

Trading Phases

Morning Session

Afternoon Session

Normal Mkt	Pre-Opening	Opening	Continuous Trading	Pre-Closing	Closing	Trading at Last	LUNCH	Pre-Opening	Opening	Continuous Trading	Pre-Closing	Closing	Trading at Last
	8.30am	9.00am	9.00am	12.15pm	12.20pm	12.20pm to 12.30pm		2.00pm	2.30pm	2.30pm	4.45pm	4.50pm	4.50pm to 5.00pm

Odd Mkt	Pre-Opening	Opening	Continuous Trading	Pre-Closing	Closing	Trading at Last	LUNCH	Pre-Opening	Opening	Continuous Trading	Pre-Closing	Closing	Trading at Last
	8.30am	9.00am	9.00am	12.15pm	12.20pm	12.20pm to 12.30pm		2.00pm	2.30pm	2.30pm	4.45pm	4.50pm	4.50pm to 5.00pm

Buying-in Mkt	Pre-Opening	Opening	Continuous Trading	Pre-Closing	Closing	Trading at Last	LUNCH	Pre-Opening	Opening	Continuous Trading	Pre-Closing	Closing	Trading at Last
	7.30am	8.30am	8.30am to 12.30pm	-	-	-		1.30pm	2.00pm	2.30pm to 5.00 pm	-	-	-

Matching Mechanism: TOP/TCP Algorithm

Theoretical Pricing Algorithm for Pre Opening and Pre Closing:	BT Securities
1. The theoretical opening price (TOP) is the price that maximizes the number of shares traded.	✓
2. If there are more than 1 prices based on Rule 1*, the TOP will be based on the one with minimize the number of unfilled shares.	✓
3(i) If there are still more than 1 prices based on Rule 2* and the imbalance of unfilled shares is on the buy side, the TOP will be the highest price therein.	✓
3(ii) If there are still more than 1 prices based on Rule 2* and the imbalance of unfilled shares is on the sell side, the TOP will be the lowest price therein.	✓
4. Otherwise the TOP used is the price closest to the reference price	✓

Example on TOP Algorithm

The market for XYZ immediately before the market opens is:

BUY			SELL		
Order	Qty	Price	Price	Qty	Order
A	4,500	3.10	2.98	6,600	K
B	25,000	3.08	2.98	5,000	L
C	3,200	3.08	2.99	3,600	M
D	1,900	3.04	3.00	17,500	N
E	49,700	3.00	3.06	1,900	O
F	8,000	2.99	3.08	16,900	P
G	16,400	2.98	3.10	8,500	Q
H	5,400	2.97	3.12	21,650	R
I	900	2.96	3.14	11,420	S
J	4,575	2.95	3.16	290	T

Example on TOP Algorithm (cont'd)

- **R1 : Determining the Maximum Executable Volume**
- The principle establishes the price(s) at which maximum volume will be executed

	Buy		Price	Sell	
	Cumulative Buy Quantity	Buy Quantity at Price		Sell Quantity at Price	Cumulative Sell Quantity
	4,500	4,500	3.10	8,500	60,000
	32,700	28,200	3.08	16,900	51,500
	32,700	0	3.06	1,900	34,600
	34,600	1,900	3.04	0	32,700
	34,600	0	3.02	0	32,700
	84,300	49,700	3.00	17,500	32,700
	92,300	8,000	2.99	3,600	15,200
	108,700	16,400	2.98	11,600	11,600

The Cumulative buy quantity at any price is the buy quantity at that price plus the sum of the buy quantities at all highest Price.

The Cumulative sell quantity at any price is the sell quantity at that price plus the sum of the sell quantities at all lower Price.

Example on TOP Algorithm (cont'd)

Cumulative Buy Quantity	Price	Cumulative Sell Quantity	Maximum Executable Volume
4,500	3.10	60,000	4,500
32,700	3.08	51,500	32,700
32,700	3.06	34,600	32,700
34,600	3.04	32,700	32,700
34,600	3.02	32,700	32,700
84,300	3.00	32,700	32,700
92,300	2.99	15,200	15,200
108,700	2.98	11,600	11,600

The Executable volume at each price Is the maximum Quantity which may Be traded at that Price .The Maximum Executable volume Overall is highest Number in this Column. In this example 32,700 is The Maximum Executable Volume

Example on TOP Algorithm (cont'd)

- **R2 : Establishing the Minimum Surplus**
- The second principle ascertains the eligible price levels at which the unfilled or unmatched quantity is a minimum. The quantity of shares left in the market at the auction price should always be the lowest possible.

Cumulative Buy Quantity	Price	Cumulative Sell Quantity	Maximum Executable Volume	Minimum Surplus (CBQ-CSQ)
4,500	3.10	60,000	4,500	
32,700	3.08	51,500	32,700	(-)18,800
32,700	3.06	34,600	32,700	(-)1,900
34,600	3.04	32,700	32,700	(+)1,900
34,600	3.02	32,700	32,700	(+)1,900
84,300	3.00	32,700	32,700	(+)51,600
92,300	2.99	15,200	15,200	
108,700	2.98	11,600	11,600	

Ignoring the Positive and Negative signs
The lowest Amount
Displayed in this Column is 1,900,
There are the Minimum Surplus is 1,900.

Example on TOP Algorithm (cont'd)

- **R3 : Ascertaining where the Market Pressure exists**

- The third principle involves ascertaining where the market pressure of the potential auction prices exists: on the buy or the sell side. A positive sign (+) indicates a surplus will be left on the buy side, demonstrating buy side pressure at the conclusion of the auction. A negative sign (-) indicates a surplus will remain on the sell side, demonstrating sell side pressure at the conclusion of the auction.

Cumulative Buy Quantity	Price	Cumulative Sell Quantity	Maximum Executable Volume	Minimum Surplus (BQ-SQ)
4,500	3.10	60,000	4,500	
32,700	3.08	51,500	32,700	(-)18,800
32,700	3.06	34,600	32,700	(-)1,900
34,600	3.04	32,700	32,700	(+)1,900
34,600	3.02	32,700	32,700	(+)1,900
84,300	3.00	32,700	32,700	(+)51,600
92,300	2.99	15,200	15,200	
108,700	2.98	11,600	11,600	

A negative sign (-) indicates the Surplus will Exit on the sell Side

A positive sign (+) indicates the Surplus will Exit on the buy side

Example on TOP Algorithm (cont'd)

- R4: Consulting the Reference Price
- The fourth and final principle determines an auction price from the range of prices established in Principle 3 on the basis of their proximity to a reference price
- In our example, if the algorithm was being used to determine the morning auction price for XYZ, and the previous trading day's closing price was RM3.04 or lower, then
- the official auction price for XYZ would be established at RM3.04. If the previous trading day's closing price was RM3.06 or higher, then the official auction price for XYZ would be RM3.06. For this example, we will assume the previous trading day's closing price was RM3.04, therefore, the official auction price is RM3.04.

TOP = RM3.04