

Steering into era of harvesting developed capabilities; defence, aerospace, e-mobility to drive Bharat Forge 2.0

About the stock: Bharat Forge (BFL) is India's leading auto component exporter with strong engineering, technological competencies in forging, metallurgy. With global forging capacity of 7 lakh tonne per annum, its products find application in domestic, exports markets across PV, CV, oil & gas, construction & mining, power, defence, etc.

- FY22 standalone segment mix – ~42% CV, ~44% Industrial, ~14% PV
- FY22 standalone export mix - ~68% America, ~29% Europe, ~3% other

Key Highlights of Analyst Meet:

- We attended BFL's analyst meet at Pune, last Friday and came away impressed by the capabilities that BFL has developed over the past decade especially in the defence, aerospace and e-mobility domains among others
- It largely builds upon its **key strength in the metallurgy and material science** domain wherein the company has successfully traversed the path from being a critical component manufacturer to a sub-assembly and eventually becoming a total assembly manufacturer providing critical solutions
- In terms of financial/growth ambitions of **Vision 2030**, key targets by FY30 include: (i) **12-15% revenue CAGR**, (ii) **EBITDA margin >20%** at consolidated level, (iii) **RoCE at 25%** at consolidated level, up 500 bps from FY22 levels, (iv) capital allocation for **organic/inorganic growth, dividend payout at 30%+**
- BFL's capabilities in **defence space** need special mention wherein it has indigenously developed **armoured vehicles, ATAG guns** (successfully tested, ready for induction in Indian Army, order anticipated anytime soon), bullet shell casing, etc, with IP rights staying with BFL and opportunity size in this space pegged at thousands of crores in the next decade

What should investors do? BFL's share price has grown at ~4% CAGR in the past five years (~₹ 696 in December 2017), outperforming Nifty Auto index in that time.

- We retain **BUY** amid BFL's capabilities in auto, non-auto space with growth opportunities that lies ahead in defence, aerospace & e-mobility domains

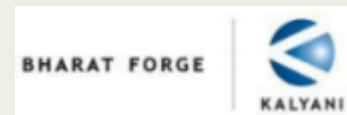
Target Price and Valuation: Incorporating FY25E and rolling over our valuations, we now value BFL at ₹ 1,050 i.e. 33x P/E on FY24-25E average EPS of ₹ 31.7/share

Key triggers for future price performance:

- With capacities & capabilities in place, sales, PAT are seen growing at CAGR of 15% over FY22-25E with EBITDA margins improving to 19.4% by FY25E

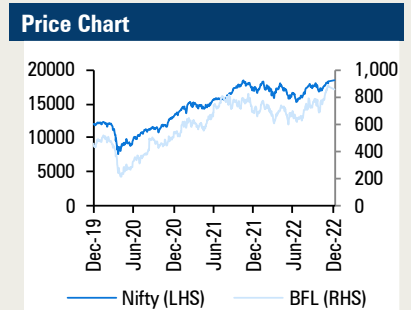
Alternate Stock Idea: Besides BFL in our coverage we like M&M in the OEM space.

- Focused on prudent capital allocation, UV differentiation & EV proactiveness
- BUY with target price of ₹ 1,590



Particulars	
Particular	Amount
Market Capitalization	₹ 39899 crore
Total Debt (FY22)	₹ 5655 crore
Cash and Inv. (FY22)	₹ 2511 crore
EV	₹ 43043 crore
52 week H/L (₹)	897 / 595
Equity capital	₹ 93.1 Crore
Face value	₹ 2

Shareholding pattern				
	Dec-21	Mar-22	Jun-22	Sep-22
Promoter	44.8	45.3	45.3	45.3
FII	23.4	19.8	18.8	19.3
DII	20.0	23.6	24.3	24.6
Other	11.9	11.4	11.6	10.9



Recent event & key risks

- Concluded its Analyst meet 2022
- **Key Risk:** (i) Slower than anticipated pick-up in sales from new growth areas i.e. defence, aerospace, e-mobility (ii) Slower than expected ramp-up in US facility catering to PV domain

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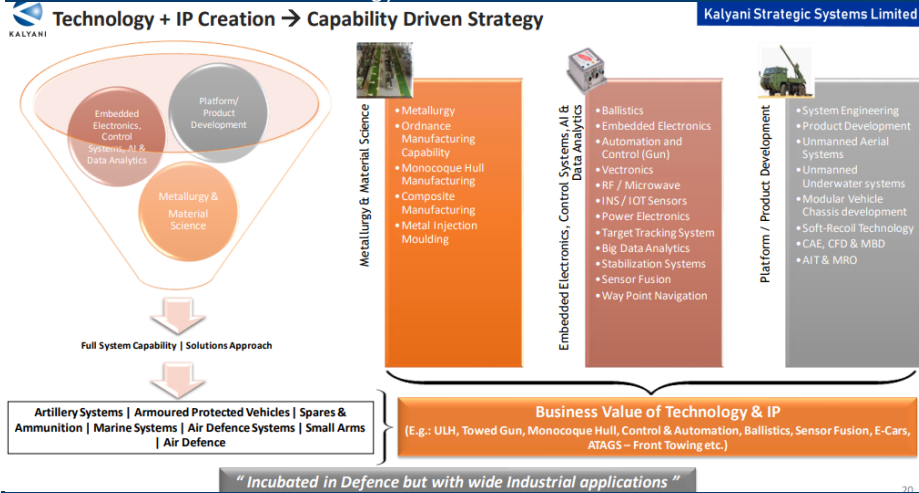
Key Financial Summary

Key Financials	FY20	FY21	FY22	5 year CAGR (FY17-22)	FY23E	FY24E	FY25E	3 year CAGR (FY22-25E)
Net Sales	8,055.8	6,336.3	10,461.1	10.3%	12,055.2	13,701.1	15,725.9	14.6%
EBITDA	1,114.8	861.7	2,016.0	10.0%	1,897.5	2,579.9	3,050.8	14.8%
EBITDA Margins (%)	13.8	13.6	19.3		15.7	18.8	19.4	
Net Profit	349.2	(127.0)	1,077.2	9.1%	816.1	1,314.8	1,635.6	14.9%
EPS (₹)	7.5	(2.7)	23.1		17.5	28.2	35.1	
P/E	114.3	(314.1)	37.0		48.9	30.3	24.4	
RoNW (%)	7.8	(125.9)	15.2		11.4	16.4	17.9	
RoCE (%)	5.6	2.2	9.6		8.4	12.6	14.9	

Source: Company, ICICI Direct Research

Key takeaways of recent analyst meet & presentation highlights

Exhibit 1: Defence domain strategy



Source: Company, ICICI Direct Research

Exhibit 2: Defence product classification



Source: Company, ICICI Direct Research

Key highlights of analyst meet:

- BFL is comfortably placed to surpass its FY25E targets set in the last analyst meet held in FY19 with diversification attained across served geographies, segments as well as product profile
- The company had invested ~₹ 4,500 crore over the past 10 years with another ~₹ 1,100 crore invested in subsidiaries amid consistent ~30% payouts

Defence Business:

- Its ATAG guns has been successfully tested and the company will start deliveries from April 2023 onwards and will increase production capacities thereafter. ASP of each gun is ~₹ 20-25 crore & ASP of each protected vehicle is ~₹ 4-5 crore
- Further, the company said about starting supply of six ATAG guns/month from October 2023 onwards, which will increase to 12 guns/month from FY25 and ultimately to 20-25 guns/ month depending upon the order book
- The company explained about own IPs benefiting BFL during tender process as the company does not need to take approval from supplier of technology, which can lead to delay in application of tenders
- For artillery guns, the company has received orders from one non conflict country and one vehicle mounted gun is under testing in the US
- BFL designed & developed protected vehicles are being supplied to Indian Army and UN missions
- In ammunition space BFL is providing only the outer shell case and not the gun powder. Hence, is ESG compliant in this domain

Exhibit 3: Defence space – detailed product profile

Defence Product Line (1/2) – In 10 years Kalyani Strategic Systems Limited

ARTILLERY SYSTEMS

- ATAGS
- Bharat ULH (Steel)
- Garuda 105
- MAr-G 155-BR
- Bharat 52
- ATAGS MGS
- Bharat ULH (Titanium)
- Bharat ULH (ER)
- Bharat 45
- MGS 6X6 *

PROTECTED VEHICLES

- KM4
- Armoured Troop Carrier
- Armoured Personnel Carrier
- Armoured Troop Carrier
- Light Bullet Proof Vehicle
- Light Tactical Vehicle
- Ultra Light Strike Vehicle
- Mine Protective Vehicle
- Drive Away Chassis
- TC 9 *

ARMOURD VEHICLES (MRO)

- Mobility Solutions
- Fire Power Solutions
- Components

UNMANNED SYSTEMS

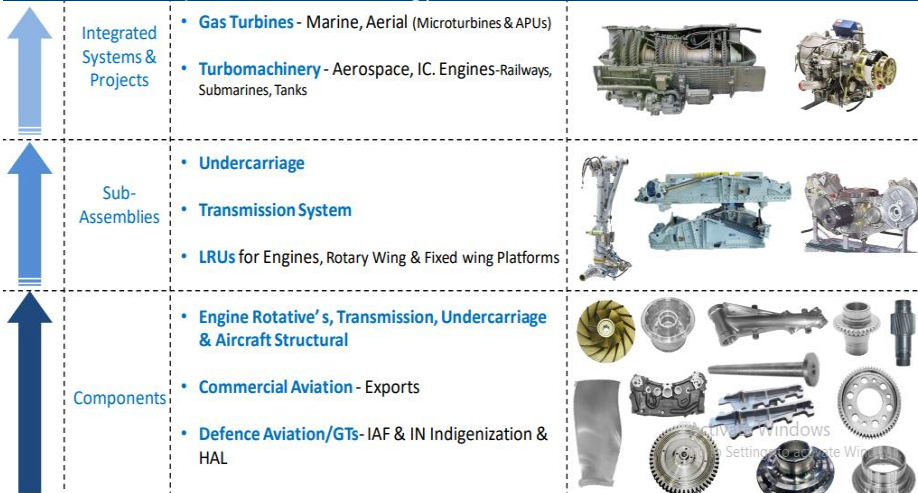
- ECARS - UGV
- Multi-rotor UAV
- Autonomous Underwater Systems
- Autonomous Underwater Systems

AMMUNITION (Only Empty)

- 40 to 155mm Ammunition
- FSAPDS
- Mortar Bodies
- War Heads
- Bomb Bodies

Source: Company, ICICI Direct Research

Exhibit 4: Aerospace business strategy



Source: Company, ICICI Direct Research

Aerospace Business:

- The company initially started aerospace division for exports only based on its metallurgical strength
- Currently, BFL is producing components only like landing gear, blades, structural components turbocharger for marine & air force, with focus on shifting from components to sub-assemblies and ultimately to integrated systems like gas turbine, composite rotor blade amid a shift from Tier III/II supplier to Tier I supplier
- Currently, BFL supplies to Boeing, Rolls Royce, etc

Exhibit 5: Aluminium business overview at BFL

Bharat Forge Aluminum Overview



BFAL anticipates to comprise four plants leveraging relationships with marquee OEM customers, and portfolios of key products

	BFAT Forging	BFALUS Forging	CLWT Casting
Overview	<ul style="list-style-type: none"> Aluminum forging facility located in Germany, established in 1996 Holds multi-year contracts with marquee European OEM customers Demonstrable ramp in financial profile, with EBITDA margin doubling over the last 10 years, and now at ~20% 	<ul style="list-style-type: none"> Aluminum forging facility located in Sanford, USA Launched in 2019 and began shipping product in 2022 HPDC¹ technology for structural and transmission components In-house engineering and design capabilities Specialized in lightweighting, Aluminum forging, HPDC, machining, foundry, assembly 	<ul style="list-style-type: none"> Aluminum casting / lightweighting facility located in India, launched in 2018 Key products across categories: powertrain, chassis, EV motors and EV battery housing Specialized in Die Casting, Hydroforming, Carbon Fiber, Foundry, Light Tooling
Capacity	7.0mm pcs	2.0 mm pcs	2,000 tons
Products			

Source: Company, ICICI Direct Research

Aluminium Business:

- The company entered the aluminium casting business due to expected rise in aluminium parts in upcoming high performance cars, stringent safety norms & increasing light weighting requirement in electric vehicles
- BFL has ~9 million parts aluminium forging capacity & ~2,000 tonnes casting capacity for EV related parts
- The company's US facility is supplying to OEMs like BMW, Daimlers, which are located close to the company's facility
- BFLs aluminium business was ~15% of its overseas operations to start with. Aims to increase it up to 40-45% with a turnaround another couple of quarters away

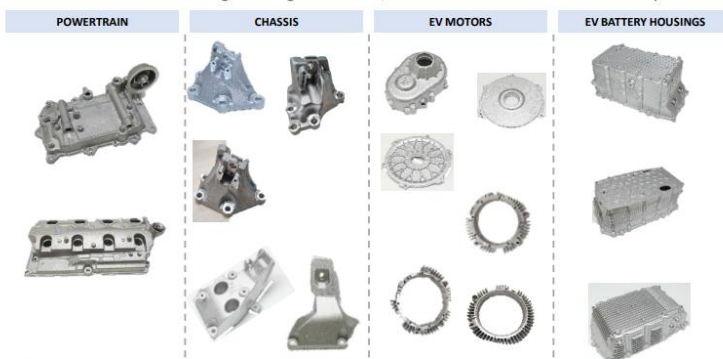
Exhibit 6: Aluminium business – casting capabilities

Extensive Product Development Capabilities



CLWT Delivers Key Products in Aluminum Lightweighting

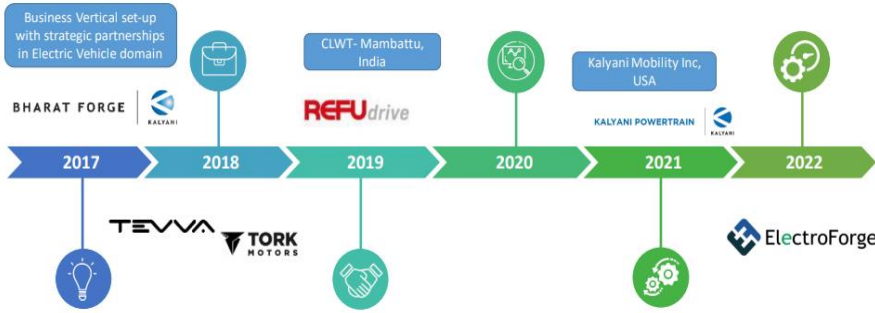
CLWT's mission-critical products are well-diversified across the parts spectrum and position the business to capitalize on the secular shift toward lighter-weight aluminum, as well as electric vehicles more broadly



CLWT Designs Mission-Critical Products to Address Lightweighting Needs Across the Vehicle

Source: Company, ICICI Direct Research

Exhibit 7: BFL journey - E-Mobility space



Source: Company, ICICI Direct Research

Exhibit 8: BFL – Product portfolio and capabilities in EV’s

Advanced Technologies	Product Portfolio aligned to EV markets		Future products (2025)
Embedded Systems	Power Electronics DC DC Converter, Auxiliary Inverter, Motor Controller, Traction Inverter, On Board Charger, VCU	Traction / Drivetrain PMSM motors, Axial Flux Motor, Diff Gears, Final Drive assembly, Transmission	H2 Fuel cell based powertrain solutions
Data Analytics			Mechanical (Light Weighting) Al. Castings, Battery Housings, Heat Sink, Al. & Mg. Structural Parts
Artificial Intelligence (AI)	Energy Storage Battery & BMS, Nano enriched advanced Lead Acid Battery, Li-ion battery Pack	H2 Fuel Cell Membranes	
Telematics & Remote Diagnostics		Advanced e-Axle	
Connected Vehicles		Carbon Fiber Composites	
V2G & V2V Charging		Sodium ion Battery	
Advanced Cell Chemistries		Hydrogen Cylinders	
Nano Technology			

Source: Company, ICICI Direct Research

Exhibit 9: Update on latest JV Electro Forge

- JV with Harbinger Motors "ElectroForge" unveiled on 14th Sep'22 at Detroit Auto show
- Electroforge will operate from India for high volume production and cater to requirements of
 - a) Harbinger for their Skateboard Chassis
 - b) India Domestic Market – both OEM & Retrofit
 - c) Global Auto OEMs and new age customers



ElectroForge products – eMotor, EDU

- For Bus and MHCV segments
 - Modular design with competitive specifications
- Product Beta build in progress
 - Alpha sample testing completed
- Motor Mfg. lines design – WIP
 - SOP target Q4 FY23-24
- JV agreement and product offering definitions in progress



Source: Company, ICICI Direct Research

Exhibit 10: CV Repowering business update



External view of Construction site at Chakan, Pune

- ✓ CV Repowering Pilot Plant : Chakan Phase II, Pune
- ✓ Capacity : 1000 CV Conversions / Annum
- ✓ 10 Production bays, 3 Inspection bays
- ✓ With additional scope for e-CV kitting
- ✓ Plant SOP : Q1 / 2023

Products:



e-CV Kit



Re-Powered e-Truck



Re-Powered e-Bus

Source: Company, ICICI Direct Research

E-Mobility Business:

- The company's first investment in EV space was in Tevva Motors in 2018 for electric truck & FCEV technologies
- Followed by it the company entered into E-mobility space with investment in Tork Motors. Tork Motors have ~4,673 units online bookings with >19,000 active leads. Its product is FAME-II certified as of October 2022
- The company informed about investment in REFU for power, electronics & control
- BFL is capable of delivering E-axle technology along with chassis for US Class 3 to US Class 6 trucks
- The company has also developed various EV specific components like DC converters, traction motors, differential assembly, etc

Exhibit 11: JS Autocast Overview

Overview: JS Autocast

- 18-year-old young company, initially supplying to the automotive sector.
- Leading manufacturer of high-grade machined ductile iron castings, which find applications in wind energy, hydraulics, automotive and power generation sectors.
- Manufactures machined castings of up to ~400kgs (small size) using green sand molding process
 - over 50 % of products are exported
 - 100% of products are machined in-house
 - Provides sub-assembly services for select customers.
- Fully-integrated manufacturing setup with in-house design, melting/ molding, machining, metalizing/ painting, testing, and packaging
 - Unit -I in Coimbatore (2005) – Designing, core making, melting, molding, testing facilities and 96 CNC machines for machining
 - Unit-II in Perundurai (2020) – core making, melting, molding, heat treatment facilities
- Combined capacity of ~ 72,000 MTPA (SIPCOT) + 28,800 MTPA (Coimbatore)
- Direct single source supplier to reputed domestic and global customers. 100% SOB with major customers.

Source: Company, ICICI Direct Research

Exhibit 12: BFL – Component business snapshot

Bharat Forge at a Glance...Y 2022

68% Exports	60+ Global Customers	40+ Domestic Customers	15 Plants globally	700K TPA Global Forging Capacity
50+ years Manufacturing Experience	30+ years Exporting Experience	70% of Revenue shipped as Finish Machined	Materials Highly Engineered Steel, Aluminum, Titanium	Weights 1 kg – 2500 kg (CD) Up to 50,000 kg (OD)
Reliable	Trusted	World-class	Digitalized	Planet Positive

Source: Company, ICICI Direct Research

Exhibit 13: Salient features of Bharat Forge 2.0

Traditional Business	<ul style="list-style-type: none"> Securing more business as supply chain consolidation hastens. China+1 and Europe+1 is real ICE is the dominant power train for heavy load applications.
Defence	<ul style="list-style-type: none"> Transformation from a component supplier to a product/ system supplier within a decade. 10 years of honing our skill at system’s manufacturing.. Lady Luck finally shines. Most cost competitive set up globally for artillery systems. 99% of products in defence stable is without any JV partnership
E-Mobility	<ul style="list-style-type: none"> E-Mobility is allowing BFL to play the full spectrum of automotive sector (2W to commercial vehicles); Content per vehicle and TAM goes up significantly. BFL in 2030 would be a supplier of solutions across castings/ Forgings across various materials, power electronics and subsystems.
Industrial Castings	<ul style="list-style-type: none"> New customer and new products over the past 6 months; O&G as a sector has been added 1 NPd every day.. that’s the kind of business traction they are seeing / RFQ pipeline = annual sales JSA is where BFL was exactly 2 decades ago. Young team, focused on technology

Material, Metallurgy and metal forming is the fulcrum for all the success we are witnessing; it is enabling us to move up the product & system value chain involving AI, IoT & Digital technology— **This will define the future of manufacturing**

Source: Company, ICICI Direct Research

Exhibit 14: Vision 2030 targets

Revenues	<ul style="list-style-type: none"> 12 - 15% CAGR Balanced revenues stream across components & products.
Consol EBITDA%	<ul style="list-style-type: none"> 20%+ as the businesses grow/turnaround.
Consol ROCE%	<ul style="list-style-type: none"> 500 bps improvement from FY22 levels of 20%.
Capital Allocation	<ul style="list-style-type: none"> Organic & In-organic growth Dividend at 30%+

Source: Company, ICICI Direct Research

JS Auto:

- The company has total capacity of 1,00,800 MTPA with history of consistent annual growth
- It is a leader in small sized wind turbine castings
- BFL plans to capitalise on cross selling opportunities with JS Auto customers

Components Business:

- The company has ~7 lakh MTPA forging capacity and ~68% of topline comes from export business
- The management said >60% of truck in US, EU, APAC, South America use parts made by BFL
- Further, BFL informed about all CV OEMs as its clients except Chinese OEMs. Also, in PV space the company has all major OEMs as its clients including some EV OEMs

Industry Outlook

- The management expects minimal impact on CV space with respect to electrification by 2030 whereas the impact is slightly higher in PV space. Electrification to lead in 2-W & 3-W domain
- Going forward, the company plans to focus on increasing value content, adding new products in aerospace & defence domains

Financial Summary

Exhibit 15: Profit and loss statement				
	₹ crore			
(Year-end March)	FY22	FY23E	FY24E	FY25E
Total operating income	10461.1	12055.2	13701.1	15725.9
Growth (%)	65.1	15.2	13.7	14.8
Raw Material Expenses	4,215.9	5,219.9	5,891.5	6,762.1
Employee Expenses	1,464.7	1,567.2	1,698.9	1,887.1
Other expenses	2,764.5	3,370.6	3,530.8	4,025.8
Total Operating Expenditure	8,445.1	10,157.7	11,121.1	12,675.0
EBITDA	2,016.0	1,897.5	2,579.9	3,050.8
Growth (%)	134.0	-5.9	36.0	18.3
Depreciation	730.3	753.5	822.1	904.2
Interest	160.4	190.9	169.9	148.9
Other Income	195.9	147.5	160.9	175.8
PBT	1,321.2	1,100.6	1,748.9	2,173.5
Others	-33	-3	0	0
Total Tax	303.5	276.0	440.7	547.7
PAT	1,077.2	816.1	1,314.8	1,635.6
Growth (%)	LP	-24.2	61.1	24.4
EPS (₹)	23.1	17.5	28.2	35.1

Source: Company, ICICI Direct Research

Exhibit 16: Cash flow statement				
	₹ crore			
(Year-end March)	FY22	FY23E	FY24E	FY25E
Profit after Tax	1077.2	816.1	1314.8	1635.6
Add: Depreciation & Interest	890.7	944.4	992.0	1053.1
(Inc)/dec in Current Assets	-1755.5	-704.8	-699.2	-851.2
Inc/(dec) in CL and Provisions	507.5	449.8	368.2	453.0
CF from operating activities	719.9	1505.4	1975.7	2290.5
(Inc)/dec in Investments	169.2	200.0	0.0	-100.0
(Inc)/dec in Fixed Assets	-1056.6	-965.0	-650.0	-650.0
Others	-303.7	-112.1	-83.5	-120.7
CF from investing activities	-1191.1	-877.1	-733.5	-870.7
Issue/(Buy back) of Equity	0.0	0.0	0.0	0.0
Inc/(dec) in loan funds	659.1	-200.0	-600.0	-600.0
Dividend paid & dividend tax	-325.9	-279.3	-442.3	-558.7
Inc/(dec) in Sec. premium	0.0	0.0	0.0	0.0
Others	268.2	-190.9	-169.9	-148.9
CF from financing activities	601.4	-670.3	-1212.2	-1307.6
Net Cash flow	130.2	-41.9	30.1	112.2
Opening Cash	472.8	603.0	561.1	591.2
Closing Cash	603.0	561.1	591.2	703.4

Source: Company, ICICI Direct Research

Exhibit 17: Balance Sheet				
	₹ crore			
(Year-end March)	FY22	FY23E	FY24E	FY25E
Liabilities				
Equity Capital	93.1	93.1	93.1	93.1
Reserve and Surplus	6,533.6	7,070.3	7,942.8	9,019.8
Total Shareholders funds	6,626.7	7,163.5	8,035.9	9,112.9
Total Debt	5,654.5	5,454.5	4,854.5	4,254.5
Deferred Tax Liability	288.9	288.9	288.9	288.9
Minority Interest / Others	791.7	791.7	791.7	791.7
Total Liabilities	13,361.9	13,698.6	13,971.1	14,448.0
Assets				
Gross Block	11,756.6	12,971.6	13,871.6	14,771.6
Less: Acc Depreciation	6,937.5	7,691.0	8,513.1	9,417.3
Net Block	4,819.1	5,280.6	5,358.5	5,354.3
Capital WIP	1,124.8	874.8	624.8	374.8
Total Fixed Assets	5,943.8	6,155.4	5,983.3	5,729.1
Investments	2,654.7	2,554.7	2,654.7	2,904.7
Inventory	2,710.5	3,137.7	3,566.0	4,093.0
Debtors	2,162.3	2,477.1	2,815.3	3,231.3
Loans and Advances	16.7	19.2	21.8	25.1
Other Current Assets	530.5	490.8	420.8	325.7
Cash	603.0	561.1	591.2	703.4
Total Current Assets	6,022.9	6,685.9	7,415.1	8,378.6
Creditors	1,631.4	1,981.7	2,252.2	2,585.1
Provisions	91.6	111.3	126.5	145.2
Other Current Liabilities	524.0	603.9	686.3	787.7
Total Current Liabilities	2,247.0	2,696.9	3,065.1	3,518.0
Net Current Assets	3,775.9	3,989.0	4,350.0	4,860.5
Other non-current assets	987.5	999.6	983.1	953.8
Application of Funds	13,361.9	13,698.6	13,971.1	14,448.0

Source: Company, ICICI Direct Research

Exhibit 18: Key ratios				
(Year-end March)	FY22	FY23E	FY24E	FY25E
Per share data (₹)				
EPS	23.1	17.5	28.2	35.1
Cash EPS	38.8	33.7	45.9	54.6
BV	142.3	153.9	172.6	195.7
DPS	7.0	6.0	9.5	12.0
Cash Per Share	53.9	48.7	49.4	53.9
Operating Ratios				
EBITDA Margin (%)	19.3	15.7	18.8	19.4
PBT / Net sales (%)	12.3	9.5	12.8	13.7
PAT Margin (%)	10.3	6.8	9.6	0.0
Inventory days	94.6	95.0	95.0	95.0
Debtor days	75.4	75.0	75.0	75.0
Creditor days	56.9	60.0	60.0	60.0
Return Ratios (%)				
RoCE	9.6	8.4	12.6	14.9
RoE	15.2	11.4	16.4	17.9
RoIC	13.2	10.8	15.9	18.6
Valuation Ratios (x)				
P/E	39.7	48.7	30.3	24.4
EV / EBITDA	21.4	22.7	16.5	13.6
EV / Net Sales	4.1	3.6	3.1	2.6
Market Cap / Sales	3.8	3.3	2.9	2.5
Price to Book Value	6.0	5.6	5.0	4.4
Solvency Ratios				
Debt/EBITDA	2.8	2.9	1.9	1.4
Debt / Equity	0.9	0.8	0.6	0.5
Current Ratio	2.4	2.3	2.2	2.2
Quick Ratio	1.2	1.1	1.1	1.0

Source: Company, ICICI Direct Research

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Buy: >15%

Hold: -5% to 15%;

Reduce: -15% to -5%;

Sell: <-15%



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