdID	Y	Unique ID of original order as assigned by client
11	ClOrdID	Y	Unique ID of cancel request as assigned by the client
66	ListID	N	Must be set if the corresponding order is a List order
125	CxlType	Y	Refer to MATCH Now-Supported CxlType (125) Values. Other values are rejected.
50	SenderSubID	Y	(BrokerNumber:TSXTraderID) Must correspond to the original order
55	Symbol	Y	Up to 8 characters in Symbol.SymbolSfx
65	SymbolSfx	N	Up to 8 characters in Symbol.SymbolSfx
54	Side	Y	Refer to. (page 3-11)
38	OrderQty	Y	Original OrderQty
58	Text	N	Ignored
	<i>Standard Trailer</i>	Y	

Examples – Order Cancel

Below is the sequence of events involving Cancel Requests on existing orders:

		ClordID	OrigClordID
Client	New Order	15	-
MATCH Now	Ack report	15	-
Client	Cancel	16	15
MATCH Now	Pending Cancel (OrdStatus = 6	16	-
MATCH Now	Cancelled Report (OrdStatus = 4)	15	-

Order Cancel Reject

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = 9
37	OrderID	Y	MATCH Now-assigned number for order with ClOrdID, or 0 if order was never received
11	ClOrdID	Y	Unique order id assigned by client to the cancel request or to the <i>replacement</i> order.
41	OrigClOrdID	Y	The unique order id assigned by client to the execution or correction that occurred prior to this cancellation or correction.
66	ListID	N	Will be set if a corresponding <i>List</i> order was found.
102	CxlRejReason	N	0 = Too late to cancel, 1 = Unknown order
58	Text	N	Not used
	<i>Standard Trailer</i>	Y	

Order Status Request

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = H
37	OrderID	N	Not used - Ignored
11	ClOrdID	Y	Original ID of the order sent by client
55	Symbol	Y	Up to 8 characters in Symbol.SymbolSfx
65	SymbolSfx	N	Up to 8 characters in Symbol.SymbolSfx
54	Side	Y	OrderSide for original order sent with ClOrdID
	<i>Standard Trailer</i>	Y	

Email

Below is a sample of the FIX tags that we send in an Email message from MATCH Now to a client. The sending of Email messages can be turned off. Email messages sent by the client are entered into our log files.

Tag	Field Name	Req'd	Comments
	<i>Standard Header</i>	Y	MsgType = C
94	EmailType	Y	0 = New
33	LinesOfText	Y	Number of lines in text
58	Text	Y	Displayable text.
	<i>Standard Trailer</i>	Y	

MATCH Now Liquidity Information Email

MATCH Now uses FIX Email messages to transmit information regarding liquidity in the MATCH Now liquidity pool. These FIX Email messages are transmitted on the MATCH Now-Market Flow FIX channel.

This liquidity information permits access vendors to pre-filter orders destined for the MATCH Now-Market Flow destination, to avoid sending market flow orders to MATCH Now that have no possibility of matching anything in the MATCH Now liquidity pool.

- MATCH Now Liquidity Information Email will be sent on the MATCH Now Market Flow link only.
- When there is a change in MATCH Now liquidity (e.g. when a supplier sends marketable orders to MATCH Now), MATCH Now will send a FIX Email with Tag Text(58) containing the new liquidity additions or deletions using the following format:

1. TCM_LIQUIDITY#ADD#Symbol1.Suffix=B Symbol2=S Symbol3=B ...
2. TCM_LIQUIDITY#DELETE#Symbol4=B Symbol5=S Symbol6.Suffix=S ...
3. TCM_LIQUIDITY#DELETE *

(1) Above means add "Buy Symbol1.Suffix, Sell Symbol2 and Buy Symbol3" to MATCH Now's liquidity information.

(2) Above means "Delete Buy Symbol4, Sell Symbol5, and Sell Symbol6" from MATCH Now's liquidity information.

(3) Above requests deletion of the entire MATCH Now liquidity information.

Field Values Supported by MATCH Now

This section describes the values that are supported in some of the fields within the FIX messages described in the preceding section. The behaviour that occurs when values outside these are received is described in the above descriptions of the messages.

MATCH Now-Supported Order Sides (54) Values

		MATCH NOW LIQUIDITY	MATCH NOW MARKET FLOW
1	Buy	√	√
2	Sell	√	√
5	Sell Short	√	√
6	Sell Short Exempt	√	√

MATCH Now-Supported Order Types (40) Values

		MATCH NOW LIQUIDITY	MATCH NOW MARKET FLOW
1	Market	√	√
2	Limit	√	√

MATCH Now-Supported TimeInForce (59) Values

		MATCH NOW LIQUIDITY	MATCH NOW MARKET FLOW
0	Day	√	√
1	Good Till Cancel (GTC)		√
2	At the Opening (OPG)		
3	Immediate or Cancel (IOC)		√
4	Fill or Kill (FOK) <i>(treated as IOC by MATCH Now as eligible for partial fill)</i>		√
5	Good Till Crossing (GTX)		√
6	Good Till Date		√

MATCH Now-Supported Rule 80A (47) Values

		MATCH NOW LIQUIDITY	MATCH NOW MARKET FLOW
CL	Client	√	√
ST	Specialist	√	√
NC	Non-client	√	√
IN	Inventory	√	√
Other	Will be rejected		

MATCH Now-Supported CxlType (125) Values

		MATCH NOW LIQUIDITY	MATCH NOW MARKET FLOW
F	Full remaining quantity	√	

MATCH Now-Supported ExecTransType (20) Values

0	New (for Acknowledgements, Fills, confirmation of Cancel, confirmation of Cancel/Replace, Nothing Done)
1	Cancel (Cancel an execution)
2	Correct (change in Price)
3	Status (a response for a status)

MATCH Now-Supported OrderStatus (39) Values

0	Acks on order
1	Partial Fill
2	Fill
3	Done for Day
4	Canceled
5	Replaced
6	Pending Cancel
8	Rejections on orders

MATCH Now-Supported Order Reject Reason (103) Values

0	Invalid orders due to invalid specifications
---	--

MATCH Now-Order Reject Reason (35=8) (58) Values

	Invalid Symbol
	Invalid Trader Id 1
	No liquidity available

Supported Symbol Suffixes

For symbols, MATCH Now uses standard TSX / TSXV symbology as follows:

Symbol Type	Format
Common shares	XXX
Special voting classes: <ul style="list-style-type: none"> • Non-voting shares • Multiple-voting shares • Subordinate-voting shares • Limited-voting shares • Restricted-voting shares 	XXX.NV / XXX.NV.X XXX.MV / XXX.MV.X XXX.SV / XXX.SV.X XXX.LV / XXX.LV.X XXX.RV / XXX.RV.X
Preferred shares	XXX.PR.X
Rights	XXX.RT / XXX.RT.X
Warrants	XXX.WT / XXX.WT.X
Units	XXX.UN
Debentures	XXX.DB / XXX.DB.X
When issued	XXX.WI
Installment Receipts	XXX.IR

Chapter Four: FIX 4.0 Test Plan

MATCH Now-Supported Messages

As mentioned earlier in this document, the following FIX 4.0 messages are supported by MATCH Now Direct Connect:

Administration messages	<ul style="list-style-type: none">• Heartbeat• Logon• Test Request• Resend Request• Reject• Sequence Reset• Logout
Application messages	<ul style="list-style-type: none">• New Order - Single• Execution Reports• Orders Cancel/Replace Request• Order Cancel Request• Order Cancel Reject• Orders Status Request• Email• Don't Know Trade (DK)• New Order List• List Execute

Connection Instructions

Before testing, you'll need to establish a connection. Follow these steps:

1. Determine which FIX protocol version you will be using.
2. Agree on the method of testing: either Internet or wait for a leased line to be installed.
3. Provide MATCH Now with the following information:
 - Your SenderCompID.
 - Your list of SubIds (SenderSubID), if needed to represent multiple traders.
5. You'll need to know the following MATCH Now settings:
 - MATCH Now's SenderCompID will be "TCM" unless you request a change.
 - You will be supplied with an IP address and Port# in order to connect to MATCH Now.

Basic Connectivity Test

1. Establish the connection.
2. After authentication, exchange Heartbeats.
3. Disconnect, then reconnect again. (Generate Resend_Requests if gaps are detected)
4. MATCH Now will send the following messages:
 - Logon - In response to the client's logon
 - TestRequest - After the logon is received
 - HeartBeat
 - Resend_Request - If a gap is detected by MATCH Now
 - Sequence_reset - After resending all messages requested by receiving side
 - Logout - This will occur during any of the following events:
 - The incoming sequence number is less than expected
 - Regular logout
 - Logout in case the client's logon cannot be authenticated.
5. Expect to receive the following messages:
 - Logon
 - TestRequest
 - HeartBeat
 - Resend_Request (if a gap is detected by the receiving application)
 - Logout

Session Protocol Test

MATCH Now LIP Feed

- **Accept LIP Feed.** Build LIP database from LIP feed.
- **Add symbol to LIP.** Send an order to MATCH Now Liquidity; process symbol addition.
- **Delete symbol from LIP.** Cancel an order in MATCH Now Liquidity; process symbol deletion.

MATCH Now – Liquidity Destination

Single Orders

- **New Order Singles**
 - New Single Orders from client.
 - New Single Order with constraints set.
- **Cancels** - Cancel requests on outstanding orders. Partial cancellation of an order will be rejected.
- **Cancel/Replace** - Outstanding orders will be requested to be corrected for:
 - Order Type Change
 - Quantity Change
 - Price Change
 - Perform a cancel
- **Status Request** - Status Request messages will be sent by the client to determine the current status of an order.
- **Possdupe** - If the client is uncertain as to whether an order was successfully transmitted, Possduplicated Orders will be sent by the client under the same sequence number of the original order.
- **Execution Reports** - MATCH Now will generate all possible reports.

List Orders

- **New Order - List**
 - List Orders from client with constraints, followed by a ListExecute.
- **Cancel/Replace** - As done for single orders. Outstanding orders will be requested to be corrected for:
 - Order Type Change
 - Quantity Change
 - Price Change
 - Constraint change
 - Perform a cancel

MATCH Now – Market Flow Destination

Single Orders

- **New Order Singles** - Valid New Single Orders from client.
 - Submit an order with a match available in MATCH Now
 - Submit an order with no match available in MATCH Now
- **Cancel/Replace** – Cancels and corrections will be rejected on Market Flow orders. By definition, it will always be too late to cancel (correct) a Market Flow order. Unmatched orders are re-routed to the broker/network for on-routing to the marketplace. Cancels and corrects should apply to the re-routed orders.
- **Execution Reports** - MATCH Now will generate all possible reports.
 - Full execution
 - Partial execution; remainder is returned to the sending broker/network for on-routing to the marketplace

Special Cases

Single Order Scenarios:

Rejected Orders may occur for the following reasons:

- **Cancel_Reject** - These will be caused by either of the following reasons:
 - **Unknown order** - Cancel/Correct for an unknown order by Client.
 - **TLTC** - This case will be simulated by receiving a Cancel request on an order while the order is on its way to being filled.
 - **Unknown symbol** - An order from the Client with a security which MATCH Now doesn't trade.
 - **Unsolicited cancel** - MATCH Now may cancel an order without a request.

List Order Scenarios

The following are error scenarios for list orders:

- If a new order is received with the same list id after a *List-Execute* has been received for the same list. The order will be rejected.
- If *List Execute* for an unknown list is received. No action will be taken from the MATCH Now side.
- If *List Execute* is received for a list where all orders are not yet received for that list. Rejections will be sent for each order in the list.
- Orders received in wrong order in a list will not be rejected.
- If a new list is received with a duplicate list id. Rejection will be sent for all the orders in the duplicate list.

- If a *List Execute* is received for an already cancelled list. An alert will be logged on the MATCH Now side.

Recovery Tests

Test 1

The following steps will be performed from the MATCH Now side:

1. Establish the connection.
2. Receive a few orders, then send execution reports back.
3. Drop the connection.
4. Decrease the expected incoming sequence number to a lower number than the current expected sequence number. (E.g., if the last received message had a MsgSeqNum of 20, decrease the expected incoming number to 12.)
5. Reconnect, then establish connection.
6. As soon as connection is established and first message is received, MATCH Now will issue a Resend_Request for the gap. (from 12 to all)

MATCH Now expects the following tasks to be performed from the Client Side:

1. Retransmission of all the messages sought.
2. Emulate the same scenario for Resends.

Test 2

1. Establish the connection.
2. Receive a few orders from client. Break the connection while sending executions back to the client so that not all the reports go through. Restore the connection and check if the client receives all the remaining (missing) reports.